RX211,V21,02

RX02 FCTN/LGC
CZRXFA0

AH E626A MC

FICHE 1 OF 1

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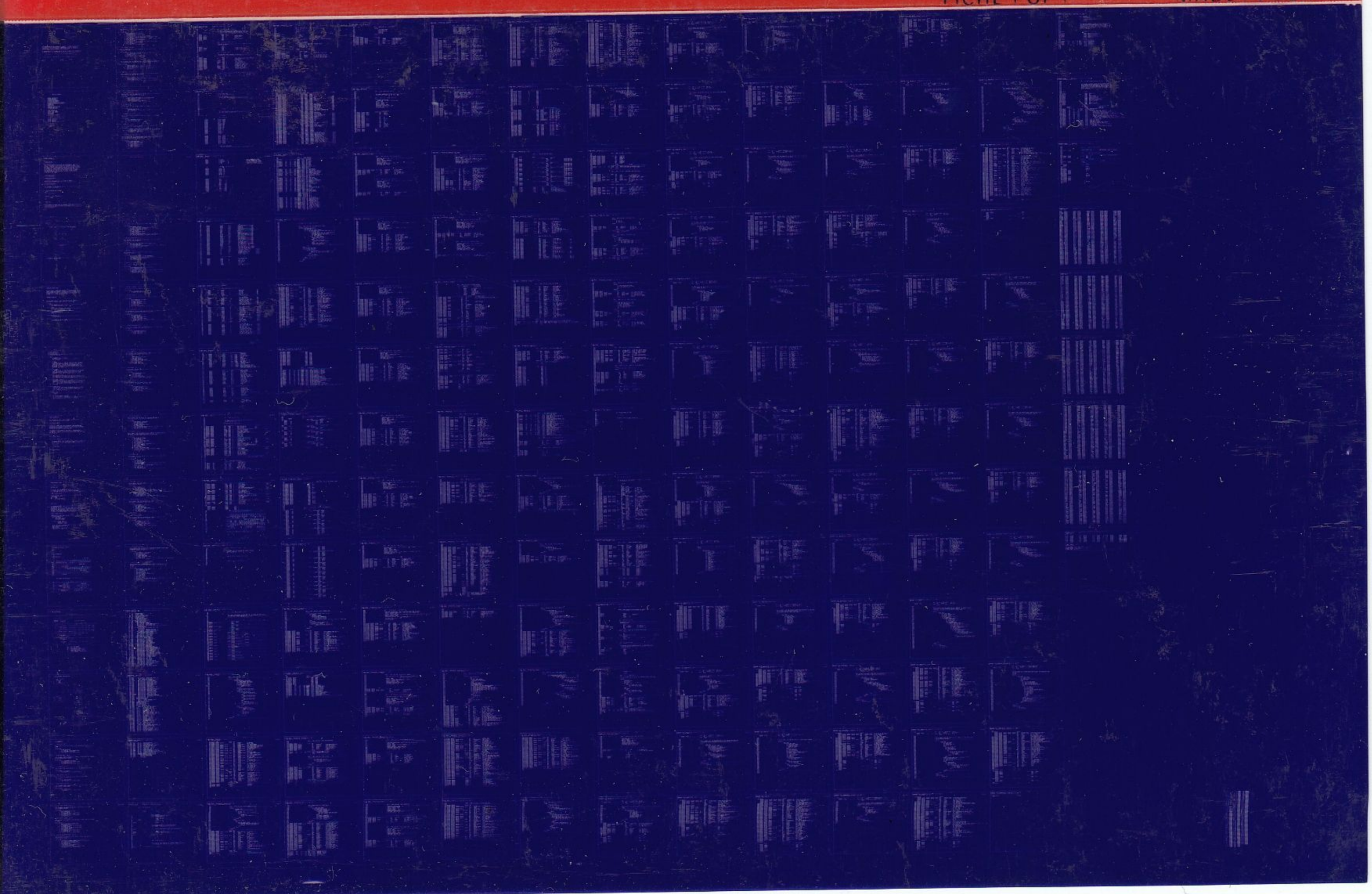
digital
MADE IN USA



IDENTIFICATION

PRODUCT CODE: AC-E625A-MC

PRODUCT NAME: CZRXFA0 RX02 FCTN/LGC

PRODUCT DATE: 10 AUG 79

MAINTAINER: DIAGNOSTIC ENGINEERING

AUTHOR: L. S. PRUCHA

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1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS PROGRAM CONTAINS A FUNCTION TEST OPTION AND A LOGIC TEST OPTION. A USER MAY SELECT TO RUN THE FUNCTION TEST ONLY, LOGIC TEST ONLY OR BOTH. THE DIAGNOSTIC WILL DEFAULT TO RUN THE LOGIC TEST ONLY. THE FUNCTION TEST WILL PERFORM A FUNCTIONAL EVALUATION OF THE DEVICE. IT WILL VERIFY THAT THE DRIVES CAN SEEK, THAT DATA CAN BE WRITTEN AND READ AND THAT DRIVE STATUS IS CORRECT. THE LOGIC TEST WILL ANALYZE DEVICE FAILURES, REPORT FAILING FIELD REPLACEABLE UNITS AND PROVIDE EXTENSIVE INFORMATION ON THE NATURE OF THE ERROR.

1.2 SYSTEM REQUIREMENTS

1.2.1 HARDWARE REQUIREMENTS

PDP-11/LSI-11 PROCESSOR WITH 16K OR MORE OF MEMORY
CONSOLE DEVICE (LA30, LA36, VT50, ETC.), LOAD MEDIA DEVICE.

1.2.2 SOFTWARE REQUIREMENTS

THIS DIAGNOSTIC IS DESIGNED TO RUN WITH THE DIAGNOSTIC SUPERVISOR AS DESCRIBED IN PARAGRAPH 2.0.

1.3 RELATED DOCUMENTS AND STANDARDS

XXDP+ USERS MANUAL

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

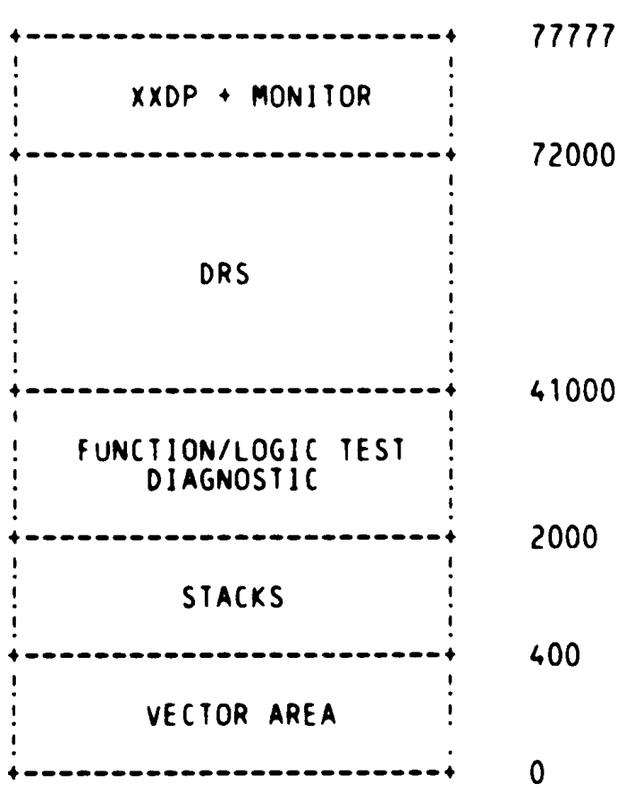
NONE

1.5 ASSUMPTIONS

THIS DIAGNOSTIC ASSUMES THAT ALL HARDWARE OTHER THAN THE RXV21/RX211 INTERFACE OR RX02 SUBSYSTEM BEING TESTED WORKS PROPERLY. FALSE ERRORS MAY BE REPORTED IF THE PROCESSOR, MEMORY, ETC., DOES NOT FUNCTION PROPERLY.

1.6 MEMORY MAP

MEMORY LAYOUT ON 16K MACHINE - XXDP ENVIRONMENT



IN A MACHINE WITH MORE MEMORY FREE SPACE WILL OCCUR BETWEEN THE DIAGNOSTIC AND THE DRS.

2.0 OPERATING INSTRUCTIONS

THIS IS A REV C SUPERVISOR DIAGNOSTIC: FOR OPERATING INSTRUCTIONS, PLEASE SEE CHAPTER 5 OF XXDP+ OPERATOR'S MANUAL. THEY ARE NO LONGER INCLUDED IN THE DIAGNOSTIC LISTING BECAUSE IT IS DESIRED THAT A CHANGE IN THOSE INSTRUCTIONS NOT REQUIRE A RE-ASSEMBLY OF ALL SUPERVISOR DIAGNOSTICS.

2.1 HARDWARE QUESTIONS

THE FOLLOWING SERIES OF QUESTIONS COMPRISE THE PARAMETERS NECESSARY TO IDENTIFY EACH FLOPPY DISK SUBSYSTEM.

RX ADDRESS -
THIS PARAMETER DEFINES THE BASE BUS ADDRESS FOR THE FLOPPY DISK SUBSYSTEM INTERFACE.

VECTOR ADDRESS -
THIS PARAMETER DEFINES THE INTERRUPT VECTOR ADDRESS FOR THE FLOPPY DISK SUBSYSTEM INTERFACE.

DRIVE -
THIS PARAMETER DEFINES THE FLOPPY DISK SUBSYSTEM DRIVE NUMBER (0 - 1).

EXPANSION-TYPE -
THIS PARAMETER IS TO BE USED FOR FUTURE EXPANSION. TYPE A CARRIAGE RETURN.

BR-LEVEL -
THIS PARAMETER DEFINES THE BR-LEVEL OF THE FLOPPY DISK SUBSYSTEM INTERFACE. A BR LEVEL OF 0 -> 7 WILL BE ACCEPTED.

2.2 SOFTWARE QUESTIONS

SEQ 0006

THE FOLLOWING SERIES OF QUESTIONS ARE INTENDED TO PROVIDE SELECTION OF VARIOUS TEST OPTIONS.

TEST HELP -
IF ANSWER IS YES "Y" THEN A SHORT HELP DESCRIPTION ON USE OF THIS DIAGNOSTIC WILL BE TYPED.

LOGIC TEST MODE -
IF ANSWER IS YES "Y" THEN THE LOGIC TESTS WILL BE DONE. THESE TESTS PROVIDE EXTENSIVE TESTING OF THE FLOPPY DISK SUBSYSTEM LOGIC. FAILING FIELD REPLACEABLE UNITS WILL BE CALLED OUT AND EXTENSIVE ERROR INFORMATION WILL BE REPORTED. THE AMOUNT OF ERROR INFORMATION MAYBE SUPPRESSED WITH THE "DRS" "IXE" FLAG.

FUNCTION TEST MODE -
IF ANSWER IS YES "Y" THEN THE FUNCTION TESTS WILL BE DONE. THESE TESTS PROVIDE A QUICK VERIFICATION THAT THE FLOPPY DISK SUBSYSTEM IS FUNCTIONAL, ONLY VERY BASIC ERROR REPORTING IS DONE, MEDIA RELATED ERRORS ARE IGNORED.

DEVICE FATAL THRESHOLD LEVEL -
THE DEVICE FATAL THRESHOLD LEVEL (DFTL) IS INITIALLY SET=1. THIS THRESHOLD LEVEL EQUALS THE NUMBER OR HARD ERRORS THAT WILL CAUSE A DEVICE FATAL ERROR WHEN THE DRS "EVL" FLAG IS SET.

NON-EXISTENT MEMORY ADDRESS -
THIS ADDRESS IS USED BY THE DIAGNOSTIC TO TEST THE RX CAPABILITY TO DETECT NON EXISTENT MEMORY (VIA BUS TIME OUT). THIS IS ONLY TESTED DURING THE NON EXISTENT MEMORY TEST. THE STANDARD 160000 DIAGNOSTIC ADDRESS IS USED BY DEFAULT.

EXTENDED ADDRESS BITS -
THESE BITS ARE USED DURING THE NPR & NON EXISTENT MEMORY TESTS TO TEST THE RX EXTENDED MEMORY CAPABILITIES. BITS 13 & 12 ARE SET IN THE RXCS REGISTER CORRESPONDING TO BITS 1 & 0 SET BY THE USER.

TEST CONTROL FLAGS -
IF ANSWER IS YES "Y", THEN THE FOLLOWING QUESTION WILL BE ASKED.

PRINT ONLY 10 DATA ERRORS & CONTINUE
IF THIS QUESTION IS ANSWERED NO "N", THEN ALL ERRORS IN THE RX DATA BUFFER WILL BE PRINTED. A YES ANSWER "Y" WILL CAUSE ONLY THE FIRST 10 BYTES IN ERROR TO BE PRINTED.

3.0 ERROR INFORMATION

THIS PROGRAM HAS THREE TYPES OF ERROR CLASSIFICATIONS; SYSTEM FATAL, DEVICE FATAL, AND HARD ERRORS.

3.1 SYSTEM FATAL ERRORS

SYSTEM FATAL ERRORS ARE USED TO INDICATE THAT AN ERROR WAS DETECTED BY THE DIAGNOSTIC SUPERVISOR IN RELATION TO LOADING/ CONTROLLING THE DIAGNOSTIC PROCESS. WHEN A SYSTEM FATAL ERROR IS DETECTED THE UNIT IS USUALLY DROPPED.

THE CONTENT OF EACH ERROR IS SUCH THAT IT SHOULD BE SELF - EXPLANATORY. HOWEVER, THE MESSAGES UTILIZE SOME TERMS THAT ARE SPECIFIC TO THE FLOPPY DISK SUBSYSTEM, AND MAY REQUIRE SOME GETTING USE TO.

3.2 DEVICE FATAL ERRORS

DEVICE FATAL ERRORS ARE A RESULT OF:

1. REACHING A DEVICE FATAL THRESHOLD LEVEL ("DVTL"). THIS LEVEL IS INITIALLY SET=1, BUT MAY BE MODIFIED BY THE OPERATOR. AN "DVTL" =1 WILL CAUSE 1 HARD ERROR TO BE CLASSIFIED A DEVICE FATAL ERROR.

2. AN ERROR THAT IS CONSIDERED FATAL TO THE DEVICE, BUT TESTING WILL CONTINUE.

3.3 HARD ERRORS

HARD ERRORS ARE A RESULT OF: A NON-RECOVERABLE ERROR

3.5 ERROR PRINTOUT FORMAT

EACH ERROR WILL BE PRINTED OUT USING THE STANDARD "DRS" HEADER.

3.5.1 FUNCTION TESTS

THE SECOND LINE PRINTED OUT WILL GIVE THE TEST TITLE
THE THIRD LINE PRINTED OUT WILL IDENTIFY THE ERROR. IF IT
IS A CSR ERROR THE ACTUAL AND EXPECTED RESULTS WILL BE DISPLAYED.

EXAMPLE ERROR PRINTOUT:

```
CZRXFA0 HRD ERR  00004 ON UNIT 01 TST 010 SUB 000 PC:003476
 POSITIONING - FNC TST
  CSR- ERROR
        REG ACTUAL=005520
        REG EXPECT=037566
```

3.5.2 LOGIC TESTS

THE SECOND AND THIRD LINES WILL BE PRINTED AS DESCRIBED FOR
THE FUNCTION TESTS.
DEPENDING ON THE TYPE OF ERROR ADDITIONAL ACTUAL AND EXPECTED
RESULTS WILL BE DISPLAYED. THEN THE TEST WILL CALL OUT WHICH ARE
THE MOST LIKELY FIELD REPLACEABLE UNITS "FRU'S" THAT ARE
FAILING. ALL CURRENT DEVICE REGISTERS ARE THEN DISPLAYED,
INCLUDING A DATA BUFFER DUMP IF DATA WAS BAD.

EXAMPLE ERROR PRINTOUT:

```
CZRXFA0 DEV FTL ERR  00019 ON UNIT 01 TST 024 SUB 000 PC:003476
 WRD CNT INTEGRITY PRT:1 - LGC TST
  WORD COUNT ERROR
        REG ACTUAL=000020
        REG EXPECT=000000

  POSSIBLE FAILING "FRU'S":
            CONTROLLER - M7744
            INTERFACE - M8256

  UNIT#1 RXCSR=014440 RXESR=010040 CMD=000437 ->READ ERR CODE
  ERROR CODE=230 ->WORD CNT OVF.
  WORD CNT=020
  CUR TRK DV0=76. CUR TRK DRV1= 0.
  TARGET TRK =76. TARGET SEC  =10. SOFT STAT=060 BAD TRK=15.
```

4.0 PERFORMANCE AND PROGRESS REPORTS

NONE

5.0 DEVICE INFORMATION

5.1 DEVICE REGISTERS

	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
													<FUNCTION>			
RXCS:	ERR	INT	XM	XM	RX2		SID	DEN	TR	IE	DON	DRV	FUN	FUN	FUN	GO
RXWC:	X	X	X	X	X	X	X	X	WORD COUNT							
RXBA:	BUS ADDRESS															
RXES:	X	X	X	X	NXM	WC OVF	SID #1	DRV #1	DRV RDY	DEL DAT	DSK DEN	AC ERR	AC LOW	INT DON	SID RDY	CRC
RXTA:	X	X	X	X	X	X	X	X	0	TRACK ADDRESS						
RXSA:	X	X	X	X	X	X	X	X	0	0	0	SECTOR ADDRESS				
RXDB:	DATA BUFFER															

READ ERROR CODE REGISTERS - (SEE LABLE "XERUUT")

WORD	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
#1	WORD COUNT								ERROR CODE							
#2	CURRENT TRACK DRV #1								CURRENT TRACK DRIVE #0							
#3	TARGET SECTOR								TARGET TRACK							
#4	BAD TRACK-ONLY VALID IF ERRCODE=150								UNT SEL	DV1 DEN.LD	HD	DV0 DEN	X	X	X	LCD DEN

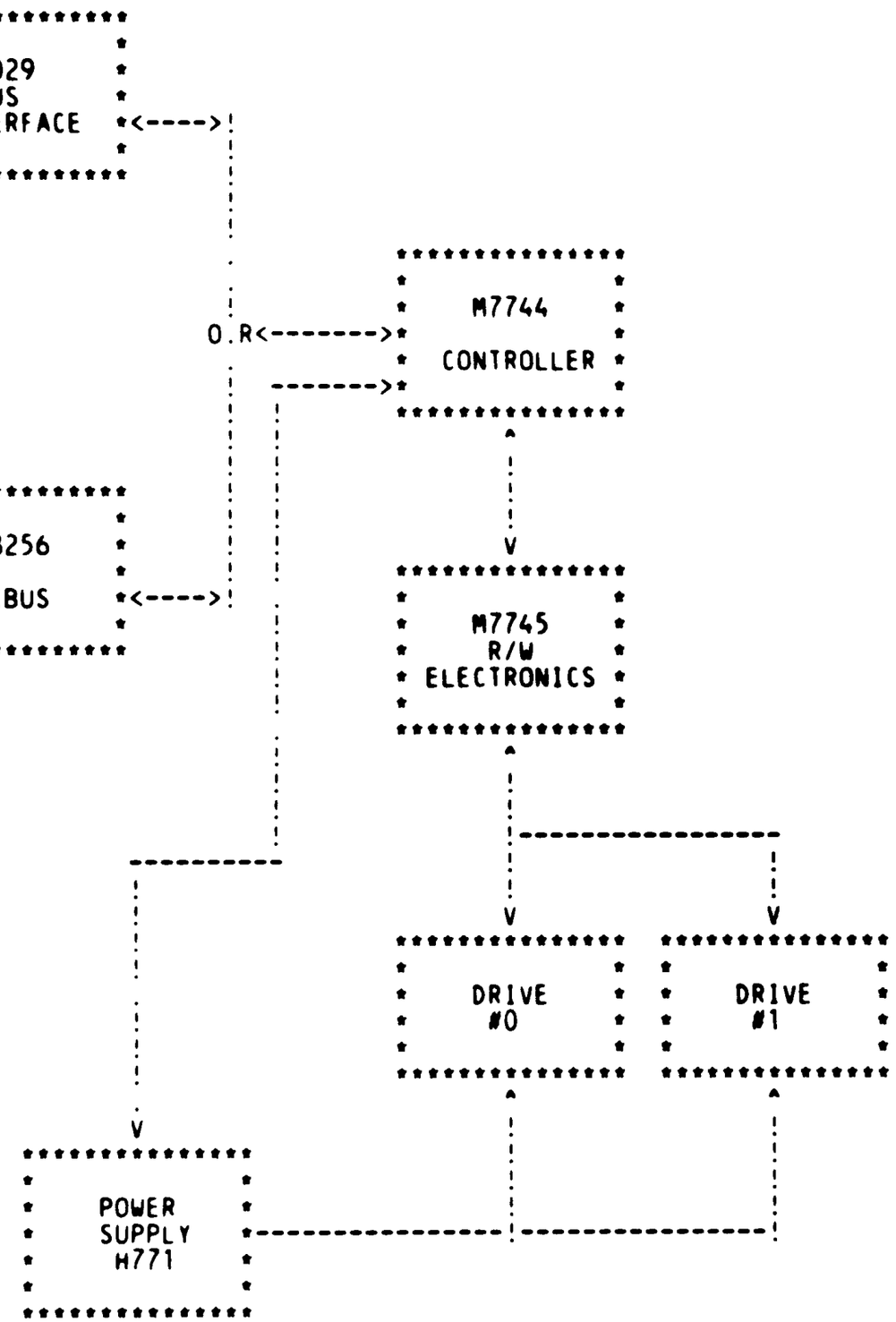
5.2 DEVICE PROTOCOL

RX02 FUNCTIONAL PROCESS

FUNCTION CODE BIT # 3 2 1	FUNCTION	PROCEDURE (PROTOCOL)
0 0 0	FILL BUFFER	Function Word --->TR--->WC--->TR--->BA--->DONE
0 0 1	EMPTY BUFFER	Function Word --->TR--->WC--->TR--->BA--->DONE
0 1 0	WRITE SECTOR	Function Word --->TR--->SA--->TR--->TA--->DONE
0 1 1	READ SECTOR	Function Word --->TR--->SA--->TR--->TA--->DONE
1 0 0	SET DENSITY	Function Word --->TR--->VW--->DONE
1 0 1	READ MAINT. STATUS	Function Word --->DONE
1 1 0	WRITE SECTOR with deleted data	Function Word --->TR--->SA--->TR--->TA--->DONE
1 1 1	READ ERROR CODE	Function Word --->TR--->BA--->DONE

TR = wait for TR BIT
DONE = wait for DONE BIT
BA = BUS ADDRESS (output to RX)
VW = VERIFICATION WORD (output to RX)
WC = WORD COUNT (output to RX)
SA = SECTOR ADDRESS (output to RX)
TA = TRACK ADDRESS (output to RX)

5.3 DEVICE HARDWARE CONFIGURATION



6.0 TEST SUMMARIES

TEST 1 - INITIALIZE - FNC TST

TEST TO VERIFY THAT AN RX INITIALIZE WILL RETURN THE DEVICE TO A VALID STATE.

DESCRIPTION:
1. DO BUS INITIALIZE
2. IF RX ERR BIT IS SET REPORT ERROR
3. CALL PROGAMMED INITIALIZE
4. IF RX ERR BIT IS SET REPORT ERROR

TEST 2 - READ ERROR CODE - FNC TST

TEST TO VERIFY THAT THE DEVICE WILL COMPLETE A READ ERROR CODE COMMAND WITHOUT ENCOUNTERING AN ERROR.

DESCRIPTION:
1. CALL PROGRAMMED INITIALIZE
2. IF RX ERR BIT IS SET REPORT ERROR
3. CALL READ ERROR CODE
4. IF RX ERR BIT IS SET REPORT ERROR

TEST 3 - FILL BUFFER - FNC TST

TEST TO VERIFY THE DEVICE BUFFER WILL FILL WITH NO RESULTING ERROR.

DESCRIPTION:
1.CALL FILL BUFFER
2. IF RX ERR BIT IS SET REPORT ERROR

TEST 4 - EMPTY BUFFER - FNC TST

TEST TO VERIFY THE DEVICE BUFFER WILL EMPTY WITHOUT ERRORS.

DESCRIPTION:
1. CALL EMPTY BUFFER
2. IF RX ERR BIT IS SET REPORT ERROR

TEST 5 - READ STATUS - FNC TST

TEST TO VERIFY THAT A DEVICE MAINTENANCE READ STATUS (RXES) COMMAND WILL EXECUTE WITHOUT ERROR.

DESCRIPTION:
1. CALL READ STATUS
2. IF RX ERR BIT IS SET REPORT ERROR

TEST 6 - FILL & EMPTY BUFFER - FNC TST

TEST TO VERIFY THE DEVICE BUFFER DATA IS VALID AFTER A FILL/EMPTY BUFFER COMMAND SEQUENCE.

DESCRIPTION:
1. SETUP RANDOM DATA PATTERN
2. CALL FILL BUFFER
3. IF RX ERR BIT IS SET REPORT ERROR
4. CALL EMPTY BUFFER
5. IF RX ERR BIT IS SET REPORT ERROR
6. CALL DATA CHECK

TEST 7 - READ & WRITE SECTOR - FNC TST

TEST TO VERIFY THE DEVICE WILL READ AND WRITE IN BOTH DENSITIES WITHOUT AN ERROR.

DESRIPTION:
1. SETUP TO DO TEST IN WRONG DENSITY
2. CALL WRITE SECTOR
3. IF RX ERR BIT IS NOT SET REPORT ERROR
4. CALL READ SECTOR
5. IF RX ERR BIT IS NOT SET REPORT ERROR
6. SETUP CORRECT DENSITY
7. CALL WRITE SECTOR
8. IF RX ERR BIT IS SET REPORT ERROR
9. CALL READ SECTOR
10. IF RX ERR BIT IS SET REPORT ERROR

TEST 8 - WRITE SECTOR DELETED DATA - FNC TST

TEST TO VERIFY THAT THE DEVICE WILL WRITE A DELETED DATA MARK ON THE DISKETTE WITHOUT ERROR.

DESCRIPTION:
1. SETUP TEST TO CORRECT DENSITY AND DELETED DATA MODE
2. CALL WRITE SECTOR DELETED DATA
3. IF RX ERR BIT IS SET REPORT ERROR
4. CALL READ SECTOR
5. IF RX ERR BIT IS SET REPORT ERROR
6. CLEAR DELETED DATA MODE
7. CALL WRITE SECTOR (CLEAR DETETED DATA MARK)
8. IF RX ERR BIT IS SET REPORT ERROR

TEST 9 - SET DENSITY - FNC TST

TEST TO VERIFY THE DEVICE WILL CHANGE DENSITIES WITHOUT INCURRING AN ERROR.

DESCRIPTION:

1. SETUP DENSITY = DISK DENSITY
2. CALL SET DENSITY
3. IF RX ERR BIT IS SET REPORT ERROR
4. CALL READ SECTOR
5. IF RX ERR BIT IS SET OR DENSITY NOT CORRECT REPORT ERROR
6. SETUP DENSITY = OPPOSITE DISK DENSITY
7. CALL SET DENSITY
8. IF RX ERR BIT IS SET REPORT ERROR
9. CALL READ SECTOR
10. IF RX ERR BIT IS SET OR DENSITY NOT CORRECT REPORT ERROR
11. SETUP DENSITY = DISK DENSITY
12. CALL SET DENSITY
13. IF RX ERR BIT IS SET REPORT ERROR

TEST 10 - POSITIONING - FNC TEST

TEST TO VERIFY THE DEVICE WILL CHANGE SECTORS AND TRACKS WITHOUT INCURRING AN ERROR.

DESCRIPTION:

1. SETUP RANDOM TRACK PATTERN AND DENSITY = DISK DENSITY
2. CALL GET A TRACK & SECTOR
3. CALL READ SECTOR
4. IF RX ERR BIT IS SET REPORT ERROR
5. DO 2. -> 4. UNTIL 76. TRACKS DONE

TEST 11 - CSR BITS - LGC TST

TEST TO VERIFY THAT THE READ/WRITE BITS OF THE CONTROL AND STATUS REGISTER CAN BE WRITTEN INTO AND READ AND OTHERWISE BEHAVE AS EXPECTED.

DESCRIPTION:

1. LOAD RX CSR WITH 1'S
2. CHECK & REPORT THAT ALL BITS THAT SHOULD SET, DO SET
3. LOAD RX CSR WITH 0'S
4. CHECK & REPORT THAT ALL BITS THAT SHOULD NOT BE SET, ARE NOT SET

TEST 12 - DBR BITS - LGC TST

TEST TO VERIFY THAT THE READ/WRITE BITS OF THE DATA BUFFER REGISTER CAN BE WRITTEN INTO AND READ AS EXPECTED.

DESCRIPTION:

1. WRITE RX DBR WITH ALL 1'S
2. CHECK & REPORT ALL BITS THAT SHOULD & SHOULD NOT BE SET
3. WIRTE RX DBR WITH ALL 0'S
4. CHECK & REPORT ALL BITS THAT SHOULD & SHOULD NOT BE SET

TEST 13 - CSR-DBR COMMON BYTE - LGC TST

TEST TO VERIFY THAT THE LOWER BYTE OF THE RXCS MAPS INTO THE RXDB AND THEREFORE CHECK WRITE ONLY BITS OF THE RXCS.

DESCRIPTION:
1. LOAD RX CSR LOW BYTE WITH ALL 1'S (EXCEPT BIT#0)
2. CHECK & REPORT IF RX DBR LOW BYTE NOT EQUAL TO ALL 1'S (EXCEPT BIT#0 & BIT#3)
3. LOAD RX CSR LOW BYTE WITH ALL 0'S
4. CHECK & REPORT IF RX DBR LOW BYTE NOT EQUAL TO ALL 0'S

TEST 14 - BUS INITIALIZE - LGC TST

TEST TO VERIFY THAT THE INTERFACE BOARD WILL COMPLETE A BUS INITIALIZE.

DESCRIPTION:
1. ISSUE BUS INITIALIZE
2. CHECK & REPORT IF ERROR BIT OR AC LOW BIT ARE SET OR IF DONE BIT IS NOT SET

TEST 15 - PROGRAMMED INITIALIZE - LGC TST

TEST TO VERIFY THAT THE INTERFACE BOARD WILL COMPLETE A PROGRAMMED INITIALIZE.

DESCRIPTION:
1. CALL PROGRAMMED INITIALIZE
2. CALL DEVICE STATE CHECK
3. CHECK & REPORT ERRORS

TEST 16 - POWER FAIL - LGC TST

TEST TO VERIFY THAT THE ACLOW CIRCUITS OPERATE AS EXPECTED.

DESCRIPTION:
1. IF MANNUAL INTERVENTION ALLOWED ASK OPERATOR TO POWER DOWN RX
2. IF POWERED DOWN, THEN CHECK & REPORT IF AC LOW BIT NOT SET
3. ASK OPERATOR TO POWER UP RX
4. IF POWERED UP, THEN INITIALIZE, CHECK & REPORT IF AC LOW BIT SET

TEST 17 - CONTROLLER-INTERFACE - LGC TST

TEST TO VERIFY THAT THE INTERFACE BOARD STATE SEQUENCER IS FUNCTIONAL. ALSO TO VERIFY THE CONTROLLER-INTERFACE HANDSHAKE BY TRYING FUNCTIONS WITH MINIMUM READ/WRITE BOARD INVOLVEMENT.

DESCIRPTION:
1. CALL READ ERROR CODE
2. IF ERROR, THEN REPORT ERROR
3. CALL FILL BUFFER
4. IF ERROR, THEN REPORT ERROR
5. CALL EMPTY BUFFER
6. IF ERROR, THEN REPORT ERROR
7. CALL READ STATUS

8. IF ERROR, THEN REPORT ERROR

SEQ 0016

TEST 18 - NPR - LGC TST

TEST TO VERIFY THAT THE NPR LOGIC WILL STORE A WORD IN MEMORY.

DESCRIPTION:
1. SETUP MEMORY LOCATION
2. CALL READ ERROR CODE (TO WRITE OVER LOCATION)
3. IF ERROR, THEN REPORT NPR ERROR
4. SETUP BUFFER AREAS BEGIN, END & END+1
5. CALL FILL BUFFER
6. IF ERROR, THEN REPORT ERROR
7. CALL EMPTY BUFFER
8. IF ERROR, THEN REPORT ERROR
9. CHECK BUFFER AREAS BEGIN & END SHOULD CHANGE & END+1 SHOULD NOT, REPORT AS NPR ERROR, IF CONDITIONS NOT MET

TEST 19 - NPR NON-EXISTENT MEM - LGC TST

TEST TO VERIFY THAT THE NPR NON-EXISTEND MEMORY LOGIC WILL TIME OUT WHEN GIVEN AN ILLEGAL ADDRESS.

DESCIRPTION:
1. SETUP BUS TRAPS AND NONEXSISTANT MEMORY ADDRESS
2. CALL READ ERROR CODE
3. IF RX CSR ERROR BIT OR RX ESR NXM BIT NOT SET, THEN CALL ERROR
4. CALL INITIALIZE (CLEAR RX ERROR)
5. CLEAR BUS TRAP VECTOR

TEST 20 - INTERRUPT - LGC TST

TEST TO VERIFY THAT THE INTERRUPTS CAN BE SET AND THAT THE DEVICE RESPONDS AS EXPECTED.

DESCRIPTION:
1. SET PROCESSOR PRIORTY = 7 (NO INTERRUPTS)
2. SET RX INTERRUPT BIT & SETUP LOWER PRIORITY
3. CALL WATCH TO LOWER PROCESSOR PRIORITY & WAIT FOR INTERRUPT
4. CALL ERROR IF DID NOT INTERRUPT
5. CLEAR RX INTERRUPT BIT

TEST 21 - PRIORITY LVL - LGC TST

TEST TO VERIFY THAT THE DEVICE PRIORITY IS SET TO THE CORRECT LEVEL.

DESCRIPTION:
1. SETUP PROCESSOR PRIORITY = 7 (NO INTERRUPTS)
2. DO SET PROCESSOR PRIORITY
3. SET RX INTERRUPT BIT
4. IF INTERRUPT OCCURED, THEN CHECK LEVEL & REPORT IF PROCSSOR PRIORITY NOT LOWER THAN RX
5. IF INTERRUPT DID NOT OCCUR, THEN SETUP NEXT LOWER PROCESSOR PRIORITY & START AT 2. AGAIN

TEST 22 - INITIALIZE CONTROL - LGC TST SEQ 0018

TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE INITIALIZE.

DESCRIPTION:
1. CALL PROGRAMMED INITIALIZE
2. IF ERROR, THEN REPORT ERROR

TEST 23 - DATA BUF INTEGRITY - LGC TST

TEST TO VERIFY ALL BITS OF DATA BUFFER, VARIOUS PATTERNS WILL BE USED.

DESCRIPTION:
1. SETUP RANDOM DATA PATTERN
2. CALL FILL BUFFFR
3. IF ERROR, THEN REPORT ERROR
4. CALL EMPTY BUFFER
5. IF ERROR, THEN REPORT ERROR
6. CALL DATA CHECK
7. SETUP NEW DATA PATTERN
8. DO 2. -> 7. UNTIL ALL DATA PATTERNS DONE

TEST 24 - WRD CNT INTEGRITY - LGC TST

TEST TO VERIFY ALL BITS OF WORD COUNT REGISTER AND CHECK THAT EXCEEDING THE WORD COUNT FOR DISKETTE DENSITY WILL BE DETECTED.

DESCRIPTION:
1. SETUP BUFFER LENGTH = 128.
2. CALL FILL BUFFER
3. IF ERROR, THEN REPORT ERROR
4. CALL READ ERROR CODE
5. IF ERROR, THEN REPORT ERROR
6. IF RX WORD COUNT NOT = 0, THEN CALL ERROR
7. DECREMENT WORD COUNT TO RX, DO 2. -> 6. UNTIL WORD COUNT TO RX IS = 0

TEST 25 - CONTROLLER-READ*WRITE ELECT - LGC TST

TEST TO VERIFY MINIMAL CONTROLLER BOARD-READ/WRITE ELECTRONICS BOARD INTERFACE VIA INITIALIZE OF A SELECTED DRIVE.

DESCRIPTION:
1. CALL PROGRAMMED INITIALIZE
2. IF ERROR, THEN REPORT ERROR
3. CALL READ ERROR CODE
4. IF ERROR, THEN REPORT ERROR

TEST 26 - READ SECTOR-PRT:1 - LGC TST SEQ 0019

TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A READ SECTOR IN
BOTH DENSITIES AND RETURN A VALID ERROR CODE.

DESCRIPTION:
1. SETUP DENSITY = DISK DENSITY
2. CALL READ SECTOR
3. CALL READ ERROR CODE
4. IF ERROR, THEN REPORT ERROR
5. SETUP DENSITY = OPPOSITE DISK DENSITY
6. CALL READ SECTOR
7. CALL READ ERROR CODE
8. IF ERROR, THEN REPORT ERROR

TEST 27 - POSITIONING - LGC TST

TEST TO VERIFY THAT THE DRIVE WILL READ THE HEADERS ON ALL TRACKS OF
THE DEIVE AS EXPECTED.

DESCRIPTION:
1. SETUP RANDOM TRACKS MODE
2. CALL GET A TRACK
3. CALL READ SECTOR
4. CALL READ ERROR CODE
5. IF TRACK OR OTHER ERROR, THEN REPORT ERROR
6. DO 2. -> 5. UNTIL 76. TRACKS DONE

TEST 28 - WRITE SECTOR-PRT:1 - LGC TST

TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A WRITE SECTOR IN
BOTH DENSITIES AND RETURN A VALID ERROR CODE.

DESCRIPTION:
1. SETUP DENSITY = DISK DENSITY
2. CALL WRITE SECTOR
3. IF ERROR, THEN REPORT ERROR
4. SETUP DENSITY = OPPOSITE DISK DENSITY
5. CALL WRITE SECTOR
6. IF NO DENSITY ERROR, THEN REPORT ERROR

TEST 29 - DELETED DATA WRITE PRT:1 - LGC TST SEQ 0020

TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISYETTE HEADER AND RETRIEVE THIS DATA ON A KNOWN GOOD DISKETTE.

DESCRIPTION:

1. SETUP DENSITY = DISK DENSITY
2. SETUP DELETED DATA MODE
3. CALL WRITE SECTOR
4. IF ERROR, THEN REPORT ERROR
5. CALL READ SECTOR
6. IF RX CSR DELETED DATA BIT NOT SET, THEN REPORT ERROR
7. CLEAR DELETED DATA MODE
8. CALL WRITE SECTOR (CLEAR DELETED DATA MARK)

TEST 30 - SET DENSITY - LGC TST

TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE SET DENSITY IN BOTH DENSITIES. THE VALID WORD WILL ALSO BE CHECKED. ALSO TO VERIFY THAT THE DRIVE WILL READ IN BOTH DENSITIES, WITHOUT ERRORS.

DESCRIPTION:

1. GET & SAVE DISK DENSITY
2. SETUP DENSITY = SINGLE
3. CALL SET DENSITY
4. IF ERROR, THEN REPORT ERROR
5. SETUP INVALID KEY WORD = ASCII "K"
6. CALL SET DENSITY
7. IF NO DENSITY ERROR, THEN REPORT ERROR
8. SETUP VALID KEY WORD = ASCII "I"
9. SETUP DENSITY = DOUBLE
10. CALL SET DENSITY
11. IF ERROR, THEN REPORT ERROR
12. CHECK DISK DENSITY & REPORT IF NOT SET = DOUBLE
13. IF SAVED DISK DENSITY = DOUBLE, THEN SET DENSITY = SINGLE AND CALL SET DENSITY

TEST 31 - SECTOR ADR - LGC TST

TEST TO VERIFY THAT THE CONTROLLER WILL HANDLE ALL LEGAL AND ILLEGAL SECTOR ADDRESSES PROPERLY.

DESCIRPTION:

1. GET A SECTOR
2. CALL READ SECTOR
3. CALL READ ERROR CODE
4. IF SECTOR ADDRESS NOT = RX SECTOR ADDRESS OR OTHER ERROR, THEN REPORT ERROR
5. DO 1. -> 4. UNTIL ALL SECTORS DONE OR ERROR OCCURS
6. SETUP SECTOR = 0 (ILLEGAL SECTOR)
7. CALL READ SECTOR
8. CALL READ ERROR CODE
9. IF NO SECTOR ERROR OR IF OTHER ERROR, THEN REPORT ERROR

TEST 32 - TRACK ADR - LGC TST SEQ 0021

TEST TO VERIFY THAT THE CONTROLLER WILL HANDLE ALL LEGAL AND ILLEGAL
TRACK ADDRESSES PROPERLY.

DESCRIPTION:
1. GET A TRACK
2. CALL READ SECTOR
3. CALL READ ERROR CODE
4. IF TRACK ADDRESS NOT = RX TRACK ADDRESS, THEN CALL ERROR
   OR IF OTHER TRACK ERROR OCCURED, THEN CALL ERROR
5. DO 1. -> 4. UNTIL ALL TRACKS DONE OR FINI FLAG SET (COMMAND ERROR)
6. SETUP ILLEGAL TRACK
7. CALL READ SECTOR
8. CALL READ ERROR CODE
9. IF TRACK ADDRESS NOT = RX TRACK ADDRESS OR
   IF ERROR CODE NOT = 40 (TRACK > 76.), THEN CALL ERROR

TEST 33 - READ SECTOR-PRT:2 - LGC TST

TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A READ SECTOR IN
BOTH DENSITIES AND RETURN A VALID ERROR CODE.

DESCRIPTION:
1. SETUP DENSITY = DISK DENSITY
2. CALL READ SECTOR
3. CALL READ ERROR CODE
4. IF ERROR, THEN REPORT ERROR
5. SETUP DENSITY = OPPOSITE DISK DENSITY
6. CALL READ SECTOR
7. CALL READ ERROR CODE
8. IF NOT DENSITY ERROR, THEN REPORT ERROR

TEST 34 - WRITE SECTOR-PRT:2 - LGC TST

TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A WRITE SECTOR IN
BOTH DENSITIES AND RETURN A VALID ERROR CODE.

DESCRIPTION:
1. SETUP DENSITY = DISK DENSITY
2. CALL WRITE SECTOR
3. IF ERROR, THEN REPORT ERROR
4. SETUP DENSITY = OPPOSITE DISK DENSITY
5. CALL WRITE SECTOR
6. IF NOT DENSITY ERROR, THEN REPORT ERROR

TEST 35 - DELETED DATA WRITE PRT:2 - LGC TST SEQ 0022

TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISKETTE HEADER AND RETRIEVE THIS DATA ON A KNOWN GOOD DISKETTE. THIS IS DONE IN OPPOSITE DENSITY OF PART: 1.

DESCRIPTION:

1. SETUP DENSITY = DISK DENSITY
2. SETUP DELETED DATA MODE
3. CALL WRITE SECTOR
4. CALL READ ERROR CODE
5. IF ERROR, THEN REPORT ERROR
6. CALL READ SECTOR
7. IF RX ESR DELETED DATA BIT NOT SET OR OTHER ERROR, THEN REPORT ERROR

TEST 36 - DISKETTE & DENSITY DATA CHECK - LGC TST

TEST TO VERIFY WITH A KNOWN GOOD DISKETTE THAT THE DEVICE WILL READ AND WRITE TO THE DISKETTE WITHOUT DATA ERRORS. BOTH DENSITIES WILL BE DONE.

DESCRIPTION:

1. SETUP DENSITY = DISK DENSITY
2. SETUP RANDOM DATA PATTERN
3. GET A TRACK & SECTOR
4. CALL FILL BUFFER
5. CALL WRITE SECTOR
6. SETUP TO CLEAR RX INTERNAL BUFFER
7. CALL FILL BUFFER
8. CALL READ SECTOR
9. CALL EMPTY BUFFER
10. CALL DATA CHECK
11. DO 3. -> 10. UNTIL AT LEAST ONE SECTOR OF EACH TRACK IS ACCESSED
12. SETUP DENSITY = OPPOSITE DISK DENSITY
13. CALL SET DENSITY
14. DO 3. -> 13. UNTIL BOTH DENSITIES DONE

HARDWARE TESTS MACRO M1110 13-AUG-79 15:33
TABLE OF CONTENTS

SEQ 0025

```
                .NLIST  SEQ,LD,BIN,CND


                                                                        .REPT 0
                7.1     LISTING
                        -------

                                                                        .ENDR
     9                                  .LIST   SEQ,BIN
    22                                  .TITLE PROGRAM HEADER AND TABLES
    23                                  .SBTTL  PROGRAM HEADER
    49
    51                                          .ENABL  ABS,AMA
    52          002000                          .=2000
    53                                          .NLIST  BEX,MD
    55
    56 002000                                   BGNMOD
    57
    58                                  ;++
    59                                  ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
    60                                  ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
    61                                  ;--
    62
    63 002000                                   POINTER BGNSW,BGNSFT,BGNAU,BGNDU,ERRTBL,BGNSETUP
    64
    74
    75 002000                                   HEADER  CZRXFA0,0,0,170,0
    76 002122                                   DESCRIPT <RX02 FUNCTION-LOGIC TEST>
    77
    86 002154                                   DEVTYP <RX02>
    87
    88
    89
    90
    91
    92                                  .SBTTL  DISPATCH TABLE
    93
    94                                  ;++
    95                                  ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
    96                                  ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
    97                                  ;--
    98
    99 002162                                   DISPATCH 36
   100
```

```
                                .SBTTL  DEFAULT HARDWARE P-TABLE
                                ;++
                                ; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                                ; THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
                                ; IS IDENTICAL TO THE STRUCTURE OF THE HARDWARE P-TABLES.
                                ;--
002274                                  BGNHW   DFPTBL
002276  177170                         .WORD   177170          ;UNIBUS ADDRESS
002300  000264                         .WORD   264             ;VECTOR ADDRESS
002302  000000                         .WORD   0               ;DRIVE #
002304  000000                         .WORD   0               ;FUTURE EXPANSION
002306  000005                         .WORD   5               ;BR LEVEL #'S
002310                                  ENDHW

                                .SBTTL  LOAD DEVICE PROTECTION
                                ;++
                                ; LOAD DEVICE PROTECTION TABLE - USED TO CHECK HARDWARE P-TABLE
                                ; AGAINST LOAD DEVICE.
                                ;--
002310                                  BGNPROT
002310  000000                         .WORD   0               ;P-TABLE OFFSET->CSR
002312  177777                         .WORD   -1              ;P-TABLE OFFSET->VECTOR-DON'T CARE
002314  000004                         .WORD   4               ;P-TABLE OFFSET->DRIVE
002316                                  ENDPROT

                                .SBTTL  SOFTWARE P-TABLE
                                ;++
                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;--
002316                                  BGNSW   SFPTBL
002320  000001         DVTL:    .WORD   1               ;HARD ERROR->DEVICE FATAL THRESHOLD LEVEL
002322  000000                  .WORD   0               ;CONTROL WORD FOR SOFTWARE P-TABLES
002324  000001         TSTMOD:: .WORD   1               ;TEST MODE
002326  000000         TSTPAT:: .WORD   0               ;TEST PATTERN #
002330  000000         TRKSEQ:: .WORD   0               ;TRACK SEQUENCE #
002332  000020         SWREG::  .WORD   20              ;SOFTWARE SWITCH REG
002334  000000         OD::     .WORD   0               ;OUTSIDE DIA. TRACK LIMIT
002336  000114         ID::     .WORD   114             ;INSIDE DIA. TRACK LIMIT.
002340  000001         MINSEC:: .WORD   1               ;MINIMUM SECTOR LIMIT
002342  000032         MAXSEC:: .WORD   32              ;MAXIMUM SECTOR LIMIT
002344  160000         NXMADR:: .WORD   160000          ;NON-EXISTENT MEMORY-ADR
002346  000000         XADBIT:: .WORD   0               ;EXTENDED ADDRESS BITS
002350                          ENDSW

                        ;       !   !                   !           !           !
                        ;       ! 15! 14! 13! 12. 11! 10! 09! 08! 07. 06! 05! 04! 03. 02! 01! 00!
                        ;-------+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---!
                        ;SWREG: .   !PRT.   !SID!   !   !   !   !   .   :   !TEN!SEK!   .FUN!   !
                        ;       !   !STA!   !FLG!   .   .   !   !   !   !   !DAT!CAL!   !TST!   .
                        ;-------+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---!

002350                          ENDMOD
```

```
                                .TITLE GLOBAL AREAS
                                .SBTTL  GLOBAL EQUATES SECTION

                                ;-----< TEST MACROS >----
                                ; THIS SECTION CONTAINS MACROS USED THROUGHOUT THE TESTS
                                ;-------------------------------------------------------
002350                                  BGNMOD

                                ;++
                                ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
                                ; ARE USED IN MORE THAN ONE TEST.
                                ;--

002350                                  EQUALS
                                ;
                                ; BIT DIFINITIONS
                                ;
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
                                ;
001000                          BIT9==  BIT09
000400                          BIT8==  BIT08
000200                          BIT7==  BIT07
000100                          BIT6==  BIT06
000040                          BIT5==  BIT05
000020                          BIT4==  BIT04
000010                          BIT3==  BIT03
000004                          BIT2==  BIT02
000002                          BIT1==  BIT01
000001                          BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
```

```
                        ;
000040                  EF.START==      32.             ; START COMMAND WAS ISSUED
000037                  EF.RESTART==    31.             ; RESTART COMMAND WAS ISSUED
000036                  EF.CONTINUE==   30.             ; CONTINUE COMMAND WAS ISSUED
000035                  EF.NEW==        29.             ; A NEW PASS HAS BEEN STARTED
000034                  EF.PWR==        28.             ; A POWER-FAIL/POWER-UP OCCURRED
                        ;
                        ;
                        ; PRIORITY LEVEL DEFINITIONS
                        ;
000340                  PRI07== 340
000300                  PRI06== 300
000240                  PRI05== 240
000200                  PRI04== 200
000140                  PRI03== 140
000100                  PRI02== 100
000040                  PRI01== 40
000000                  PRI00== 0
                        ;
                        ;OPERATOR FLAG BITS
                        ;
000004                  EVL==       4
000010                  LOT==       10
000020                  ADR==       20
000040                  IDU==       40
000100                  ISR==      100
000200                  UAM==      200
000400                  BOE==      400
001000                  PNT==     1000
002000                  PRI==     2000
004000                  IXE==     4000
010000                  IBE==    10000
020000                  IER==    20000
040000                  LOE==    40000
100000                  HOE==   100000
```

```
                        ;***** PROGRAM EQUIVALENTS *****

000010          DLDCMD  =       BIT3            ;DEL. DATA CMD BIT------<CSR>
100000          ERRBIT  =       BIT15           ;ERROR BIT-------------<CSR>
040000          RXINIT  =       BIT14           ;RXINIT BIT------------<CSR>
004000          RX2BIT  =       BIT11           ;RX02 BIT--------------<CSR>
001000          SIDE1   =       BIT9            ;SIDE #1 BIT-----------<ESR> & <CSR>
000400          DENBIT  =       BIT8            ;DENSITY BIT-----------<CSR>
000200          TRBIT   =       BIT7            ;TR BIT----------------<CSR>
000040          DNBIT   =       BIT5            ;DONE BIT--------------<CSR>
000020          DRV1    =       BIT4            ;DRIVE 1---------------<CSR>
004000          NXMBIT  =       BIT11           ;NON-EXISTENT MEM------<ESR>
002000          WCOVRF  =       BIT10           ;WORD COUNT OVERFLOW----<ESR>
000400          DRIVE1  =       BIT8            ;DRIVE #1 BIT----------<ESR>
000200          DRVRDY  =       BIT7            ;DRIVE READY BIT-------<ESR>
000100          DLDBIT  =       BIT6            ;DEL. DATA BIT---------<ESR>
000040          DRVDEN  =       BIT5            ;DRIVE DENSITY---------<ESR>
000020          DENERR  =       BIT4            ;DENSITY ERROR---------<ESR>
000010          ACLOW   =       BIT3            ;AC LOW BIT------------<ESR>
000004          INITDN  =       BIT2            ;INITIALIZE DONE BIT----<ESR>
000002          SIDRDY  =       BIT1            ;SIDE READY BIT--------<ESR>
000001          CRCERB  =       BIT0            ;CRC ERROR BIT---------<ESR>
000004          BTRP4   =       4               ;BUS TRAP LOC #4 - TRAP HANDLER
000006          BTRP6   =       6               ;BUS TRAP LOC #4 - PSW
000001          LOGICT  =       BIT0            ;LOGIC TEST BIT--------<SWREG>
000002          FUNCTT  =       BIT1            ;FUNCTION TEST BIT-----<SWREG>
010000          SIDFLG  =       BIT12           ;SIDE FLAG SOFT-P TABLE-<SWREG>
000400          ITK     =       BIT8            ;INITIALIZE TRACKS FLAG         <TKSCFG>
001000          ISC     =       BIT9            ;INITIALIZE SECTORS FLAG        <TKSCFG>
000001          STK     =       BIT0            ;SEQUENCE TRACKS FLAG           <TKSCFG>
000002          SSC     =       BIT1            ;SEQUENCE SECTORS FLAG          <TKSCFG>
000000          RTK     =       0               ;RANDOM TRACKS FLAG             <TKSCFG>
000000          RSC     =       0               ;RANDOM SECTORS FLAG            <TKSCFG>
000004          ILTK    =       BIT2            ;ILLEGAL TRACKS FLAG            <TKSCFG>

                        ;***** DEVICE COMMANDS *****

000000          FBCMD   =       0               ;FILL BUFFER CMD ;
000002          EBCMD   =       2               ;EMPTY BUFFER CMD
000004          WSCMD   =       4               ;WRITE SECTOR
000006          RSCMD   =       6               ;READ SECTOR
000010          SDCMD   =       10              ;SET DENSITY
000012          STCMD   =       12              ;STATUS
000014          WDDCMD  =       14              ;WRITE DELETED DATA CMD
000016          RECCMD  =       16              ;READ ERROR CODE CMD
```

```
                        ;***** ERROR NUMBER EQUIVALENTS *****
                        
000002                  WRTERR  =       2.              ;WRITE ERR                      -HRD
000003                  RDERR   =       3.              ;READ ERR                       -HRD
000004                  CRCERR  =       4.              ;CRC ERR                        -HRD
000005                  DATER   =       5.              ;DATA ERR                       -HRD
000006                  SEKERR  =       6.              ;SEEK ERR                       -HRD
000007                  DLDERR  =       7.              ;DELETED DATA ERR               -HRD
                        ;-----------------------------------------------------------------------
                        
000012                  FILERR  =       10.             ;FILL BUFFER ERR                -HRD
000013                  EMPERR  =       11.             ;EMPTY BUFFER ERR               -HRD
000014                  INTNDN  =       12.             ;INTERRUPT, NO DONE ERR         -HRD
000015                  DNNINT  =       13.             ;DONE, NO INTERRUPT ERR         -HRD
000016                  ERRNST  =       14.             ;ERROR NOT SET ERR              -HRD
000017                  ILLERC  =       15.             ;ILLEGAL ERROR CODE             -HRD
000020                  DENDSK  =       16.             ;DENSITY OF DISK-NOT ERR        -HRD
000021                  RECERR  =       17.             ;READ ERROR CODE ERR            -HRD
                        ;-----------------------------------------------------------------------
                        
000023                  WCERR   =       19.             ;WORD COUNT ERROR               -DVCFTL
000024                  SDRDYE  =       20.             ;SIDE READY                     -DVCFTL
000025                  DVRDYE  =       21.             ;DRIVE READY                    -DVCFTL
000026                  SIDWRG  =       22.             ;SIDE WRONG                     -DVCFTL
000027                  DRVWRG  =       23.             ;DRIVE WRONG                    -DVCFTL
000030                  DENERR  =       24.             ;DENSITY ERR                    -DVCFTL
000031                  DENMIX  =       25.             ;DENSITY MIXED ON DISK ERR      -DVCFTL
000032                  DLDTER  =       26.             ;DELETED DATA ERR               -DVCFTL
000033                  CSRERR  =       27.             ;RXCSR-ERR                      -DVCFTL
000034                  DBRERR  =       28.             ;RXESR-ERR                      -DVCFTL
000035                  STDNER  =       29.             ;SET DENSITY ERR                -DVCFTL
000036                  SDKYWD  =       30.             ;SET DENSITY KEYWORD (VARIFY)   -DVCFTL
000037                  ACLOWD  =       31.             ;AC LOW                         -DVCFTL
000040                  ALGO2E  =       32.             ;ALGO2 ERROR                    -DVCFTL
000041                  TRKAER  =       33.             ;TRACK ADDRESS                  -DVCFTL
000042                  SECAER  =       34.             ;SECTOR ADDRESS                 -DVCFTL
                        ;-----------------------------------------------------------------------
                        
000050                  ACLOWF  =       40.             ;AC LOW FATAL ERR               -SYSFTL
000051                  WCOVFE  =       41.             ;WORD COUNT OVERFLOW ERR        -SYSFTL
000052                  NXMERR  =       42.             ;NON-EXISTENT MEMORY ERR        -SYSFTL
000053                  NPRERR  =       43.             ;NPR LOGIC ERR                  -SYSFTL
000054                  PRILEV  =       44.             ;PRIORITY LEVEL ERR             -SYSFTL
000055                  DATABF  =       45.             ;DATA BUFFER INTEG ERR          -SYSFTL
000056                  HDSFDG  =       46.             ;HARDWARE SELF DIAG ERR         -SYSFTL
000057                  NOTRBT  =       47.             ;"TR" BIT TIME OUT ERR          -SYSFTL
000060                  NODNBT  =       48.             ;"DONE" BIT TIBIT TIME OUT ERR  -SYSFTL
000061                  NOITDB  =       49.             ;NO "INIT DONE" BIT ERR         -SYSFTL
000062                  NOITDP  =       50.             ;NO PROG "INIT DONE" BIT ERR    -SYSFTL
000063                  DNNOTR  =       51.             ;"DONE" BIT, NO "TR" BIT        -SYSFTL
                        ;-----------------------------------------------------------------------
```

```
                        ;***** FRU CALLOUT MESSAGE EQUIVALENTS *****
000000                  INTERF  =       0               ;INTERFACE=0
000002                  CONTRL  =       2*1.    ;FRUM1  ;CONTROLLER
000004                  RWELEC  =       2*2.    ;FRUM2  ;R-W ELECTRONICS
000006                  PHYDRV  =       2*3.    ;FRUM3  ;PHYSICAL DRIVE
000010                  CABLES  =       2*4.    ;FRUM4  ;CABLES
000012                  POWRSP  =       2*5.    ;FRUM5  ;POWER SUPPLY
000014                  DISKET  =       2*6.    ;FRUM6  ;DISKETTE
000016                  INTFSW  =       2*7.    ;FRUM7  ;INTERFACE SWITCHES
000020                  NPRJPR  =       2*8.    ;FRUM8  ;NPR JUMPER
000022                  CONTSW  =       2*9.    ;FRUM9  ;CONTROLLER SWITCHES
000024                  INTFCB  =       2*10.   ;FRUM10 ;INTERFACE CABLE
000026                  DOOROP  =       2*11.   ;FRUM11 ;DOOR OPEN
000030                  DISKSP  =       2*12.   ;FRUM12 ;DISK SPINNING-DRIVE BELT
000032                  MOTOR   =       2*13.   ;FRUM13 ;MOTOR AC POWER NOT ROTATING
000034                  NOPWR   =       2*14.   ;FRUM14 ;POWER CORD, BLOWN FUSE, DRIVE POWER
                                                ;CONNECTOR POWER SUPPLY FAULT.

                        ;***** TEST FLAGS REGISTER EQUIVALENTS (FLAGST).*****
000001                  REGCK   =       BIT0            ;REGISTER CHECK
000002                  DDCFLG  =       BIT1            ;DOUBLE DENSITY CONTROL FLAG (DD=1)
000004                  DATCK   =       BIT2            ;DATA CHECK
000010                  DLPDN   =       BIT3            ;DO LOOP DONE
000020                  EMBUFF  =       BIT4            ;EMPTY BUFFER-<USED BY DATA CHECK>
000040                  FUNTST  =       BIT5            ;FUNCTION TEST FLAG
000100                  HDRPRT  =       BIT6            ;ERROR CALL HEADER PRINT
000200                  RECFLG  =       BIT7            ;READ ERROR CODE FLAG
001000                  TRKDON  =       BIT9            ;TRACK DONE
002000                  SECDON  =       BIT10           ;SECTOR DONE
004000                  NEGTST  =       BIT11           ;NEGATIVE TEST FLAG
010000                  ILLGAL  =       BIT12           ;ILLEGAL FLAG
020000                  CKERR   =       BIT13           ;CHECK ERROR WORDS FLAG
040000                  HRDERR  =       BIT14           ;HARD ERROR
100000                  ERRFLG  =       BIT15           ;ERROR

                        ;***** PROGRAM/PRINT FLAGS REGISTER EQUIV (FLAGSP) *****

000001                  TKPRT   =       BIT0            ;TRACKS PRINT
000002                  SCPRT   =       BIT1            ;SECTORS PRINT
000004                  RGPRT   =       BIT2            ;REGISTERS PRINT
000010                  PROPRT  =       BIT3            ;PROTOCAL LEVEL PRINT
000100                  HDRPRT  =       BIT6            ;HEADER PRINT
000200                  RECTST  =       BIT7            ;ERROR CODE TEST (INVOKE ERROR CODE)
000400                  LSIFLG  =       BIT8            ;LSI FLAG
010000                  FONZFG  =       BIT12           ;FONZ FLAG
040000                  RESFLG  =       BIT14           ;RESTART FLAG
100000                  STAFLG  =       BIT15           ;START FLAG

                        ;***** "SYS ERR" & "TYP ERR" REGISTER EQUIVALENTS *****

000020                  CMDERR  =       BIT4            ;COMMAND ERROR
004000                  DVFERR  =       BIT11           ;DEVICE FATAL ERROR
002000                  SYFERR  =       BIT10           ;SYSTEM FATAL ERROR
```

```
                                .SBTTL  GLOBAL DATA SECTION

                                ;++
                                ; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
                                ; IN MORE THAN ONE TEST.
                                ;--
                                ; STORAGE FOR DEVICE REGISTERS
                                ;
                                ;-------------------------------------------------------------------------------
002350  000000                  RXCS:   .WORD   0       ;UNIT BUS ADR-CSR               <UUT *>
002352  000000                  RXDB:   .WORD   0       ;UNIT BUS ADR-DBR               <UUT *>
002354  000000                  VECT:   .WORD   0       ;UNIT VECTOR                    <UUT *>
002356  000000                  RXPRI:  .WORD   0       ;PRIORITY FOR DEVICE INTERRUPTS <UUT *>
002360  000000                  EMPADR: .WORD   0       ;EMPTY BUFFER ADDRESS
002362  000000                  FILADR: .WORD   0       ;FILL BUFFER ADDRESS
002364  000000                  RECADR: .WORD   0       ;READ ERROR CODE ADDRESS
002366  000000                  EXTADR: .WORD   0       ;EXTENDED ADDRESS (BITS: #12 & #13)
002370  000000                  WDCNT:  .WORD   0       ;WORD COUNT
002372  000000                  VARIFY: .WORD   0       ;VARIFY WORD
002374  000000                  TRACK:  .WORD   0       ;TRACK ADR
002376  000000                  SECTOR: .WORD   0       ;SECTOR ADR
                                ;-------------------------------------------------------------------------------
002400  000000                  CMD:    .WORD   0       ;COMMAND WORD-TO DEVICE
002402  000000                  DELDAT: .WORD   0       ;DELETED DATA FLAG & WORD       <CMD>
002404  000000                  INTERT: .WORD   0       ;INTERRUPT WORD                 <CMD>
002406  000000                  DRIVE:  .WORD   0       ;DRIVE WORD                     <CMD*>
002410  000000                  SIDE:   .WORD   0       ;SIDE WORD                      <CMD*>
002412  000000                  DENSTY: .WORD   0       ;DENSITY CONTROL WORD           <CMD>
002414  000000                  DENSTA: .WORD   0       ;DENSITY STATUS WORD-DRIVE DENSITY
002416  000000                  PRIORT: .WORD   0       ;PRIORITY OF INTERRUPT HANDLER-WATCH DOG
002420  000000                  DRVOFF: .WORD   0       ;DRIVE BYTE OFFSET
                                ;-------------------------------------------------------------------------------
002422  000000                  ERRCMD: .WORD   0       ;ERROR COMMAND
002424  000000                  LCMD:   .WORD   0       ;LAST COMMAND
002426  000000                  LRXCSR: .WORD   0       ;LAST RX CSR STORAGE
002430  000000                  LRXESR: .WORD   0       ;LAST RX ESR STORAGE
002432  000000                  RXCSR:  .WORD   0       ;RX CSR STORAGE
002434  000000                  RXESR:  .WORD   0       ;RX ESR STORAGE
002436  000000                  REGEXP: .WORD   0       ;REGISTER EXPECTED
002440  000000                  REGACT: .WORD   0       ;REGISTER ACTUAL
                                ;-------------------------------------------------------------------------------
                                ;                                   * = INFO FROM HARDWARE P-TABLES
                                ;-------------------------------------------------------------------------------


                                .SBTTL -  READ ERROR CODE BUFFER
                                ;-------------------------------------------------------------------------------
002442  000                     XERUUT: .BYTE   0       ;ERROR CODE UUT
002443  000                     WC:     .BYTE   0       ;WORD COUNT UUT
002444  000                     CTK0:   .BYTE   0       ;CUR TRK DRV#0
002445  000                     CTK1:   .BYTE   0       ;CUR TRK DRV#1
002446  000                     TTRK:   .BYTE   0       ;TARGET TRACK
002447  000                     TSEC:   .BYTE   0       ;TARGET SECTOR
002450  000                     SFTSTS: .BYTE   0       ;MICRO CODE SOFT STATUS
002451  000                     BTRK:   .BYTE   0       ;BAD TRACK ADR (ONLY APPLIES IF ERR CODE = 150
                                ;-------------------------------------------------------------------------------
```

```
                            ;------------------------------------------------------------------------
002452  000000              ABORT:  .WORD   0       ;ABORT FLAG                                 !  TEST
002454  000000              FIN:    .WORD   0       ;FINI COMMAND FLAG                          !  ERROR
002456  000000              SYSERR: .WORD   0       ;SYSTEM ERROR                               !
002460  000000              TYPERR: .WORD   0       ;TYPE ERROR                                 !  &
002462  000000              RECERN: .WORD   0       ;READ ERROR CODE-ERROR NUMBER               !  STATUS
002464  000000              NGTSER: .WORD   0       ;NEG TEST EXPECTED ERROR                    !  INFO
                            ;------------------------------------------------------------------------
002466  000000              TSTID:  .WORD   0       ;TEST IDENT WORD                            !  TEST
002470  000000              TCMDCT: .WORD   0       ;TEST COMMAND COUNTER                       !
002472  000000              PROTCT: .WORD   0       ;PROTOCAL COUNT                             !  INFO
002474  000004              DNWTMT: .WORD   4       ;DONE WAIT MULTIPLIER                       !
                            ;------------------------------------------------------------------------
002476  000000              FLAGST: .WORD   0       ;SOFTWARE TEST FLAGS -> SEE BELOW           !  TEST
002500  000000              FLAGSP: .WORD   0       ;SOFTWARE PROG/PRT FLAGS-->SEE BELOW        !
002502  000004              FLGDRS: .WORD   4       ;FLAGS FROM "DRS"                           !  CONTROL
002504  000000              TTEMP1: .WORD   0       ;TEST TEMP 1                                !
002506  000000              TSAVE1: .WORD   0       ;TEST SAVE 1                                !  FLAGS
002510  000000              TKSCFG: .WORD   0       ;TRACK & SECTORS FLAGS --> SEE BELOW        !
                            ;------------------------------------------------------------------------
002512  000000              UNTPRT: .WORD   0       ;UNIT #-PRINT                               !  DEVICE
002514     000              DRVPRT: .BYTE   0       ;DRIVE #-PRINT                              !  PRINT
002515     000              SIDPRT: .BYTE   0       ;SIDE #-PRINT                               !
                            ;------------------------------------------------------------------------
002516                      ERRTBL
002516  000000              ERRTYP::        .WORD   0
002520  000000              ERRNBR::        .WORD   0
002522  000000              ERRMSG::        .WORD   0
002524  000000              ERRBLK::        .WORD   0
                            ;---------------------------------------------------------------
                            ;       ***** SOFTWARE REGISTER DEFINITIONS *****
                            ;---------------------------------------------------------------
                            ;           !   !   !   !   !   !   !   !   !   !   !   !   !   !   !   !
                            ;       ! 15! 14! 13! 12! 11! 10! 09! 08! 07! 06! 05! 04! 03! 02! 01! 00!
                            ;       !---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---!
                            ;       !ERR!ERR!DON!ITR!WRT! RD!FIL!UNK!   ! DD! DD!   !   ! CK!   !   !
                            ;TYPERR:!BIT!NOT! NO! NO!ERR!ERR!EMP!ERR! - !MIS!UNX!CMD!DAT!SUM!SEK!CRC!
                            ;       !   !SET!ITR!DON!   !   !ERR!   !   !   !   !ERR!   !   !   !   !
                            ;=======!===+===+===+===+===+===+===+===+===+===+===+===+===+===+===+===!
                            ;       !   !   !   !   !   !   ! WRONG !TR !SID!DRV!NO DONE! FUNCTION  !
                            ;SYSERR:!UNR!   !DEN!   !DVF!SYF!-------!TO !RDY!RDY!-------!  CAUSING  !
                            ;       !ERR!   !ERR!   !ERR!ERR!SID!DRV!ERR!ERR!ERR!FUN!INT!   ERROR   !
                            ;=======+===+===+===+===+===+===+===+===+===+===+===+===+===+===+===+===!
                            ;FLAGST:!ERR!HRD! CK!ILL!NEG!SEC!TRK!RTY!REC!HDR!FUN!EMB!DLP!DAT!DDC!REG!
                            ;       !FLG!ERR!ERR!GAL!TST!DON!DON!ENB!FLG!PRT!TST!UFF!DN !  CK!FLG! CK!
                            ;======================================================================!
                            ;FLAGSP:!STA!RES!                       !LSI!REC!HDR!   !   !PRO!RG !SC !TK !
                            ;       !FLG!FLG!                       !FLG!TST!PRT!   !   !PRT!PRT!PRT!PRT!
                            ;========================================================================
                            ;TKSCFG:!   !   !   !   !   !   ! I ! I !   !   !   !   !   !IL ! S ! S !
                            ;       !   !   !   !   !   !   !SC !TK !   !   !   !   !   !TK !SC !TK !
                            ;========================================================================
                            ;NOTE:  RXXX IS REFERENCE FOR FURTHER EXPANSION
```

```
                                .SBTTL  GLOBAL TEXT SECTION

                                ;++
                                ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
                                ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
                                ; MORE THAN ONE TEST.
                                ;--

                                ;
                                ; NAMES OF DEVICES SUPPORTED BY PROGRAM
                                ;


                                ;
                                ; FORMAT STATEMENTS USED IN PRINT CALLS
                                ;
```

```
                                .SBTTL  GLOBAL ERROR REPORT SECTION

                                ;++
                                ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX CALLS
                                ; THAT ARE USED IN MORE THAN ONE TEST.  IT ALSO INCLUDES THE ASCII MESSAGES
                                ; THAT ARE USED BY THE PRINTB AND PRINTX CALLS..
                                ;--

                                ;-------------------------------------------------------------------------
002526                                  BGNMSG  PRTB0
002526  004737  002550                  CALL    PRTB0S
002532                                  ENDMSG
                                ;-------------------------------------------------------------------------
002534                                  BGNMSG  PRTB1
002534  004737  002570                  CALL    PRTB1S
002540                                  ENDMSG
                                ;-------------------------------------------------------------------------
002542                                  BGNMSG  PRTB2
002542  004737  002612                  CALL    PRTB2S
002546                                  ENDMSG
                                ;-------------------------------------------------------------------------
002550                          PRTB0S: PRINTB  R1
002566  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------------
002570                          PRTB1S: PRINTB  R1,R2
002610  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------------
002612                          PRTB2S: PRINTB  R1,R2,R3
002634  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------------
002636                          PRTB3S: PRINTB  R1,R2,R3,R4
002662  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------------
002664                          PRTB4S: PRINTB  R1,R2,R3,R4,R5
002712  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------------
002714                          PRTX0S: PRINTX  R1
002732  000207                          RETURN
                                ;-------------------------------------------------------------------------
002734                          PRTX1S: PRINTX  R1,R2
002754  000207                          RETURN
                                ;-------------------------------------------------------------------------
002756                          PRTX2S: PRINTX  R1,R2,R3
003000  000207                          RETURN
                                ;-------------------------------------------------------------------------
003002                          PRTX3S: PRINTX  R1,R2,R3,R4
003026  000207                          RETURN
                                ;-------------------------------------------------------------------------
003030                          PRTX4S: PRINTX  R1,R2,R3,R4,R5
003056  000207                          RETURN
                                ;-------------------------------------------------------------------------
```

```
                        .SBTTL -  MOD U.ERR.ERR - ERROR
                        ;-------------------------------------------------------------------------
                        ; BGNSUB       ERR
                        ;       IF ERR NBR NOT=0                                        [F]
                        ;       : THEN-SET ERR SAVE = ERR NUMBER
                        ;       :       CALL ERROR NUMBER EVALUATION
                        ;       :       SETUP ERROR BLOCK CODE ADDRESS
                        ;       :       CALL PRINT ERROR TYPE
                        ;       :       IF PROGRAM FLAGS-PRT REGS ???? SET              [J]
                        ;       :       THEN-IF ERRNBR=CSR ERROR                        [I]
                        ;       :       :     : THEN-CALL PRINT REGS
                        ;       :       :   ENDIF
                        ;       :       ENDIF
                        ;       :       IF COMMAND ERROR SET IN TYPERR                  [B]
                        ;       :       : THEN-CALL PRINT COMMAND ERROR
                        ;       :       ENDIF
                        ;       :       IF FUNCTION TEST NOT SET                        [A]
                        ;       :       : THEN-IF PRINT FLAGS=REGS PRINT                [E]
                        ;       :       :       : THEN-CALL REGISTERS PRINT
                        ;       :       :       ENDIF
                        ;       :       :       IF PRINT FLAG=SECTOR PRINT              [G]
                        ;       :       :       : THEN-CALL SECTOR PRINT
                        ;       :       :       ENDIF
                        ;       :       :       IF PRINT FLAG=TRACK PRINT               [C]
                        ;       :       :       : THEN-CALL TRACKS PRINT
                        ;       :       :       ENDIF
                        ;       :       :       CALL PRINT FRU
                        ;       :       :       CALL PRINT UNIT STATUS
                        ;       :       :  ELSE-IF SWITCH REGISTER BIT #14 SET          [D]
                        ;       :       :       : THEN-CALL PRINT UNIT STATUS
                        ;       :       :       ENDIF
                        ;       :       ENDIF
                        ;       :       IF ERR SAVE = ERR OLD                           [K]
                        ;       :       : THEN - INCREMENT ERROR CTR
                        ;       :       :       IF ERROR CTR = 10 ERRORS                [L]
                        ;       :       :       : THEN - SET ABORT = 20
                        ;       :       :       ENDIF
                        ;       :       :  ELSE - SET ERR OLD = ERR SAVE
                        ;       :       :       CLEAR ERR SAVE
                        ;       :       :       CLEAR ERR CTR
                        ;       :       ENDIF
                        ;       :       CALL CLEAR ERRORS
                        ;       ENDIF
                        ; ENDSUB
                        ;-------------------------------------------------------------------------
```

```
 938 003060  000240                    ERROR:  NOP                     ;
 939 003062  005737  002520             IFERR:  TST     ERRNBR          ;IF ERR NBR,
 940 003066  001520                             BEQ     EFERR           ;NOT=0, THEN
 941 003070  013737  002520  003336             MOV     ERRNBR,ERRSAV   ;SAVE ERROR NUMBER
 942 003076  004737  003344                     CALL    ERNBEV          ;CALL ERROR NUMBER EVALUATION
 943 003102  012737  003502  002524             MOV     #ERIDNT,ERRBLK  ;SETUP ERROR BLOCK CODE ADDRESS
 944 003110  004737  003474                     CALL    PTERTY          ;CALL PRINT ERROR TYPE
 945 003114  032737  000004  002500  IJERR:     BIT     #RGPRT,FLAGSP   ;IF PROGRAM FLAG-PRT FLAG
 946 003122  001006                             BNE     IBERR           ;NOT SET, THEN
 947 003124  022737  000033  002520  IIERR:     CMP     #CSRERR,ERRNBR  ;IF CSR ERR
 948 003132  001002                             BNE     IBERR           ;THEN,
 949 003134  004737  007564                     CALL    PRTREG          ;CALL PRINT REGS
 950 003140  032737  000020  002460  IBERR:     BIT     #CMDERR,TYPERR  ;IF TYPERR-COMMAND ERROR
 951 003146  001402                             BEQ     IAERR           ;SET, THEN
 952 003150  004737  007040                     CALL    PRTCDE          ;CALL PRINT COMMAND ERRORS
 953 003154  032737  000040  002476  IAERR:     BIT     #FUNTST,FLAGST  ;IF FLAGS-FUNCTION TEST
 954 003162  001027                             BNE     IDERR           ;NOT SET, THEN
 955 003164  032737  000004  002500  IEERR:     BIT     #RGPRT,FLAGSP   ;IF PROGRAM FLAGS=REGS PRINT
 956 003172  001402                             BEQ     IGERR           ;THEN
 957 003174  004737  007564                     CALL    PRTREG          ;CALL PRINT REGS
 958 003200  032737  000002  002500  IGERR:     BIT     #SCPRT,FLAGSP   ;IF PROGRAM FLAG=SECTOR
 959 003206  001402                             BEQ     ICERR           ;BIT SET, THEN
 960 003210  004737  007674                     CALL    PRTSEC          ;
 961 003214  032737  000001  002500  ICERR:     BIT     #TKPRT,FLAGSP   ;IF PROGRAM FLAGS=TRK PRINT
 962 003222  001402                             BEQ     ECERR           ;BIT SET, THEN
 963 003224  004737  010002                     CALL    PRTTRK          ;CALL PRINT TRACKS
 964 003230  004737  005404             ECERR:  CALL    PRTFRU          ;CALL PRINT FRU
 965 003234  004737  015240                     CALL    PRTSTA          ;CALL PRINT UNIT STATUS
 966 003240  000406                             BR      EAERR           ;BR TO END 'A'
 967 003242  032737  040000  002332  IDERR:     BIT     #BIT14,SWREG    ;IF SWITCH REG BIT 14
 968 003250  001402                             BEQ     EAERR           ;SET, THEN
 969 003252  004737  015240                     CALL    PRTSTA          ;CALL PRINT UNIT STATUS
 970 003256  000240                    EAERR:  NOP                     ;
 971 003260  023737  003336  003340  IKERR:     CMP     ERRSAV,ERROLD   ;IF SAVED ERR & OLD ERR
 972 003266  001011                             BNE     LKERR           ;EQUAL, THEN
 973 003270  005237  003342                     INC     ERRCTR          ;INCREMENT ERR CTR
 974 003274  022737  000012  003342  ILERR:     CMP     #10.,ERRCTR     ;IF 10 ERRS OF SAME KIND
 975 003302  012737  000020  002452             MOV     #20,ABORT       ;SET ABORT FLAG
 976 003310  000407                             BR      EFERR           ;BR TO END 'F'
 977 003312  013737  003336  003340  LKERR:     MOV     ERRSAV,ERROLD   ;SETUP OLD ERR FOR NEXT CK
 978 003320  005037  003336                     CLR     ERRSAV          ;CLEAR OUT SAVED ERR
 979 003324  005037  003342                     CLR     ERRCTR          ;CLEAR ERR CTR
 980 003330  004737  010300             EFERR:  CALL    CLRERR          ;CALL CLEAR ERRORS
 981 003334  000207                    XERROR: RETURN                  ;RETURN
 982                                    ;-----------------------------------------------------------------------
 983 003336  000000                    ERRSAV: 0                       ;SAVED ERR
 984 003340  000000                    ERROLD: 0                       ;OLD ERR
 985 003342  000000                    ERRCTR: 0                       ;ERR CTR
 986                                    ;-----------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.ENV - ERROR NUMBER EVALUATION
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       IF ERR NBR > 39.                                        [A]
                                ;       : THEN-SET SYSTEM FATAL ERR->ERRTYP
                                ;       : ELSE
                                ;       :   IF ERR NBR > 19.                                    [B]
                                ;       :   : THEN-SET DEVICE FATAL ERR->ERRTYP
                                ;       :   : ELSE
                                ;       :   :   IF ERR NBR > 0.                                 [D]
                                ;       :   :   : THEN-SET HARD ERR->ERRTYP
                                ;       :   :   :   ENDIF
                                ;       :   :   ENDIF
                                ;       :   ENDIF
                                ;       ENDIF
                                ;       IF ERRTYP=HARD ERROR                                    [F]
                                ;       : THEN-
                                ;       :   IF EVAL SET IN DRS FLAGS                            [G]
                                ;       :   : THEN-INCREMENT HARD ERR THRESHOLD LEVEL
                                ;       :   :   IF HARD ERR THRESHOLD LEVEL=SET LEVEL           [H]
                                ;       :   :   : THEN-SET DEV FATAL ERR->ERRTYP
                                ;       :   :   ENDIF
                                ;       :   ENDIF
                                ;       ENDIF
                                ; ENDSUB
                                ;-------------------------------------------------------------------
003344  000240                ERNBEV: NOP                     ;
003346  022737  000047  002520 IAENV:  CMP     #39.,ERRNBR     ;IF ERR NBR > 39.
003354  101003                       BHI     IBENV           ;THEN
003356  005037  002516               CLR     ERRTYP          ;SET ERRTYP=SYS FTL
003362  000416                       BR      IFENV           ;BR TO IF 'F'
003364  022737  000023  002520 IBENV:  CMP     #19.,ERRNBR     ;IF ERR NBR > 19.
003372  101004                       BHI     IDENV           ;THEN
003374  012737  000001  002516       MOV     #1,ERRTYP       ;SET ERRTYP=DVC FTL
003402  000406                       BR      IFENV           ;BR TO IF 'F'
003404  005737  002520       IDENV:  TST     ERRNBR          ;IF ERR NBR > 0
003410  001403                       BEQ     IFENV           ;THEN
003412  012737  000002  002516       MOV     #2,ERRTYP       ;SET ERRTYP=HARD ERR
003420  022737  000002  002516 IFENV:  CMP     #2,ERRTYP       ;IF ERRTYP = HARD ERR
003426  001017                       BNE     EFENV           ;THEN
003430  032737  000004  002502 IGENV:  BIT     #BIT2,FLGDRS    ;IF EVAL IN DRS FLAGS
003436  001413                       BEQ     EFENV           ;SET, THEN
003440  005237  003472               INC     HETLCT          ;INCREMENT HARD ERR THRESHOLD LEVEL CTR
003444  023737  002320  003472 IHENV:  CMP     DVTL,HETLCT     ;IF DEVICE FTL THRES LVL=SFT LEV
003452  101005                       BHI     EFENV           ;THEN
003454  012737  000001  002516       MOV     #1,ERRTYP       ;SET ERRTYP=DEV FTL ERR
003462  005037  003472               CLR     HETLCT          ;CLEAR HARD ERR THRES LVL CTR
003466  000240              EFENV:  NOP                     ;
003470  000207              XERNBE: RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
003472  000000              HETLCT: 0                       ;HARD ERROR THRESHOLD LEVEL CTR
                                ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.PRT.PET - PRINT ERROR TYPE
                                ;-----------------------------------------------------------------------
                                ; BGNSUB
                                ;       CALL ERROR - REVC
                                ; ENDSUB
                                ;-----------------------------------------------------------------------

003474  000240                  PTERTY: NOP
003476                                  ERROR
003500  000207                          RETURN                  ;RETURN
                                ;-----------------------------------------------------------------------

                                .SBTTL -  MOD U.ERR.IDT - GET & PRINT ERROR IDENTIFICATION MESSAGE
                                ;-----------------------------------------------------------------------
                                ;
                                ; BGNMSG        ERIDENT
                                ;       LET R1=ERROR #
                                ;       DOUBLE R1 FOR ADDRESSING - MESSAGE OFFSET
                                ;       LET R1=ERR MSG TABLE ADD + MESSAGE OFFSET
                                ;       PRINT BASIC R1
                                ;       PUT MESSAGE TABLE ADDRESS IN R1
                                ;       PRINT BASIC R1
                                ; ENDMSG
                                ;-----------------------------------------------------------------------

003502                                  BGNMSG  ERIDNT
003502  013701  002520                  MOV     ERRNBR,R1       ;GET ERR #
003506  006301                          ASL     R1              ;DOUBLE IT FOR ADDRESSING
003510  000240                          NOP                     ;
003512  016101  003534                  MOV     ERMSTB(R1),R1   ;GET ERR MSG ADR FROM TABLE
003516  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC NO ARG
003522  013701  003534                  MOV     ERMSTB,R1       ;GET REST OF ERR MSG FROM TABLE
003526  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC NO ARG
003532                                  ENDMSG
                                ;-----------------------------------------------------------------------
```

```
                                ;    ERROR MESSAGE TABLE        ERROR DESCRIPTION                          -CLASS
                                ;-------------------------------------------------------------------------------
                                ERMSTB: .WORD   ERMS0   ;ERROR  ;
                                        .WORD   ERMS0   ;ERR#0  ;
                                        .WORD   ERMS2   ;ERR#2  ;WRITE                                     -HARD
                                        .WORD   ERMS3   ;ERR#3  ;READ                                      -HARD
                                        .WORD   ERMS4   ;ERR#4  ;CRC                                       -HARD
                                        .WORD   ERMS5   ;ERR#5  ;DATA ERR                                  -HARD
                                        .WORD   ERMS6   ;ERR#6  ;SEEK                                      -HARD
                                        .WORD   ERMS7   ;ERR#7  ;DEL DATA                                  -HARD
                                        .WORD   ERMS0   ;ERR#8  ;                                          -HARD
                                        .WORD   ERMS0   ;ERR#9  ;                                          -HARD
                                        .WORD   ERMS10  ;ERR#10 ;FILL BUFFER                               -HARD
                                        .WORD   ERMS11  ;ERR#11 ;EMPTY BUFFER                              -HARD
                                        .WORD   ERMS12  ;ERR#12 ;INTR-NO DONE                              -HARD
                                        .WORD   ERMS13  ;ERR#13 ;DONE-NO INTR                              -HARD
                                        .WORD   ERMS14  ;ERR#14 ;ERR-NOT SET                               -HARD
                                        .WORD   ERMS15  ;ERR#15 ;ILLEG ERR CODE                            -HARD
                                        .WORD   ERMS16  ;ERR#16 ;DISK DENSITY MIXED OR WRG                 -HARD
                                        .WORD   ERMS17  ;ERR#17 ;READ ERROR CODE-ERROR WRG                 -HARD
                                        .WORD   ERMS0   ;ERR#18 ;
                                        .WORD   ERMS19  ;ERR#19 ;WORD COUNT
                                        .WORD   ERMS20  ;ERR#20 ;SIDE NOT RDY                              -DEVFTL
                                        .WORD   ERMS21  ;ERR#21 ;DRIVE NOT RDY                             -DEVFTL
                                        .WORD   ERMS22  ;ERR#22 ;SIDE RESPONDING WRG                       -DEVFTL
                                        .WORD   ERMS23  ;ERR#23 ;DRIVE RESPONDING WRG                      -DEVFTL
                                        .WORD   ERMS24  ;ERR#24 ;DENSITY                                   -DEVFTL
                                        .WORD   ERMS25  ;ERR#25 ;DENSITY DISK                              -DEVFTL
                                        .WORD   ERMS26  ;ERR#26 ;DEL DATA                                  -DEVFTL
                                        .WORD   ERMS27  ;ERR#27 ;CSR                                       -DEVFTL
                                        .WORD   ERMS28  ;ERR#28 ;DBR                                       -DEVFTL
                                        .WORD   ERMS0   ;ERR#29 ;                                          -DEVFTL
                                        .WORD   ERMS30  ;ERR#30 ;SET DENSITY KEYWORD                       -DEVFTL
                                        .WORD   ERMS31  ;ERR#31 ;AC LOW                                    -DEVFTL
                                        .WORD   ERMS32  ;ERR#32 ;ALGO2                                     -DEVFTL
                                        .WORD   ERMS33  ;ERR#33 ;TRACK ADDRESS                             -DEVFTL
                                        .WORD   ERMS34  ;ERR#34 ;SECTOR ADDRESS                            -DEVFTL
                                        .WORD   ERMS0   ;ERR#35 ;
                                        .WORD   ERMS0   ;ERR#36 ;
                                        .WORD   ERMS0   ;ERR#37 ;
                                        .WORD   ERMS0   ;ERR#38 ;
                                        .WORD   ERMS0   ;ERR#39 ;
                                        .WORD   ERMS40  ;ERR#40 ;AC LOW FATAL                              -SYSFTL
                                        .WORD   ERMS41  ;ERR#41 ;WORD COUNT OVERFLOW                       -SYSFTL
                                        .WORD   ERMS42  ;ERR#42 ;NON-EXISTENT MEM                          -SYSFTL
                                        .WORD   ERMS43  ;ERR#43 ;NON PROCESSOR REQUEST                     -SYSFTL
                                        .WORD   ERMS44  ;ERR#44 ;PRIORITY LEVEL                            -SYSFTL
                                        .WORD   ERMS45  ;ERR#45 ;DATA BUFFER INTEG                         -SYSFTL
                                        .WORD   ERMS46  ;ERR#46 ;HARDWARE SELF DIAG                        -SYSFTL
                                        .WORD   ERMS47  ;ERR#47 ;"TR" BIT TIME OUT                         -SYSFTL
                                        .WORD   ERMS48  ;ERR#48 ;"DONE" BIT TIME OUT                       -SYSFTL
                                        .WORD   ERMS49  ;ERR#49 ;NO BUS "INIT DONE"                        -SYSFTL
                                        .WORD   ERMS50  ;ERR#50 ;NO PROG "INIT DONE"                       -SYSFTL
                                        .WORD   ERMS51  ;ERR#51 ;"DONE" SET->WAITING FOR "TR" BIT-SYSFTL
                                        .WORD   ERMS0   ;ERR#52 ;                                          -SYSFTL
                                ;-------------------------------------------------------------------------------
```

```
                                        .SBTTL -    ERROR MESSAGES
                                        ;-------------------------------------------------------------------
003706      045     101     040 ERMS0:  .ASCIZ  /%A ERROR/
                                ;ERMS1: .ASCIZ  /%A  1 ?/
003717      045     101     040 ERMS2:  .ASCIZ  /%A  WRITE/
003731      045     101     040 ERMS3:  .ASCIZ  /%A  READ/
003742      045     101     040 ERMS4:  .ASCIZ  /%A  CRC/
003752      045     101     040 ERMS5:  .ASCIZ  /%A  DATA/
003763      045     101     040 ERMS6:  .ASCIZ  /%A  SEEK/
003774      045     101     040 ERMS7:  .ASCIZ  /%A  DELETED DATA/
                                ;ERMS8: .ASCIZ  /%A  8 ?/
                                ;ERMS9: .ASCIZ  /%A  9 ?/
004015      045     101     040 ERMS10: .ASCIZ  /%A  FILL BUFFER/
004035      045     101     040 ERMS11: .ASCIZ  /%A  EMPTY BUFFER/
004056      045     101     040 ERMS12: .ASCIZ  /%A  INTERRUPT-NO "DONE" BIT/
004112      045     101     040 ERMS13: .ASCIZ  /%A  "DONE" BIT-NO INTERRUPT/
004146      045     101     040 ERMS14: .ASCIZ  /%A  ERROR BIT NOT SET-ON/
004177      045     101     040 ERMS15: .ASCIZ  /%A  ILLEGAL ERROR CODE/
004226      045     101     040 ERMS16: .ASCIZ  /%A  DISK DENSITY MIXED OR WRG/
004264      045     101     040 ERMS17: .ASCIZ  /%A  RD ERR CODE-ERR WRG/
                                ;ERMS18: .ASCIZ /%A  18 ?/
004314      045     101     040 ERMS19: .ASCIZ  /%A  WORD COUNT/
004333      045     101     040 ERMS20: .ASCIZ  /%A  SIDE NOT READY/
004356      045     101     040 ERMS21: .ASCIZ  /%A  DRIVE NOT READY/
004402      045     101     040 ERMS22: .ASCIZ  /%A  WRONG SIDE RESPONDING/
004434      045     101     040 ERMS23: .ASCIZ  /%A  WRONG DRIVE RESPONDING/
004467      045     101     040 ERMS24: .ASCIZ  /%A  DENSITY/
004503      045     101     040 ERMS25: .ASCIZ  /%A  DISK-MIXED DENSITY/
004532      045     101     040 ERMS26: .ASCIZ  /%A  DELETED DATA/
004553      045     101     040 ERMS27: .ASCIZ  /%A  CSR-/
004564      045     101     040 ERMS28: .ASCIZ  /%A  DBR-/
004575      045     101     040 ERMS29: .ASCIZ  /%A  DENSITY DID NOT SET/
004625      045     101     040 ERMS30: .ASCIZ  /%A  SET DENSITY KEYWORD/
004655      045     101     040 ERMS31: .ASCIZ  /%A  AC LOW/
004670      045     101     040 ERMS32: .ASCIZ  /%A  ALGO2 FAILED/
004711      045     101     040 ERMS33: .ASCIZ  /%A  TRACK ADDRESS/
004733      045     101     040 ERMS34: .ASCIZ  /%A  SECTOR ADDRESS/
                                ;ERMS35: .ASCIZ /%A  35 ?/
                                ;ERMS36: .ASCIZ /%A  36 ?/
                                ;ERMS37: .ASCIZ /%A  37 ?/
                                ;ERMS38: .ASCIZ /%A  38 ?/
                                ;ERMS39: .ASCIZ /%A  39 ?/
004756      045     101     040 ERMS40: .ASCIZ  /%A  AC LOW FATAL/
004777      045     101     040 ERMS41: .ASCIZ  /%A  WORD COUNT OVERFLOW/
005027      045     101     040 ERMS42: .ASCIZ  /%A  NON-EXISTENT MEM/
005054      045     101     040 ERMS43: .ASCIZ  /%A  NON-PROCESSOR REQ/
005102      045     101     040 ERMS44: .ASCIZ  /%A  PRIORITY LEVEL/
005125      045     101     040 ERMS45: .ASCIZ  /%A  DATA BUFFER INTEG/
005153      045     101     040 ERMS46: .ASCIZ  /%A  HARDWARE SELF DIAG/
005202      045     101     040 ERMS47: .ASCIZ  /%A  "TR" BIT TIME OUT/
005230      045     101     040 ERMS48: .ASCIZ  /%A  "DONE" BIT TIME OUT/
005260      045     101     040 ERMS49: .ASCIZ  /%A  NO BUS "INIT DONE"/
005307      045     101     040 ERMS50: .ASCIZ  /%A  NO PROG "INIT DONE"/
005337      045     101     040 ERMS51: .ASCIZ  /%A  "DONE" SET->WAITING FOR "TR" BIT/
                                ;ERMS52: .ASCIZ /%A  52 ?/
                                        .EVEN   ;800. BYTES-->680.
```

```
1261                    ;
1262                    ; BIT-NAMES FOR THE DEVICE REGISTERS
1263                    ;
1264
1265                    .SBTTL -  MOD U.SFT.FRU - GET & PRINT FRU'S IDENT
1266                    ;-----------------------------------------------------------------
1267                    ; BGNSUB - GET/PRINT FRU-<GPFRU>
1268                    ;       IF FINI FLAG SET                                        [A]
1269                    ;       :  THEN-GET FINI FRU TABLE ADDRESS
1270                    ;       :  ELSE-IF ERR CODE NOT=0 & FLAGS=PRINT ERROR CODE SET  [B]
1271                    ;       :       :  THEN-GET ERROR CODE
1272                    ;       :       :       CLEAR TOP BYTE & SHIFT RT 2 FOR ADDRESSING
1273                    ;       :       :       GET ERROR CODE FRU TABLE ADDRESS
1274                    ;       :       :       FIND ERROR CODE FRU TABLE ADDRESS FROM TABLE
1275                    ;       :       :       SET TABLE ADDRESS
1276                    ;       :       :  ELSE-GET TEST TABLE ADDRESS
1277                    ;       :       :       DOWHILE TABLE ENTRY NOT=-1              [C]
1278                    ;       :       :       :  ADVANCE TABLE ADDRESS POINTER
1279                    ;       :       :       ENDDO
1280                    ;       :       :       DOWHILE TABLE ENTRY NOT=-1              [D]
1281                    ;       :       :       :  ADVANCE TABLE ADDRESS POINTER
1282                    ;       :       :       ENDDO
1283                    ;       :       :       ADVANCE TABLE ADDRESS POINTER
1284                    ;       :       :       DOUBLE TEST SEQ POINTER
1285                    ;       :       :       FRU TABLE ADDRESS THIS TEST SEQ=TABLE ADR PTR+TEST SEQ PTR
1286                    ;       :       ENDIF
1287                    ;       ENDIF
1288                    ;       SETUP & PRINT FRU HEADER
1289                    ;       DOWHILE TABLE ENTRY NOT=-1                              [E]
1290                    ;       :  IF FRU TABLE ENTRY=0                                 [F]
1291                    ;       :  :  THEN-IF LSI PROCESSOR                             [G]
1292                    ;       :  :       :  THEN-SET FRU PRINT=INTERFACE-M8029  (LSI)
1293                    ;       :  :       :  ELSE-SET FRU PRINT=INTERFACE-M8256 (UNIBUS)
1294                    ;       :  :       ENDIF
1295                    ;       :  :       CALL FRU PRINT
1296                    ;       :  :  ELSE-SET FRU PRINT=TABLE ENTRY
1297                    ;       :  :       CALL FRU PRINT
1298                    ;       :  ENDIF
1299                    ;       :  ADVANCE TABLE ADDRESS
1300                    ;       ENDDO
1301                    ;       NOP
1302                    ; ENDSUB
1303                    ;-----------------------------------------------------------------
```

```
1306 005404  000240                    PRTFRU: NOP                     ;
1307 005406  005737  002454            IAFRU:  TST     FIN             ;IF FINI FLAG
1308 005412  001404                            BEQ     IBFRU           ;SET, THEN
1309 005414  012737  006640  005610            MOV     #TOFTO,FRUTAD   ;SET FRU TBL ADR=FINI FRU TBL ADR
1310 005422  000431                            BR      EAFRU           ;BR TO WHILE 'E'
1311 005424  105737  002442            IBFRU:  TSTB    XERUUT          ;IF ERROR CODE
1312 005430  001412                            BEQ     LBFRU           ;NOT=0, AND
1313 005432  032737  000200  002476            BIT     #RECFLG,FLAGST  ;FLAGS-READ ERROR CODE BIT
1314 005440  001406                            BEQ     LBFRU           ;SET, THEN
1315 005442  004737  017106                    CALL    GTECOF          ;CALL GET ERROR CODE OFFSET
1316 005446  016137  006660  005610            MOV     TOFTB(R1),FRUTAD  ;GET ERROR CODE FRU TABLE ADDRESS
1317 005454  000414                            BR      EAFRU           ;BR TO WHILE 'E'
1318 005456  013701  002466            LBFRU:  MOV     TSTID,R1        ;GET TEST TABLE ADDRESS
1319 005462  005721                    WCFRU:  TST     (R1)+           ;DO WHILE TABLE ENTRY NOT=-1
1320 005464  100376                            BPL     WCFRU           ;ADVANCE TABLE ADDRESS
1321 005466  005721                    WDFRU:  TST     (R1)+           ;DO WHILE TABLE ENTRY NOT=-1
1322 005470  100376                            BPL     WDFRU           ;ADVANCE TABLE ADDRESS
1323 005472  013702  002470                    MOV     TCMDCT,R2       ;GET TEST COMMAND CTR
1324 005476  006302                            ASL     R2              ;DOUBLE IT
1325 005500  060201                            ADD     R2,R1           ;SETUP FRU TABLE ADDRESS
1326 005502  011137  005610                    MOV     (R1),FRUTAD     ;SET FRU TABLE ADR=ABOVE ADDRESS
1327 005506  012701  005650            EAFRU:  MOV     #FRUM00,R1      ;SET FRU MSG HEADER
1328 005512  004737  002550                    CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
1329 005516  105777  000066            WEFRU:  TSTB    @FRUTAD         ;DO WHILE TABLE ENTRY
1330 005522  100430                            BMI     EEFRU           ;NOT=-1
1331 005524  105777  000060            IFFRU:  TSTB    @FRUTAD         ;IF TABLE ENTRY
1332 005530  001014                            BNE     LFFRU           ;EQUALS 0, THEN
1333 005532  032737  000400  002500    IGFRU:  BIT     #LSIFLG,FLAGSP  ;IF LSI FLAG BIT-PROGRAM FLAGS
1334 005540  001403                            BEQ     LGFRU           ;SET, THEN
1335 005542  012701  005713                    MOV     #FRUM0A,R1      ;SET LSI INTERFACE MSG
1336 005546  000402                            BR      EGFRU           ;BR TO END 'G'
1337 005550  012701  005746            LGFRU:  MOV     #FRUM0B,R1      ;SET UNIBUS INTERFACE MSG
1338 005554  004737  002550            EGFRU:  CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
1339 005560  000406                            BR      EFFRU           ;BR TO END 'G'
1340 005562  117701  000022            LFFRU:  MOVB    @FRUTAD,R1      ;SETUP PRINT FRU MSG OFFSET FROM TABLE
1341 005566  016101  005612                    MOV     FRUTBM(R1),R1   ;SET FRU MSG ADR FROM TABLE
1342 005572  004737  002550                    CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
1343 005576  005237  005610            EFFRU:  INC     FRUTAD          ;INCREMENT FRU TABLE ADDRESS
1344 005602  000745                            BR      WEFRU           ;END DO 'E'
1345 005604  000240                    EEFRU:  NOP                     ;
1346 005606  000207                    XPTFRU: RETURN                  ;RETURN
1347                                    ;-----------------------------------------------------------------------
1348 005610  000000                    FRUTAD: 0                       ;FRU TABLE ADDRESS
1349                                    ;-----------------------------------------------------------------------
```

```
                                        FRUTBM: .WORD   0
                                                .WORD   FRUM1
                                                .WORD   FRUM2
                                                .WORD   FRUM3
                                                .WORD   FRUM4
                                                .WORD   FRUM5
                                                .WORD   FRUM6
                                                .WORD   FRUM7
                                                .WORD   FRUM8
                                                .WORD   FRUM9
                                                .WORD   FRUM10
                                                .WORD   FRUM11
                                                .WORD   FRUM12
                                                .WORD   FRUM13
                                                .WORD   FRUM14
                                        ;-----------------------------------------------------------------------

                                        .SBTTL -    FRU MESSAGES
                                        ;-----------------------------------------------------------------------
                                        FRUM00: .ASCIZ  /%N%A  POSSIBLE FAILING "FRU'S": %N/
                                        FRUM0A: .ASCIZ  /%S11%A INTERFACE - M8029%N/
                                        FRUM0B: .ASCIZ  /%S11%A INTERFACE - M8256%N/
                                        FRUM1:  .ASCIZ  /%S11%A CONTROLLER - M7744%N/
                                        FRUM2:  .ASCIZ  /%S11%A R-W ELECT - M7745%N/
                                        FRUM3:  .ASCIZ  /%S11%A PHYSICAL DRIVE%N/
                                        FRUM4:  .ASCIZ  /%S11%A CABLES%N/
                                        FRUM5:  .ASCIZ  /%S11%A POWER SUPPLY-H771%N/
                                        FRUM6:  .ASCIZ  /%S11%A BAD DISKETTE%N/
                                        FRUM7:  .ASCIZ  /%S11%A INTERFACE SWITCHES%N/
                                        FRUM8:  .ASCIZ  /%S11%A NPR JUMPER - PDP-11 BACKPLANE%N/
                                        FRUM9:  .ASCIZ  /%S11%A CONTROLLER SWITCHES%N/
                                        FRUM10: .ASCIZ  /%S11%A INTERFACE->CONTROLLER CABLE%N/
                                        FRUM11: .ASCIZ  /%S11%A DOOR OPEN%N/
                                        FRUM12: .ASCIZ  /%S11%A BROKEN DRIVE BELT%N/
                                        FRUM13: .ASCIZ  /%S11%A DRIVE MOTOR - AC POWER%N/
                                        FRUM14: .ASCIZ  /%S11%A POWER CORD, BLOWN FUSE, DRIVE POWER, POWER SUPPLY %N/
                                        ;-----------------------------------------------------------------------
                                                .EVEN ; ;506. BYTES
```

```
1403                                    .SBTTL -    FRU CALLOUT - PRESETUP FOR TESTS
1404                                    ;-------------------------------------------------------------------
1405            000000                  TN=0
1406            006640                          INFCTL=TOFTO            ;INTERFACE & CONTROLLER
1407 006640                             FRUTB   0,INTERF,CONTRL,INTFCB
     006640     000                             TOFTO: .BYTE    INTERF
     006641     002                                    .BYTE    CONTRL
     006642     024                                    .BYTE    INTFCB
     006643     377                                    .BYTE    -1
1408                                    ;-------------------------------------------------------------------
1409            006644                          INTONL=TOFT40           ;INTERFACE ONLY
1410 006644                             FRUTB   40,INTERF
     006644     000                             TOFT40: .BYTE   INTERF
     006645     377                                    .BYTE    -1
1411                                    ;-------------------------------------------------------------------
1412            006646                          CTLINF=TOFT41           ;CONTROLLER & INTERFACE
1413 006646                             FRUTB   41,CONTRL,INTERF
     006646     002                             TOFT41: .BYTE   CONTRL
     006647     000                                    .BYTE    INTERF
     006650     377                                    .BYTE    -1
1414                                    ;-------------------------------------------------------------------
1415            006651                          CTLRWE=TOFT42
1416 006651                             FRUTB   42,CONTRL,RWELEC
     006651     002                             TOFT42: .BYTE   CONTRL
     006652     004                                    .BYTE    RWELEC
     006653     377                                    .BYTE    -1
1417                                    ;-------------------------------------------------------------------
1418            006654                          CTLONL=TOFT43
1419 006654                             FRUTB   43,CONTRL,INTFCB
     006654     002                             TOFT43: .BYTE   CONTRL
     006655     024                                    .BYTE    INTFCB
     006656     377                                    .BYTE    -1
1420                                    ;-------------------------------------------------------------------
1421                                            .EVEN
```

```
1424                                    ;                       ERROR CODE - FRU CALLOUT ADDRESS TABLE
1425                                    ;-----------------------------------------------------------------
1426 006660  000000                     TOFTB:  .WORD   0
1427 006662  006736                             .WORD   TOFT1
1428 006664  006742                             .WORD   TOFT2
1429 006666  000000                             .WORD   0
1430 006670  006746                             .WORD   TOFT4
1431 006672  006751                             .WORD   TOFT5
1432 006674  000000                             .WORD   0
1433 006676  006755                             .WORD   TOFT7
1434 006700  000000                             .WORD   0
1435 006702  006763                             .WORD   TOFT11
1436 006704  006770                             .WORD   TOFT12
1437 006706  006776                             .WORD   TOFT13
1438 006710  000000                             .WORD   0
1439 006712  007002                             .WORD   TOFT15
1440 006714  007006                             .WORD   TOFT16
1441 006716  007012                             .WORD   TOFT17
1442 006720  007016                             .WORD   TOFT20
1443 006722  000000                             .WORD   0
1444 006724  007022                             .WORD   TOFT22
1445 006726  007025                             .WORD   TOFT23
1446 006730  007030                             .WORD   TOFT24
1447 006732  007035                             .WORD   TOFT25
1448 006734  177777                             .WORD   -1
1449                                    ;-----------------------------------------------------------------
1450
1451                                    .SBTTL -    FRU CALLOUT - PRESETUP FOR ERROR CODE
1452                                    ;-----------------------------------------------------------------
1453          000000                    TN=0
1454 006736                             
     006736      006                            FRUTB   1,PHYDRV,CONTRL,RWELEC
     006737      002                            TOFT1: .BYTE    PHYDRV
     006740      004                                   .BYTE    CONTRL
     006741      377                                   .BYTE    RWELEC
1455 006742                                                   .BYTE    -1
     006742      006                            FRUTB   2,PHYDRV,CONTRL,RWELEC
     006743      002                            TOFT2: .BYTE    PHYDRV
     006744      004                                   .BYTE    CONTRL
     006745      377                                   .BYTE    RWELEC
1456 006746                                                   .BYTE    -1
     006746      000                            FRUTB   4,INTERF,CONTRL
     006747      002                            TOFT4: .BYTE    INTERF
     006750      377                                   .BYTE    CONTRL
1457 006751                                                   .BYTE    -1
     006751      004                            FRUTB   5,RWELEC,PHYDRV,CONTRL
     006752      006                            TOFT5: .BYTE    RWELEC
     006753      002                                   .BYTE    PHYDRV
     006754      377                                   .BYTE    CONTRL
1458 006755                                                   .BYTE    -1
     006755      014                            FRUTB   7,DISKET,RWELEC,PHYDRV,CONTRL,INTERF
     006756      004                            TOFT7: .BYTE    DISKET
     006757      006                                   .BYTE    RWELEC
     006760      002                                   .BYTE    PHYDRV
     006761      000                                   .BYTE    CONTRL
     006762      377                                   .BYTE    INTERF
1459 006763                                                   .BYTE    -1
                                        FRUTB   11,DISKET,RWELEC,PHYDRV,CONTRL
```

```
        006763  014                             TOFT11: .BYTE   DISKET
        006764  004                                     .BYTE   RWELEC
        006765  006                                     .BYTE   PHYDRV
        006766  002                                     .BYTE   CONTRL
        006767  377                                     .BYTE   -1
  1460  006770                          FRUTB   12,DISKET,RWELEC,PHYDRV,CONTRL,POWRSP
        006770  014                             TOFT12: .BYTE   DISKET
        006771  004                                     .BYTE   RWELEC
        006772  006                                     .BYTE   PHYDRV
        006773  002                                     .BYTE   CONTRL
        006774  012                                     .BYTE   POWRSP
        006775  377                                     .BYTE   -1
  1461  006776                          FRUTB   13,DISKET,RWELEC,CONTRL
        006776  014                             TOFT13: .BYTE   DISKET
        006777  004                                     .BYTE   RWELEC
        007000  002                                     .BYTE   CONTRL
        007001  377                                     .BYTE   -1
  1462  007002                          FRUTB   15,RWELEC,PHYDRV,CONTRL
        007002  004                             TOFT15: .BYTE   RWELEC
        007003  006                                     .BYTE   PHYDRV
        007004  002                                     .BYTE   CONTRL
        007005  377                                     .BYTE   -1
  1463  007006                          FRUTB   16,RWELEC,PHYDRV,CONTRL
        007006  004                             TOFT16: .BYTE   RWELEC
        007007  006                                     .BYTE   PHYDRV
        007010  002                                     .BYTE   CONTRL
        007011  377                                     .BYTE   -1
  1464  007012                          FRUTB   17,DISKET,RWELEC,CONTRL
        007012  014                             TOFT17: .BYTE   DISKET
        007013  004                                     .BYTE   RWELEC
        007014  002                                     .BYTE   CONTRL
        007015  377                                     .BYTE   -1
  1465  007016                          FRUTB   20,DISKET,RWELEC,CONTRL
        007016  014                             TOFT20: .BYTE   DISKET
        007017  004                                     .BYTE   RWELEC
        007020  002                                     .BYTE   CONTRL
        007021  377                                     .BYTE   -1
  1466  007022                          FRUTB   22,RWELEC,CONTRL
        007022  004                             TOFT22: .BYTE   RWELEC
        007023  002                                     .BYTE   CONTRL
        007024  377                                     .BYTE   -1
  1467  007025                          FRUTB   23,INTERF,CONTRL
        007025  000                             TOFT23: .BYTE   INTERF
        007026  002                                     .BYTE   CONTRL
        007027  377                                     .BYTE   -1
  1468  007030                          FRUTB   24,DISKET,CONTRL,INTERF,RWELEC
        007030  014                             TOFT24: .BYTE   DISKET
        007031  002                                     .BYTE   CONTRL
        007032  000                                     .BYTE   INTERF
        007033  004                                     .BYTE   RWELEC
        007034  377                                     .BYTE   -1
  1469  007035                          FRUTB   25,INTERF,CONTRL
        007035  000                             TOFT25: .BYTE   INTERF
        007036  002                                     .BYTE   CONTRL
        007037  377                                     .BYTE   -1
  1470                          ;-----------------------------------------------------------------
  1471                                  .EVEN
```

```
                                .SBTTL -  MOD U.ERR.PCE - PRINT COMMAND ERROR
                                ;-----------------------------------------------------------------
                                ; BGNSUB
                                ;       SETUP & PRINT COMMAND FORMAT MESSAGE
                                ;       GET COMMAND
                                ;       IF INITIALIZE COMMAND
                                ;       :  THEN-SETUP INIT COMMAND MSG
                                ;       :  ELSE-CLEAR TOP BITS & GO BIT
                                ;       :       CLEAR TOP BITS & GO BIT
                                ;       :       GET COMMAND MSG ADDRESS FROM TABLE (INDEXED BY COMMAND)
                                ;       ENDIF
                                ;       CALL PRINT
                                ;       SETUP & PRINT END OF COMMAND ERROR
                                ;       IF PROTOCOL TYPE COMMAND
                                ;       :  THEN-IF PRINT FLAGS=PRINT PROTOCAL SET
                                ;       :       :  THEN-SETUP & PRINT PROTOCOL ERR
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDSUB
                                ;-----------------------------------------------------------------

007040  000240                  PRTCDE: NOP                     ;
007042  012701  007204                  MOV     #CMFTMS,R1      ;SETUP COMMAND FORMAT MESSAGE
007046  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
007052  013702  002422                  MOV     ERRCMD,R2       ;GET COMMAND
007056  032702  040000          IAPCE:  BIT     #BIT14,R2       ;IF INITIALIZE BIT
007062  001405                          BEQ     LAPCE           ;SET, THEN
007064  012701  007452                  MOV     #CMDM8,R1       ;SET PROGRAMMED INIT MSG
007070  012702  000012                  MOV     #12,R2          ;SET R2 TO SHOW COMMAND WITH NO PROTOCOL
007074  000404                          BR      EAPCE           ;BR TO END 'A'
007076  042702  177761          LAPCE:  BIC     #177761,R2      ;CLEAR TOP BITS & GO BIT
007102  016201  007164                  MOV     CMDMSG(R2),R1   ;GET COMMAND MSG ADR FROM TABLE
007106  004737  002550          EAPCE:  CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
007112  012701  007216                  MOV     #CMERMS,R1      ;SETUP "COMMAND ERR" MSG
007116  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
007122  022702  000012          IBPCE:  CMP     #12,R2          ;IF R2 CONTAINS PROTOCOL TYPE COMMAND
007126  001415                          BEQ     XPCE            ;THEN
007130  032737  000010  002500  ICPCE:  BIT     #PROPRT,FLAGSP  ;IF PRINT PROTOCOL FLAG=FLAGSP
007136  001411                          BEQ     XPCE            ;SET, THEN
007140  013702  002472                  MOV     PROTCT,R2       ;SETUP PRINT PROTOCOL CNT
007144  012701  007502                  MOV     #CMDPE,R1       ;SETUP PRINT PROTOCOL ERR MSG
007150  004737  002734                  CALL    PRTX1S          ;PRINT MSG
007154  042737  000020  002460          BIC     #CMDERR,TYPERR  ;CLEAR TYP ERR COMMAND ERROR
007162  000207                  XPCE:   RETURN                  ;RETURN
                                ;-----------------------------------------------------------------
```

```
1521                                    .SBTTL -    COMMAND ERROR MESSAGE TABLE
1522                                    ;-----------------------------------------------------------------------
1523 007164  007237                     CMDMSG: .WORD   CMDM0
1524 007166  007255                             .WORD   CMDM1
1525 007170  007274                             .WORD   CMDM2
1526 007172  007313                             .WORD   CMDM3
1527 007174  007331                             .WORD   CMDM4
1528 007176  007347                             .WORD   CMDM5
1529 007200  007374                             .WORD   CMDM6
1530 007202  007430                             .WORD   CMDM7
1531 007204     045     116     045  CMFTMS: .ASCIZ  /%N%S6%A->/
1532 007216     045     101     040  CMERMS: .ASCIZ  /%A COMMAND ERROR/
1533 007237     045     101     106  CMDM0:  .ASCIZ  /%AFILL BUFFER/
1534 007255     045     101     105  CMDM1:  .ASCIZ  /%AEMPTY BUFFER/
1535 007274     045     101     127  CMDM2:  .ASCIZ  /%AWRITE SECTOR/
1536 007313     045     101     122  CMDM3:  .ASCIZ  /%AREAD SECTOR/
1537 007331     045     101     123  CMDM4:  .ASCIZ  /%ASET DENSITY/
1538 007347     045     101     122  CMDM5:  .ASCIZ  /%AREAD MAINT. STATUS/
1539 007374     045     101     127  CMDM6:  .ASCIZ  /%AWRITE SECTOR-DELETED DATA/
1540 007430     045     101     122  CMDM7:  .ASCIZ  /%AREAD ERROR CODE/
1541 007452     045     101     120  CMDM8:  .ASCIZ  /%APROGRAMMED INITIALIZE/
1542 007502     045     116     045  CMDPE:  .ASCIZ  /%N%S8%APROTOCOL FAILED-WAITING TO PASS WORD #%01/
1543                                            .EVEN
1544                                    ;-----------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.ERR.PRE - PRINT REGISTER ERROR
                                        ;-------------------------------------------------------------------
                                        ;
007564  000240                  PRTREG: NOP                     ;
007566  012701  007620                  MOV     #PRTGMS,R1      ;SETUP REGISTER MESSAGE
007572  013702  002440                  MOV     REGACT,R2       ;SETUP REG ACTUAL
007576  013703  002436                  MOV     REGEXP,R3       ;SETUP REG EXPECTED
007602  004737  002612                  CALL    PRTB2S          ;CALL PRINT BASIC-2 ARG
007606  005037  002440                  CLR     REGACT          ;CLEAR OLD RESULTS
007612  005037  002436                  CLR     REGEXP          ;CLEAR OLD RESULTS
007616  000207                          RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------
007620    045     116     045   PRTGMS: .ASCII  /%N%S6%AREG ACTUAL=%O%N/
007646    045     123     066           .ASCIZ  /%S6%AREG EXPECT=%O%N/
                                        .EVEN
                                        ;-------------------------------------------------------------------
                                        .SBTTL -  MOD U.PRT.SCP - PRINT SECTORS
                                        ;-------------------------------------------------------------------
                                        ; BGNSUB
                                        ;       IF READ ERROR CODE FLAG SET
                                        ;       :  THEN-SETUP PRINT EXPECTED SECTOR
                                        ;       :       SETUP PRINT DEVICE SECTOR
                                        ;       :       CALL PRINT
                                        ;       ENDIF
                                        ; ENDSUB
                                        ;-------------------------------------------------------------------
                                        ;
007674  000240                  PRTSEC: NOP                     ;
007676  032737  000200  002476  IASCP:  BIT     #RECFLG,FLAGST  ;IF READ ERROR CODE FLAG
007704  001424                          BEQ     XSCP            ;SET, THEN
007706  013702  002376                  MOV     SECTOR,R2       ;SETUP EXPECTED SECTOR
007712  012701  010156                  MOV     #EXMS,R1        ;SETUP EXPECTED MSG
007716  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
007722  012701  007760                  MOV     #ADSCMS,R1      ;SETUP SECTOR MSG
007726  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 ARG
007732  113702  002447                  MOVB    TSEC,R2         ;SETUP DEVICE SECTOR
007736  012701  010220                  MOV     #TGMS,R1        ;SETUP TARGET MSG
007742  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
007746  012701  007760                  MOV     #ADSCMS,R1      ;SETUP SECTOR MSG
007752  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 ARG
007756  000207                  XSCP:   RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------
007760    045     101     040   ADSCMS: .ASCIZ  /%A SECTOR=%D2%A./
                                        .EVEN
                                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -* MOD U.PRT.TKP - PRINT TRACKS
                                        ;-----------------------------------------------------------------
                                        ; BGNSUB
                                        ;       CALL PRINT UNIT IDENT
                                        ;       IF READ ERROR CODE FLAG SET
                                        ;       :  THEN-SETUP PRINT EXPECTED TRACK
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       :       IF DRIVE #1 SELECTED
                                        ;       :       :  THEN-SETUP CURRENT TRACK DRV1-PRINT
                                        ;       :       :  ELSE-SETUP CURRENT TRACK DRV0-PRINT
                                        ;       :       ENDIF
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       :       SETUP PRINT DRIVE TARGET TRACK
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       :  ELSE-SETUP PRINT ERROR ON TRACK
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       ENDIF
                                        ; ENDSUB
                                        ;-----------------------------------------------------------------
010002  004737  020600          PRTTRK: CALL    PRTDID          ;CALL PRINT DRIVE IDENT
010006  032737  000200  002476  IATKP:  BIT     #RECFLG,FLAGST  ;IF READ ERROR CODE FLAG
010014  001445                          BEQ     LATKP           ;FLAG SET, THEN
010016  013702  002374                  MOV     TRACK,R2        ;SETUP EXPECTED TRACK
010022  012701  010156                  MOV     #EXMS,R1        ;SETUP EXPECTED MSG
010026  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010032  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010036  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010042  005737  002406          IBTKP:  TST     DRIVE           ;IF DRIVE #1
010046  001403                          BEQ     LBTKP           ;SELECTED, THEN
010050  113702  002445                  MOVB    CTK1,R2         ;SETUP CUR TRK D1-PRT
010054  000402                          BR      EBTKP           ;BR TO END 'B'
010056  113702  002444          LBTKP:  MOVB    CTK0,R2         ;SETUP CUR TRK D0-PRT
010062  012701  010177          EBTKP:  MOV     #CDMS,R1        ;SETUP DRIVE CURRENT MSG
010066  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010072  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010076  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010102  113702  002446                  MOVB    TTRK,R2         ;SETUP TARGET TRACK
010106  012701  010220                  MOV     #TGMS,R1        ;SETUP TARGET MSG
010112  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010116  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010122  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010126  000412                          BR      XTKPRT          ;BR TO EXIT
010130  013702  002374          LATKP:  MOV     TRACK,R2        ;SETUP ERROR TRACK
010134  012701  010241                  MOV     #ERTKMS,R1      ;SETUP ERROR TRACK MSG
010140  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010144  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010150  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010154  000207                  XTKPRT: RETURN                  ;
                                        ;-----------------------------------------------------------------
010156      045     116     045 EXMS:   .ASCIZ  /%N%S6%A EXPECTED/
010177      045     116     045 CDMS:   .ASCIZ  /%N%S6%A  CUR DRV/
010220      045     116     045 TGMS:   .ASCIZ  /%N%S6%A   TARGET/
010241      045     116     045 ERTKMS: .ASCIZ  /%N%A ERROR ->/
010257      045     101     040 ADTKMS: .ASCIZ  /%A TRACK=%D2%A./
                                        .EVEN
                                        ;-----------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.ERR.CLE - CLEAR ERRORS
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       CLEAR ERROR NUMBER
                                ;       CLEAR ERROR TYPE
                                ;       CLEAR ERROR BLOCK
                                ;       CLEAR FIN
                                ;       CLEAR ABORT
                                ; ENDSUB
                                ;-------------------------------------------------------------------

010300  000240                  CLRERR: NOP                     ;
010302  005037  002442                  CLR     XERUUT          ;CLEAR READ ERR CODE WORD
010306  005037  002520                  CLR     ERRNBR          ;CLEAR ERROR NUMBER
010312  005037  002516                  CLR     ERRTYP          ;CLEAR ERROR TYPE
010316  012737  003502  002524          MOV     #ERIDNT,ERRBLK  ;CLEAR ERROR BLOCK
010324  005037  002454                  CLR     FIN             ;CLEAR FINI
010330  005037  002452                  CLR     ABORT           ;CLEAR ABORT
010334  042737  100000  002476          BIC     #ERRFLG,FLAGST  ;CLEAR FLAGST ERR FLAG
010342  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
```

```
                                        .SBTTL  GLOBAL SUBROUTINES SECTION

                                        ;++
                                        ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
                                        ; THAT ARE USED IN MORE THAN ONE TEST.
                                        ;--

                                        .SBTTL -  MOD U.1.0 - RANDOM GENERATOR
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:
                                        ;    SUBROUTINE TO GENERATE A RANDOM NUMBER
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  NONE
                                        ; OUTPUTS:  RANUM
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  NONE
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  SUB
                                        ;--


                                        ;---------- RANDOM GENERATOR ----------------------------------------
1816 010344  012700  000001             RANGEN: MOV     #1,R0
1817 010350  063700  010432                     ADD     RAN1,R0
1818 010354  063700  010434                     ADD     RAN2,R0
1819 010360  042700  170000                     BIC     #170000,R0
1820 010364  000241                             CLC
1821 010366  006100                             ROL     R0
1822 010370  006100                             ROL     R0
1823 010372  010037  010432                     MOV     R0,RAN1
1824 010376  005000                             CLR     R0
1825 010400  013700  010434                     MOV     RAN2,R0
1826 010404  006000                             ROR     R0
1827 010406  006000                             ROR     R0
1828 010410  063700  010432                     ADD     RAN1,R0
1829 010414  042700  170000                     BIC     #170000,R0
1830 010420  010037  010434                     MOV     R0,RAN2
1831 010424  010037  010436                     MOV     R0,RANUM
1832 010430  000207                             RTS     PC
1833                                    ;-------------------------------------------------------------------
1834 010432  000000                     RAN1:   0
1835 010434  000000                     RAN2:   0
1836 010436  000000                     RANUM:  0
1837                                    ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.INT - INITIALIZE DEVICE
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND INITIALIZE TO DEVICE.-ERROR CK
                                        ; INPUTS: NONE
                                        ; IMPLICIT INPUTS:  ERROR BIT
                                        ; OUTPUTS:  DEVICE INITIALIZE
                                        ; IMPLICIT OUTPUTS:
                                        ; SUBORDINATE ROUTINES USED:  COMMAND ERR CK, GET DEV. REGS, WAIT DONE
                                        ; FUNCTIONAL SIDE EFFECTS:
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--

                                        ;-------------------------------------------------------------------
010440  012737  040000  002400  INTIAL: MOV     #40000,CMD      ;SET INT COMMAND
010446  013777  002400  171674          MOV     CMD,@RXCS       ;INIT UNIT 0
010454  004737  012032                  CALL    AWDN            ;GO AWAIT DONE
010460  004737  011544          XINT:   CALL    CDERCK          ;CALL COMMAND ERROR CK
010464  004737  012244                  CALL    GETREG          ;CALL GET DEV REGS
010470  000207                          RTS     PC              ;RETURN
                                        ;-------------------------------------------------------------------



                                        .SBTTL -  MOD U.DEV.CLD - CLEAR DEVICE
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND INIT TO DEVICE - NO ERROR CK
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  NONE
                                        ; OUTPUTS:  DEVICE INITIALIZE
                                        ; IMPLICIT OUTPUTS:
                                        ; SUBORDINATE ROUTINES USED:  A WAIT "DONE"
                                        ; FUNCTIONAL SIDE EFFECTS:
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--

                                        ;-------------------------------------------------------------------

010472  012701  040000          CLRDEV: MOV     #40000,R1       ;SET INITIALIZE COMMAND
010476  010177  171646                  MOV     R1,@RXCS        ;CLEAR DEVICE
010502  004737  012032                  CALL    AWDN            ;AWAIT DONE
010506  000207                          RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.FLB - FILL BUFFER
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND FILL BUFFER COMMAND TO DEVICE.
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS: NONE
                                        ; OUTPUTS:  FILL BUFFER TO RX
                                        ; IMPLICIT OUTPUTS:
                                        ; SUBORDINATE ROUTINES USED: SET COMMANDS, WAIT "DONE", WAIT "TR"
                                        ; FUNCTIONAL SIDE EFFECTS:
                                        ; CALLING SEQUENCE:
                                        ;--

                                        ;-----------------------------------------------------------------

010510  004737  011634          FILBUF: CALL    DVDNCK          ;CALL DEVICE READY CHECK
010514  005737  002454                  TST     FIN             ;IF FINI FLAG SET
010520  001035                          BNE     XFILBF          ;NOT SET, THEN
010522  012737  000001  011542          MOV     #1,NCMD         ;SET FILL BUFFER COMMAND
010530  004737  011502                  CALL    SETSCD          ;CALL SET SUBSYS COMMAND - MOD U.DEV.SSC
010534  053737  002366  002400          BIS     EXTADR,CMD      ;SET EXT. ADR. BITS
010542  013777  002400  171600          MOV     CMD,@RXCS       ;LOAD COMMAND
010550  004737  012110                  CALL    AWTR            ;WAIT FOR "TR"
010554  005737  002454          IBFLB:  TST     FIN             ;IF FINI FLAG
010560  001015                          BNE     XFILBF          ;EQUALS ZERO THEN
010562  013777  002370  171562          MOV     WDCNT,@RXDB     ;LOAD WORD COUNT FOR OUTPUT BUFFER
010570  004737  012110                  CALL    AWTR            ;WAIT FOR "TR"
010574  005737  002454          ICFLB:  TST     FIN             ;IF FINI FLAG
010600  001005                          BNE     XFILBF          ;EQUALS ZERO THEN
010602  013777  002362  171542          MOV     FILADR,@RXDB    ;LOAD BASE ADDRESS FOR OUTPUT BUFFER
010610  004737  011610                  CALL    WAIT            ;WAIT FOR "DONE" OR INTERRUPT
010614  004737  011544          XFILBF: CALL    CDERCK          ;CALL COMMAND ERROR CHECK
010620  004737  012244                  CALL    GETREG          ;CALL GET DEV REGS
010624  000207                          RTS     PC              ;RETURN
                                        ;-----------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.EMB - EMPTY BUFFER
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND EMPTY BUFFER TO DEVICE.
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  NONE
                                        ; OUTPUTS:  EMPTY BUFFER TO RX
                                        ; IMPLICIT OUTPUTS:
                                        ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT "DONE", WAIT "TR"
                                        ; FUNCTIONAL SIDE EFFECTS:
                                        ; CALLING SEQUENCE:
                                        ;--

                                        ;-----------------------------------------------------------------------

010626  004737  011634          EMPBUF: CALL    DVDNCK          ;CALL DEVICE READY CHECK
010632  005737  002454                  TST     FIN             ;IF FINI FLAG
010636  001035                          BNE     XEMPBF          ;NOT SET, THEN
010640  012737  000003  011542          MOV     #3,NCMD         ;SET EMPTY BUFFER COMMAND
010646  004737  011502                  CALL    SETSCD          ;CALL SET SUBSYS COMMAND
010652  053737  002366  002400          BIS     EXTADR,CMD      ;SET EXT. ADR. BITS
010660  013777  002400  171462          MOV     CMD,@RXCS       ;ELSE LOAD COMMAND
010666  004737  012110                  CALL    AWTR            ;WAIT FOR "TR"    DO MOD U.TR
010672  005737  002454          IBEMB:  TST     FIN             ;IF FINI FLAG
010676  001015                          BNE     XEMPBF          ;EQUALS ZERO
010700  013777  002370  171444          MOV     WDCNT,@RXDB     ;THEN LOAD WORD COUNT FOR INPUT BUFFER
010706  004737  012110                  CALL    AWTR            ;WAIT FOR "TR"     DO MOD U.TR
010712  005737  002454          ICEMB:  TST     FIN             ;IF FINI FLAG
010716  001005                          BNE     XEMPBF          ;EQUALS ZERO
010720  013777  002360  171424          MOV     EMPADR,@RXDB    ;THEN LOAD BASE ADDRESS FOR INPUT BUFFER
010726  004737  011610                  CALL    WAIT            ;WAIT FOR "DONE" OR INTERRUPT
010732  004737  011544          XEMPBF: CALL    CDERCK          ;CALL COMMAND ERROR CHECK
010736  004737  012244                  CALL    GETREG          ;CALL GET DEV REGS
010742  000207                          RTS     PC              ;RETURN
                                        ;-----------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.DEV.WRT - WRITE SUBROUTINE
                                ;++
                                ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND WRITE SECTOR TO DEVICE.
                                ; INPUTS:  NONE
                                ; IMPLICIT INPUTS:  DELETED DATA MODE
                                ; OUTPUTS: WRITE SECTOR TO RX
                                ; IMPLICIT OUTPUTS:
                                ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT "DONE", WAIT "TR"
                                ; FUNCTIONAL SIDE EFFECTS:
                                ; CALLING SEQUENCE:
                                ;--

                                ;-----------------------------------------------------------------------

010744  004737  011634        WRITE:  CALL    DVDNCK          ;CALL DEVICE READY CHECK
010750  005737  002454                TST     FIN             ;IF FINI FLAG
010754  001037                        BNE     XWRITE          ;EQUALS ZERO THEN
010756  012737  000005  011542        MOV     #5,NCMD         ;SET TO WRITE SECTOR
010764  053737  002402  011542        BIS     DELDAT,NCMD     ;SETUP WRITE DELETED DATA, IF SET
010772  004737  011502                CALL    SETSCD          ;CALL SET SUBSYS COMMAND
010776  004737  011462                CALL    SETDCD          ;CALL SET DEVICE COMMAND - MOD U.DEV.CMD
011002  013777  002400  171340 WRITE1: MOV     CMD,@RXCS       ;LOAD COMMAND
011010  004737  012110                CALL    AWTR            ;GO AWAIT TRANSFER READY "TR"
011014  005737  002454        IBWRT:  TST     FIN             ;IF FINI FLAG
011020  001015                        BNE     XWRITE          ;EQUALS ZERO THEN
011022  013777  002376  171322        MOV     SECTOR,@RXDB    ;LOAD SECTOR ADDRESS
011030  004737  012110                CALL    AWTR            ;GO AWAIT TRANSFER READY "TR"
011034  005737  002454        ICWRT:  TST     FIN             ;IF FINI FLAG
011040  001005                        BNE     XWRITE          ;EQUALS ZERO THEN
011042  013777  002374  171302        MOV     TRACK,@RXDB     ;LOAD TRACK ADDRESS
011050  004737  011610                CALL    WAIT            ;WAIT FOR INTERRUPT OR "DONE"
011054  004737  012244        XWRITE: CALL    GETREG          ;CALL GET DEV REGS
011060  000207                        RTS     PC              ;RETURN
                                ;-----------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.RED - READ SUBROUTINE
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND READ SECTOR TO DEVICE.
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  NONE
                                        ; OUTPUTS:  READ SECTOR TO RX
                                        ; IMPLICIT OUTPUTS:
                                        ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT "DONE", WAIT "TR"
                                        ; FUNCTIONAL SIDE EFFECTS:
                                        ; CALLING SEQUENCE:
                                        ;--

                                        ;-----------------------------------------------------------------------

011062  004737  011634          READ:   CALL    DVDNCK          ;CALL DEVICE READY CHECK
011066  005737  002454                  TST     FIN             ;IF FINI FLAG
011072  001034                          BNE     XREAD           ;EQUALS ZERO, THEN
011074  012737  000007  011542          MOV     #7,NCMD         ;SET READ COMMAND
011102  004737  011502                  CALL    SETSCD          ;CALL SET SUBSYS COMMAND
011106  004737  011462                  CALL    SETDCD          ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
011112  013777  002400  171230  READ1:  MOV     CMD,@RXCS       ;LOAD COMMAND
011120  004737  012110                  CALL    AWTR            ;GO AWAIT TRANSFER READY
011124  005737  002454          IBRED:  TST     FIN             ;IF FINI FLAG
011130  001015                          BNE     XREAD           ;EQUALS ZERO, THEN
011132  013777  002376  171212          MOV     SECTOR,@RXDB    ;LOAD SECTOR ADDRESS
011140  004737  012110                  CALL    AWTR            ;GO AWAIT TRANSFER READY
011144  005737  002454          ICRED:  TST     FIN             ;IF FINI FLAG
011150  001005                          BNE     XREAD           ;EQUALS ZERO, THEN
011152  013777  002374  171172          MOV     TRACK,@RXDB     ;LOAD TRACK ADDRESS
011160  004737  011610                  CALL    WAIT            ;WAIT FOR INTERRUPT OR "DONE"
011164  004737  012244          XREAD:  CALL    GETREG          ;CALL GET DEV REGS
011170  000207                          RETURN                  ;RETURN
                                        ;-----------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.SDN - SET DENSITY
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND SET DENSITY COMMAND TO DEVICE.
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS: DENSITY
                                        ; OUTPUTS:  SET DENSITY TO RX
                                        ; IMPLICIT OUTPUTS:
                                        ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT "DONE", WAIT "TR"
                                        ; FUNCTIONAL SIDE EFFECTS:
                                        ; CALLING SEQUENCE:
                                        ;--

                                        ;-----------------------------------------------------------------------

011172  004737  011634          SETDN:  CALL    DVDNCK          ;CALL DEVICE READY CHECK
011176  005737  002454                  TST     FIN             ;IF FINI FLAG
011202  001024                          BNE     XSETDN          ;NOT SET, THEN
011204  012737  000011  011542          MOV     #11,NCMD        ;SETUP  DENSITY COMMAND
011212  004737  011502                  CALL    SETSCD          ;CALL SET SUBSYS COMMAND
011216  004737  011462                  CALL    SETDCD          ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
011222  013777  002400  171120          MOV     CMD,@RXCS       ;SEND COMMAND
011230  004737  012110                  CALL    AWTR            ;GO AWAIT  "TR"
011234  005737  002454          IBSDN:  TST     FIN             ;IF FINI FLAG IS
011240  001005                          BNE     XSETDN          ;ZERO
011242  013777  002372  171102          MOV     VARIFY,@RXDB    ;SEND VARIFY WORD
011250  004737  011610                  CALL    WAIT            ;WAIT FOR "DONE" OR INTERRUPT
011254  004737  011544          XSETDN: CALL    CDERCK          ;CALL COMMAND ERROR CHECK
011260  004737  012244                  CALL    GETREG          ;CALL GET DEV REGS
011264  000207                          RTS     PC              ;RETURN
                                        ;-----------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.RST - READ STATUS
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND READ STATUS COMMAND TO DEVICE.
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  NONE
                                        ; OUTPUTS:  READ STATUS TO RX
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT "DONE", WAIT "TR"
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:
                                        ;--

                                        ;-------------------------------------------------------------------------

011266  004737  011634          RDSTAT: CALL    DVDNCK          ;CALL DEVICE READY CHECK
011272  022737  000060  002520          CMP     #NODNBT,ERRNBR  ;IF ERRNBR NOT SET=
011300  001416                        BEQ     XRDSTA          ;"NO DONE BIT", THEN
011302  012737  000013  011542        MOV     #13,NCMD        ;SET READ STATUS
011310  004737  011502                CALL    SETSCD          ;CALL SET SUBSYS COMMAND
011314  004737  011462                CALL    SETDCD          ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
011320  013777  002400  171022        MOV     CMD,@RXCS       ;SEND COMMAND
011326  004737  011610                CALL    WAIT            ;GO AWAIT "DONE" OR INTERRUPT
011332  004737  012244                CALL    GETREG          ;CALL GET DEV REGS
011336  000207                  XRDSTA: RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.REC - READ ERROR CODE
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND READ ERROR CODE TO DEVICE.
                                        ; INPUTS:  EXTENDED ADDRESS BITS, FINI FLAG, SETUP COMMAND WORD
                                        ; IMPLICIT INPUTS:  NONE
                                        ; OUTPUTS:  READ ERROR CODE FLAG, READ ERROR CODE TO DRIVE, READ ERROR CODE NEW CMD
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  SET DEVICE CMD, WAIT, WAIT FOR "TR", GET
                                        ;                             REG, CMD ERR CK
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  -
                                        ;--
                                        ;-------------------------------------------------------------------------

011340  004737  011634          RDERCD: CALL    DVDNCK          ;CALL DEVICE READY CHECK
011344  022737  000060  002520          CMP     #NODNBT,ERRNBR  ;IF ERRNBR NOT SET=
011352  001440                          BEQ     XRDERC          ;"NO DONE BIT", THEN
011354  012737  000017  011542          MOV     #17,NCMD        ;SET ERROR CODE COMMAND
011362  004737  011502                  CALL    SETSCD          ;CALL SET SUBSYS COMMAND
011366  042737  000400  002400          BIC     #DENBIT,CMD     ;CLEAR DENSITY BIT FROM CMD
011374  053737  002366  002400          BIS     EXTADR,CMD      ;SET EXTENDED ADDRESS BITS
011402  013777  002400  170740          MOV     CMD,@RXCS       ;SEND COMMAND
011410  004737  012110                  CALL    AWTR            ;THEN GO AWAIT "TR"
011414  005737  002454          IBREC:  TST     FIN             ;IF FINI FLAG
011420  001015                          BNE     XRDERC          ;EQUALS ZERO THEN
011422  013777  002364  170722          MOV     RECADR,@RXDB    ;SET BASE ADDR FOR READ ERR CODE
011430  004737  011610                  CALL    WAIT            ;GO AWAIT "DONE" OR INTERRUPT
011434  005737  002454          ICREC:  TST     FIN             ;IF FINI FLAG
011440  001005                          BNE     XRDERC          ;NOT SET, THEN
011442  052737  000200  002476          BIS     #RECFLG,FLAGST  ;SET PRINT ERROR CODE OR FLAG
011450  004737  012244                  CALL    GETREG          ;CALL GET DEV REGS
011454  004737  011544          XRDERC: CALL    CDERCK          ;CALL COMMAND ERROR CHECK
011460  000207                          RTS     PC              ;RETURN
                                        ;-------------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.DEV.CMD - SETUP DEVICE COMMAND
                                ;++
                                ; FUNCTIONAL DESCRIPTION:  SUBR TO SETUP DEVICE COMMAND WORD - I.E.,
                                ;                          SET DRIVE & SIDE BITS
                                ; INPUTS:  NONE
                                ; IMPLICIT INPUTS: SIDE & DRIVE BITS, COMMAND
                                ; OUTPUTS:  COMMAND WORD FOR DEVICE
                                ; IMPLICIT OUTPUTS:  NONE
                                ; SUBORDINATE ROUTINES USED:  NONE
                                ; FUNCTIONAL SIDE EFFECTS:  NONE
                                ; CALLING SEQUENCE:  SUBR
                                ;--

                                ;-------------------------------------------------------------------

011462  000240                  SETDCD: NOP                     ;
011464  053737  002406  002400          BIS     DRIVE,CMD       ;SETUP DRIVE BIT
011472  053737  002410  002400          BIS     SIDE,CMD        ;SETUP SIDE BIT
011500  000207                        RETURN                  ;RETURN
                                ;-------------------------------------------------------------------

                                .SBTTL -  MOD U.DEV.SSC - SETUP SUBSYSTEM COMMANDS
                                ;++
                                ; FUNCTIONAL DESCRIPTION: SUBR TO SETUP SUBSYSTEM COMMANDS - I.E.
                                ;                          SET BITS THAT ARE NOT DRIVE RELATED
                                ; INPUTS:  NEW COMMAND
                                ; IMPLICIT INPUTS:  COMMAND, DENSITY, INTERRUPT BIT
                                ; OUTPUTS:  COMMAND
                                ; IMPLICIT OUTPUTS:  LAST COMMAND, PROTOCAL CTR
                                ; SUBORDINATE ROUTINES USED:  NONE
                                ; FUNCTIONAL SIDE EFFECTS:  NONE
                                ; CALLING SEQUENCE:  SUBR
                                ;--
                                ;-------------------------------------------------------------------

011502  000240                  SETSCD: NOP                     ;
011504  013737  002400  002424          MOV     CMD,LCMD        ;SAVE LAST COMMAND
011512  013737  011542  002400          MOV     NCMD,CMD        ;SETUP NEW COMMAND
011520  005037  002472                  CLR     PROTCT          ;CLEAR TEST COMMAND PROTOCAL COUNTER
011524  053737  002412  002400          BIS     DENSTY,CMD      ;SETUP DENSITY BIT
011532  053737  002404  002400          BIS     INTERT,CMD      ;SETUP INTERRUPT BIT
011540  000207                        RETURN                  ;
                                ;-------------------------------------------------------------------
011542  000000                  NCMD:   0                       ;NEW COMMAND
                                ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.DEV.CEC - DEVILE COMMAND ERROR CHECK
                                ;-------------------------------------------------------------------
                                ;++
                                ; FUNCTIONAL DESCRIPTION:  SUBR TO CHECK FOR DEVICE COMMAND FATAL ERRORS.
                                ; INPUTS:  NONE
                                ; IMPLICIT INPUTS:  FIN FLAG, FLAGS(NEG TEST), ERR NBR
                                ; OUTPUTS:  NONE
                                ; IMPLICIT OUTPUTS:  ERROR CONDITION
                                ; SUBORDINATE ROUTINES USED:  ERROR
                                ; FUNCTIONAL SIDE EFFECTS:  DROP UNIT & CLEAN UP
                                ; CALLINC SEQUENCE:  SUBR
                                ;--

                                ;-------------------------------------------------------------------

011544  000240                  CDERCK: NOP                     ;
011546  005737  002454                  TST     FIN             ;IF FINI FLAG
011552  001415                          BEQ     XCEC            ;SET, THEN
011554  005737  002520                  TST     ERRNBR          ;IF ERROR NUMBER
011560  001412                          BEQ     XCEC            ;NOT=0, THEN
011562  032737  004000  002476          BIT     #NEGTST,FLAGST  ;IF NEG TEST FLAG
011570  001006                          BNE     XCEC            ;NOT SET, THEN
011572  004737  003060                  CALL    ERROR           ;CALL ERROR-MOD
011576                                  DODU    UNIT            ;DROP UNIT
011604                                  DOCLN                   ;DO CLEAN-UP
011606  000207                  XCEC:   RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.WAT - WAIT SUBROUTINE
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO DETERMINE TO WAIT FOR "DONE" OR INTERRUPTS
                                        ; INPUTS:  DEVICE COMMAND
                                        ; IMPLICIT INPUTS:  NONE
                                        ; OUTPUTS:  NONE
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  WATCH & A WAIT DONE
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--

                                        ;-------------------------------------------------------------------------

011610  032737  000100  002400  WAIT:   BIT     #100,CMD        ;IF COMMAND-INTERRUPT BIT
011616  001403                          BEQ     1$              ;SET, THEN
011620  004737  011662                  CALL    WATCH           ;CALL WATCH DOG WAIT FOR INTERRUPT
011624  000402                          BR      XWAIT           ;BR TO END
011626  004737  012032          1$:     CALL    AWDN            ;ELSE, CALL WAIT FOR DONE
011632  000207                  XWAIT:  RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------------



                                        .SBTTL -  MOD U.DEV.DRC - DEVICE DONE CHECK
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO Ck IF DEVICE IS READY TO ACCEPT A CMD
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  DONE BIT
                                        ; OUTPUTS:  NONE
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  WATCH & A WAIT DONE
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--

                                        ;-------------------------------------------------------------------------

011634  005003                  DVDNCK: CLR     R3              ;CLEAR REC
011636  032777  000040  170504  1$:     BIT     #DNBIT,@RXCS    ;IF DEVICE DONE
011644  001005                          BNE     XDVRCK          ;NOT SET
011646  005203                          INC     R3              ;BUMP TIMEOUT COUNTER
011650  001372                          BNE     1$              ;IF TIME OUT, THEN
011652                                  BRESET                  ;EXECUTE BUS RESET
011654  004737  012032                  CALL    AWDN            ;CALL A WAIT "DONE"
011660  000207                  XDVRCK: RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.WCH - WATCH DOG TIMER
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO WATCH DOG DEVICE "DONE" & INTERRUPTS
                                        ; INPUTS:  PROCESSOR LOW PRIORITY
                                        ; IMPLICIT INPUTS:  DEVICE "DONE" & INTERRUPTS
                                        ; OUTPUTS:  DONE TIMEOUT ERROR, NO INTERRUPT ERROR
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  NONE
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--

                                        ;-----------------------------------------------------------------

011662  005037  012030          WATCH:  CLR     DNFLAG          ;CLEAR DONE FLAG
011666                                  SETPRI  PRIORT          ;SET PROCESSOR PRI - ALLOW INTERRUPTS
011674  013704  012024                  MOV     DX,R4           ;SET DELAY MULT
011700  013703  012026          BAUWCH: MOV     DLY,R3          ;SET DELAY
011704  005737  012030          IBUWCH: TST     DNFLAG          ;IF INTERRUPTS DONE FLAG
011710  001413                          BEQ     LBUWCH          ;IS SET, THEN
011712  032777  000040  170430  ICUWCH: BIT     #DNBIT,@RXCS    ;IF DONT BIT
011720  001035                          BNE     XUWCH           ;IS NOT SET, THEN
011722  012737  000014  002520          MOV     #INTNDN,ERRNBR  ;SET ERROR #=NO DONE BIT
011730  012737  010000  002460          MOV     #BIT12,TYPERR   ;SET INTERR, BUT NO DONE ERROR
011736  000426                          BR      XUWCH           ;BR TO MOD 'EXIT'
011740                          LBUWCH: BREAK
011742  005303                          DEC     R3              ;DECREMENT DELAY COUNT
011744  001357                  UDUWCH: BNE     IBUWCH          ;DO UNIT DELAY COUNT=0
011746  005304                          DEC     R4              ;DECREMENT DELAY MULT
011750  001353                  UAUWCH: BNE     BAUWCH          ;DO UNTIL DELAY MULT=0
011752  032777  000040  170370  IEUWCH: BIT     #DNBIT,@RXCS    ;IF DONE BIT IS
011760  001407                          BEQ     LEUWCH          ;SET, THEN
011762  012737  000015  002520          MOV     #DNNINT,ERRNBR  ;SET ERR #=DONE, NO INTR
011770  052737  020000  002460          BIS     #BIT13,TYPERR   ;SET DONE, BUT NO INTERRUPT ERROR
011776  000406                          BR      XUWCH           ;BR TO MOD 'EXIT'
012000  052737  000020  002456  LEUWCH: BIS     #BIT4,SYSERR    ;SET NO DONE T.O. ERROR
012006  012737  000060  002520          MOV     #NODNBT,ERRNBR  ;SET ERR #=NO DONE BIT
012014                          XUWCH:  SETPRI  #PR107          ;SET PROCESSOR PRI=7 - NO INTERRUPTS
012022  000207                          RTS     PC              ;RETURN
                                        ;-----------------------------------------------------------------
012024  000010                  DX:     10                      ;DELAY MULT
012026  100000                  DLY:    100000                  ;DELAY
012030  000000                  DNFLAG: 0                       ;DONE FLAG
                                        ;MOD U.2.3.4 ---- END MODULE ----------------------------------------
```

```
                                .SBTTL -  MOD U.DEV.WDN - AWAIT DONE BIT SUBROUTINE
                                ;++
                                ; FUNCTIONAL DESCRIPTION:  SUBR TO WAIT FOR DEVICE "DONE" BIT
                                ; INPUTS:  TIMEOUT PASS COUNTER
                                ; IMPLICIT INPUTS:  DEVICE "DONE" BIT, (RXCSR), DONE WAIT MULTIPLIER
                                ; OUTPUTS:  "DONE" BIT TIMEOUT ERROR
                                ; IMPLICIT OUTPUTS:  NONE
                                ; SUBORDINATE ROUTINES USED:  GET DEVICE REGISTERS
                                ; FUNCTIONAL SIDE EFFECTS:  NONE
                                ; CALLING SEQUENCE:  SUBR
                                ;--

                                ;-----------------------------------------------------------------------

012032  005004                  AWDN:   CLR     R4              ;RESET TIME OUT MULTIPLIER
012034  005003                  1$:     CLR     R3              ;PRESET TIME OUT COUNTER
012036  032777  000040  170304  2$:     BIT     #DNBIT,@RXCS    ;SEE IF DONE SET
012044  001020                          BNE     3$              ;IF SO: BR
012046                                  BREAK                   ;TEMPORARY RETURN TO MONITOR
012050  005203                          INC     R3              ;BUMP TIME OUT COUNTER
012052  001371                          BNE     2$              ;IF NOT TIMED OUT: BR
012054  005204                          INC     R4              ;INCREMENT TIMEOUT MULTIPLIER
012056  023704  002474                  CMP     DNWTMT,R4       ;IF ON 2ND
012062  101364                          BHI     1$              ;TIMEOUT PASS, THEN
012064  012737  000060  002520          MOV     #NODNBT,ERRNBR  ;SET ERR #=NO DONE BIT
012072  052737  000020  002456          BIS     #BIT4,SYSERR    ;SET NO DONE BIT ON SYSTEM ERROR
012100  012737  000001  002454          MOV     #1,FIN          ;EXIT THIS COMMAND
012106  000207                  3$:     RTS     PC              ;EXIT
                                ;-----------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.WTR - AWAIT TRANSFER READY SUBROUTINE
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO WAIT FOR DEVICE "TR" BIT
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  DEVICE "TR", "DONE" & CSR, ESR
                                        ; OUTPUTS:  "TR" TIMEOUT ERROR, NO DONE BIT, PROTOCAL COUNTER
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  GET DEVICE REGISTERS
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--

                                        ;-------------------------------------------------------------------------

012110  005237  002472          AWTR:   INC     PROTCT          ;INCREMENT TEST PROTOCAL COUNTER
012114  005004                          CLR     R4              ;PRESET TIMEOUT MULTIPLIER
012116  005003                  1$:     CLR     R3              ;PRESET TIME OUT COUNTER
012120  032777  000040  170222  2$:     BIT     #DNBIT,@RXCS    ;IF DONE BIT
012126  001013                          BNE     3$              ;NOT SET, THEN
012130  032777  000200  170212          BIT     #TRBIT,@RXCS    ;SEE IF TRANSFER READY SET
012136  001041                          BNE     5$              ;IF SO: BR
012140                                  BREAK                   ;TEMPORARY RETURN TO MONITOR
012142  005203                          INC     R3              ;BUMP TIME OUT COUNTER
012144  001365                          BNE     2$              ;IF NOT TIMED OUT: BR
012146  005204                          INC     R4              ;INCREMENT TIMEOUT MULTIPLIER
012150  022704  000004                  CMP     #4,R4           ;IF ON 2ND
012154  101360                          BHI     1$              ;TIMEOUT PASS, THEN
012156  012737  000001  002454  3$:     MOV     #1,FIN          ;EXIT THIS COMMAND
012164  052737  000020  002460          BIS     #CMDERR,TYPERR  ;**** ERROR ON COMMAND ****
012172  013737  002400  002422          MOV     CMD,ERRCMD      ;SETUP ERROR COMMAND
012200  012737  000057  002520          MOV     #NOTRBT,ERRNBR  ;SET ERR #=NO "TR" BIT
012206  052737  000200  002456          BIS     #TRBIT,SYSERR   ;SET SYS ERR=NO "TR" BIT
012214  032777  000040  170126          BIT     #DNBIT,@RXCS    ;IF DONE BIT
012222  001004                          BNE     4$              ;NOT SET, THEN
012224  052737  000020  002456          BIS     #BIT4,SYSERR    ;SET NO DONE BIT EITHER
012232  000403                          BR      5$              ;BR TO EXIT
012234  012737  000063  002520  4$:     MOV     #DNNOTR,ERRNBR  ;SET ERR #="DONE" NO "TR"
012242  000207                  5$:     RTS     PC              ;RETURN
                                        ;-------------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.REG - GET DEVICE REGISTERS
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBROUTINE TO GET RX02 CSR & ESR
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  DEVICE CSR & ESR
                                        ; OUTPUTS:  DEVICE CSR & ESR
                                        ; IMPLICIT OUTPUTS:  OLD CSR & ESR
                                        ; SUBORDINATE ROUTINES USED:  NONE
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--

                                        ;-----------------------------------------------------------------------

012244  013737  002432  002426  GETREG: MOV     RXCSR,LRXCSR    ;SAVE LAST CSR
012252  013737  002434  002430          MOV     RXESR,LRXESR    ;SAVE LAST ESR
012260  017737  170064  002432          MOV     @RXCS,RXCSR     ;GET RXCSR FOR PRINT
012266  017737  170060  002434          MOV     @RXDB,RXESR     ;GET RXESR FOR PRINT
012274  000207                          RETURN                  ;RETURN
                                        ;-----------------------------------------------------------------------



                                        .SBTTL -  MOD U.DEV.ITR - INTERRUPT HANDLER
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  ;DEVICE INTERRUPT HANDLER
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  DEVICE "DONE" BIT & INTERRUPT BIT
                                        ; OUTPUTS:  DONE FLAG
                                        ; IMPLICIT OUTPUTS:  NONE
                                        ; SUBORDINATE ROUTINES USED:  NONE
                                        ; FUNCTIONAL SIDE EFFECTS:  NONE
                                        ; CALLING SEQUENCE:  DEVICE INTERRUPT
                                        ;--

                                        ;-----------------------------------------------------------------------

012276  012737  000001  012030  INTRHD: MOV     #1,DNFLAG       ;SET DONE FLAG
012304  000002                          RTI                     ;RETURN FROM INTERRUPT
                                        ;-----------------------------------------------------------------------
```

```
2409                                    .SBTTL -  MOD U.SFT.DPT - SET DATA PATTERN
2410                                    ;-----------------------------------------------------------------
2411                                    ;  PAT #   SUBROUTINE          DATA PATTERN
2412                                    ;  -----   ----------          ------------
2413                                    ;    0       RANDAT          NO PATTERN SPECIFIED (FORCE RANDOM DATA)
2414                                    ;    1       DATA0           ALL ZEROS
2415                                    ;    2       DATA1           ALL ONES
2416                                    ;    3       FLOAT0          FLOATING ZERO
2417                                    ;    4       FLOAT1          FLOATING ONE
2418                                    ;    5       PAT125          ALTERNATING BITS
2419                                    ;    6       PAT333          ALTERNATING PAIRS OF BITS
2420                                    ;    7       RANDAT          RANDOM
2421                                    ;-----------------------------------------------------------------
2422 012306  042737  000377  012372  STDATP: BIC     #377,@#BRONPT   ;CLEAR BRANCH OFFSET
2423 012314  005037  012654            CLR     SUM             ;SET UP FOR ACCUMULATION OF CHECK SUM
2424 012320  005737  012660            TST     PAT             ;IF NO PATTERN SPECIFIED FORCE PATTERN 7
2425 012324  001003                    BNE     1$
2426 012326  012737  000007  012660            MOV     #7,PAT
2427 012334  013704  012660          1$:       MOV     PAT,R4          ;GET PATTERN BITS
2428 012340  005304                    DEC     R4              ;ADJUST FOR CORRECT OFFSET
2429 012342  006304                    ASL     R4
2430 012344  150437  012372            BISB    R4,@#BRONPT     ;INSERT OFFSET
2431 012350  012704  036224            MOV     #DATPAT+2,R4    ;SET UP ADDRESS OF FIRST BYTE
2432 012354  013705  002370            MOV     WDCNT,R5        ;SETUP WORD COUNT
2433 012360  006305                    ASL     R5              ;DOUBLE  WORD COUNT FOR ADR
2434 012362  062705  036222            ADD     #DATPAT,R5      ;ADD DATA PATTERN ADR
2435 012366  162705  000004            SUB     #4,R5           ;ADJ. FOR CHECKSUM
2436 012372  000777              BRONPT: BR      .               ;BRANCH BY OFFSET SELECTED
2437 012374  000137  012430            JMP     DATA0           ;000 DATA BYTE
2438 012400  000137  012446            JMP     DATA1           ;377 DATA BYTE
2439 012404  000137  012456            JMP     FLOAT0          ;FLOAT A 0 THROUGH ALL 1'S
2440 012410  000137  012524            JMP     FLOAT1          ;FLOAT A 1 THROUGH ALL 0'S
2441 012414  000137  012532            JMP     PAT125          ;125/052 DATA WORD
2442 012420  000137  012556            JMP     PAT333          ;314/063 DATA WORD
2443 012424  000137  012566            JMP     RANDAT          ;RANDOM DATA BYTE
2444                                    ;-----------------------------------------------------------------
2445 012430  005037  012656          DATA0:  CLR     DATBYT
2446 012434  004737  012614          PG:     JSR     PC,LOAD         ;GO LOAD THE DATA BUFFER
2447 012440  005705                    TST     R5              ;IF R5
2448 012442  001463                    BEQ     END131          ;NOT =0 ,THEN
2449 012444  000773                    BR      PG
2450                                    ;-----------------------------------------------------------------
2451 012446  112737  000377  012656  DATA1:  MOVB    #377,DATBYT
2452 012454  000767                    BR      PG
2453                                    ;-----------------------------------------------------------------
2454 012456  112737  000376  012656  FLOAT0: MOVB    #376,DATBYT     ;SET UP A ONES FIELD
2455 012464  000261              XPG:    SEC                     ;SET THE C BIT TO ROTATE THROUGH THE DATA
2456 012466  012702  000000          1$:     MOV     #0,R2           ;CLR R2 (CAN'T USE "CLR" AS IT CLEARS "C" BIT)
2457 012472  103001                    BCC     2$              ;BR IF THE "C" BIT IS CLEARED
2458 012474  005202                    INC     R2              ;SET R2 IF NOT
2459 012476  004737  012614          2$:     JSR     PC,LOAD         ;GO LOAD THE DATA BUFFER
2460 012502  005705                    TST     R5              ;IF R5
2461 012504  001442                    BEQ     END131          ;NOT ZERO THEN
2462 012506  000241                    CLC
2463 012510  005702                    TST     R2              ;IS R2 NONZERO
2464 012512  001401                    BEQ     3$
2465 012514  000261                    SEC                     ;YES, SET THE "C" BIT
```

```
2466 012516  106137  012656          3$:     ROLB    DATBYT
2467 012522  000761                          BR      1$
2468                                 ;-------------------------------------------------------------------
2469 012524  005037  012656          FLOAT1: CLR     DATBYT
2470 012530  000755                          BR      XPG
2471                                 ;-------------------------------------------------------------------
2472 012532  112737  000125  012656  PAT125: MOVB    #125,DATBYT
2473 012540  004737  012614          XXPG:   JSR     PC,LOAD
2474 012544  005705                          TST     R5              ;IF R5
2475 012546  001421                          BEQ     END131          ;NOT ZERO THEN
2476 012550  105137  012656                  COMB    DATBYT
2477 012554  000771                          BR      XXPG
2478                                 ;-------------------------------------------------------------------
2479 012556  112737  000333  012656  PAT333: MOVB    #333,DATBYT
2480 012564  000765                          BR      XXPG
2481                                 ;-------------------------------------------------------------------
2482 012566  004737  010344          RANDAT: JSR     PC,RANGEN       ;GET RANDOM NUMBER
2483 012572  113737  010436  012656          MOVB    RANUM,DATBYT
2484 012600  004737  012614                  JSR     PC,LOAD
2485 012604  005705                          TST     R5              ;IF R5
2486 012606  001401                          BEQ     END131          ;NOT ZERO THEN
2487 012610  000766                          BR      RANDAT
2488                                 ;-------------------------------------------------------------------
2489 012612  000207                  END131: RTS     PC              ;RETURN.
2490                                 ;-------------------------------------------------------------------
2491
2492
2493                                 ;-------------------------------------------------------------------
2494 012614  063737  012656  012654  LOAD:   ADD     DATBYT,SUM      ;ACCUMULATE THE PATTERN CHECK SUM
2495 012622  113724  012656                  MOVB    DATBYT,(R4)+    ;LOAD THE DATA BUFFER
2496 012626  020504                          CMP     R5,R4           ;HAVE 124 BYTES BEEN GENERATED
2497 012630  001401                          BEQ     1$              ;IF YES, RETURN
2498 012632  000407                          BR      ENDLD           ;IF NO, RETURN TO PATTERN GENERATOR
2499 012634  113724  012654          1$:     MOVB    SUM,(R4)+       ;PUT CHECKSUM INTO TABLE
2500 012640  005137  012654                  COM     SUM             ;COMPLIMENT CHECKSUM
2501 012644  113714  012654                  MOVB    SUM,(R4)        ;PUT COMP CHECK SUM INTO TABLE
2502 012650  005005                          CLR     R5              ;CLEAR TEMP #5 - FLAG DONE MODULE
2503 012652  000207                  ENDLD:  RTS     PC              ;RETURN
2504                                 ;-------------------------------------------------------------------
2505 012654  000000                  SUM:    0
2506 012656  000000                  DATBYT: 0
2507 012660  000000                  PAT:    0
2508                                 ;MOD 1.3.1 ----- END MODULE ----------------------------------------
```

```
                                        .SBTTL -  MOD U.SFT.GTK - GET TRACK
                                        ;-----------------------------------------------------------------------
                                        ;
012662  000240                  GETTRK: NOP                     ;
012664  032737  000400  002510  IAGTK:  BIT     #ITK,TKSCFG     ;IF INITIALIZE TRK IS
012672  001423                          BEQ     ICGTK           ;SET, THEN
012674  042737  000400  002510          BIC     #ITK,TKSCFG     ;RESET INITIALIZE TRK FLG
012702  013737  002336  013100          MOV     ID,TRKCNT       ;GET INSIDE TRACK
012710  163737  002334  013100\         SUB     OD,TRKCNT       ;GET OUTSIDE TRACK
012716  005237  013100                  INC     TRKCNT          ;INCREMENT # OF TRACKS
012722  013737  002334  002374          MOV     OD,TRACK        ;SET TRACK=O.D.
012730  005337  002374                  DEC     TRACK           ;DECREMENT TRACK
012734  042737  001000  002476          BIC     #TRKDON,FLAGST  ;CLEAR TRACK DONE FLAG
012742  032737  000004  002510  ICGTK:  BIT     #ILTK,TKSCFG    ;IF TK/SC FLAGS=ILLEGAL TRACK
012750  001416                          BEQ     LBGTK           ;BIT SET, THEN
012752  012737  000115  002374          MOV     #77.,TRACK      ;SET TRACK=77=ILLEGAL TRACK
012760  052737  001000  002476          BIS     #TRKDON,FLAGST  ;SET TRACK DONE FLAG
012766  000443                          BR      XGTK            ;BR TO EXIT
012770  032737  000001  002510  IBGTK:  BIT     #STK,TKSCFG     ;IF TK & SE FLAG=SEQ TRK FLAG
012776  001403                          BEQ     LBGTK           ;SET, THEN
013000  005237  002374                  INC     TRACK           ;INCREMENT TRACK
013004  000426                          BR      EBGTK           ;BR TO END 'B'
013006  004737  010344          LBGTK:  CALL    RANGEN          ;GET A RANDOM NUMBER
013012  042737  177600  010436          BIC     #177600,RANUM   ;CLEAR ALL BUT LOW 7 BITS
013020  123737  010436  002336  IDCOMP: CMPB    RANUM,ID        ;IF RANUM LARGER THAN ID ADDRESS
013026  003401                          BLE     ODCOMP          ;THEN
013030  000766                          BR      LBGTK           ;BR TO GET ANOTHER RANDOM NUMBER
013032  123737  010436  002334  ODCOMP: CMPB    RANUM,OD        ;IF RANUM SMALLER THAN OD ADDRESS
013040  002001                          BGE     PRESCK          ;THEN
013042  000761                          BR      LBGTK           ;BR TO GET ANOTHER RANDOM NUMBER
013044  123737  010436  002374  PRESCK: CMPB    RANUM,TRACK     ;IF RANUM EQUALS PRESENT TRACK
013052  001755                          BEQ     LBGTK           ;GET ANOTHER RANDOM NUMBER
013054  013737  010436  002374          MOV     RANUM,TRACK     ;RANUM OK PUT IT IN TARGET TRACK
013062  005337  013100          EBGTK:  DEC     TRKCNT          ;IF TOTAL # OF TRACKS
013066  001003                          BNE     XGTK            ;DONE, THEN
013070  052737  001000  002476          BIS     #TRKDON,FLAGST  ;THEN SET TRACK DONE FLAG
013076  000207                  XGTK:   RTS     PC              ;
                                        ;-----------------------------------------------------------------------
013100  000000                  TRKCNT: .WORD   0               ;DRV TRK TABLE LOCATOR
013102  000000                  INITTK: .WORD   0               ;INITIALIZE TRK FLAG
                                        ;-----------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.SFT.GSC - GET SECTOR
                                        ;-------------------------------------------------------------------
                                        ;
013104  000240                  GETSEC: NOP                             ;
013106  032737  001000  002510  IAGSC:  BIT     #ISC,TKSCFG            ;IF TK/SC FLAGS=INIT SECTORS BIT
013114  001411                          BEQ     IBGSC                  ;SET, THEN
013116  042737  001000  002510          BIC     #ISC,TKSCFG            ;CLEAR THE FLAG
013124  012737  000001  002376          MOV     #1,SECTOR              ;SET SECTOR=1
013132  042737  002000  002476          BIC     #SECDON,FLAGST         ;CLEAR FLAGST-SECTOR DONE FLAG
013140  105737  002510          IBGSC:  TSTB    TKSCFG                 ;IF SEQUENCE SECTOR
013144  001416                          BEQ     BCGSC                  ;SET, THEN
013146  062737  000001  002376          ADD     #1,SECTOR              ;BUMP SECTOR ADDRESS
013154  022737  000033  002376          CMP     #33,SECTOR             ;IF SECTORS
013162  101030                          BHI     XGSC                   ;DONE, THEN
013164  012737  000001  002376          MOV     #1,SECTOR              ;SET SECTOR=1
013172  052737  002000  002476          BIS     #SECDON,FLAGST         ;SET FLAGST-SECTOR DONE FLAG
013200  000421                          BR      XGSC                   ;BR EXIT
013202  004737  010344          BCGSC:  CALL    RANGEN                 ;BGN DO 'C'-CALL RANDOM NO. GENERATOR
013206  042737  177740  010436          BIC     #177740,RANUM          ;CLEAR TOP BITS RANDOM NUM.
013214  123727  010436  000033  UCGSC:  CMPB    RANUM,#27.             ;DOUNTIL RANNUM < 27.
013222  103367                          BHIS    BCGSC                  ;
013224  105737  010436          IDGSC:  TSTB    RANUM                  ;IF RANDOM NO.
013230  001002                          BNE     EDGSC                  ;EQUALS ZERO, THEN
013232  105237  010436                  INCB    RANUM                  ;SET RANNUM - 1
013236  113737  010436  002376  EDGSC:  MOVB    RANUM,SECTOR           ;SET SECTOR ADR - RANDOM NO.
013244  000207                  XGSC:   RTS     PC
                                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.SFT.DCK - DATA CHECK
                                        ;-------------------------------------------------------------------
                                        ;
013246  005037  013520          DATACK: CLR     DAERCT          ;CLEAR DATA ERR COUNT
013252  052737  000100  002500          BIS     #HDRPRT,FLAGSP  ;SET PRINT HEADER FLAG
013260  013737  002370  013514          MOV     WDCNT,BYTCNT    ;SAVE WORD COUNT
013266  006337  013514                  ASL     BYTCNT          ;DOUBLE IT SO BYTE COUNT
013272  005037  013516                  CLR     BYTNUM          ;CLEAR BYTE NUMBER
013276  013705  013516          BADCK:  MOV     BYTNUM,R5       ;SETUP BYTE NUMBER FOR AUTO INDEX
013302  116501  036222                  MOVB    DATPAT(R5),R1   ;SET TEMP#1=DATA SOURCE BYTE
013306  116502  036622                  MOVB    DATBUF(R5),R2   ;SET TEMP#2=DATA BUFFER BYTE
013312  120102                  IBDCK:  CMPB    R1,R2           ;IF SOURCE BYTE & BUFFER BYTE
013314  001465                          BEQ     EBDCK           ;NOT EQUAL-
013316  005237  013520                  INC     DAERCT          ;INCREMENT DATA ERR COUNT
013322  023727  013520  000012  IEDCK:  CMP     DAERCT,#10.     ;IF OVER 10 DATA ERRORS
013330  103404                          BLO     TFDCK           ;THEN
013332  032737  000020  002332  IFDCK:  BIT     #20,SWREG       ;IF PRINT ONLY 10 DATA ERROR FLAG
013340  001053                          BNE     EBDCK           ;IS NOT SET, THEN
013342  110137  013522          TFDCK:  MOVB    R1,DATASB       ;GET DATA SHOULD BE->PRINT
013346  110237  013524                  MOVB    R2,DATAWS       ;GET DATA WAS->PRINT
013352  032737  000100  002500  IMDCK:  BIT     #HDRPRT,FLAGSP  ;IF PRINT HEADER
013360  001431                          BEQ     EMDCK           ;OK, THEN
013362  042737  000100  002500          BIC     #HDRPRT,FLAGSP  ;CLEAR PRINT HEADER
013370  012737  000005  002520          MOV     #DATER,ERRNBR   ;SETUP ERR NBR= DATA ERR
013376  004737  003060                  CALL    ERROR           ;CALL ERROR
013402  032737  000020  002476  INDCK:  BIT     #EMBUFF,FLAGST  ;IF EMPTY BUFFER BIT
013410  001011                          BNE     ENDCK           ;NOT SET, THEN
013412  012701  013526                  MOV     #DMSG1B,R1      ;SETUP MSG FORMAT
013416  013702  002374                  MOV     TRACK,R2        ;SETUP TRACK # PRT
013422  013703  002376                  MOV     SECTOR,R3       ;SETUP SECTOR # PRT
013426  004737  002612                  CALL    PRTB2S          ;CALL PRINT BASIC-2 ARG
013432  000400                          BR      ENDCK           ;BR TO END 'N'
013434  012701  013561          ENDCK:  MOV     #DMSG1,R1       ;SETUP MSG FORMAT
013440  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
013444  012701  013615          EMDCK:  MOV     #DMSG2,R1       ;SETUP MSG FORMAT(
013450  013702  013516                  MOV     BYTNUM,R2       ;SETUP BYTE #
013454  013703  013522                  MOV     DATASB,R3       ;SETUP DATA SHOULD BE
013460  013704  013524                  MOV     DATAWS,R4       ;SETUP DATA WAS
013464  004737  002636                  CALL    PRTB3S          ;CALL PRINT BASIC-3 ARG
013470  005237  013516          EBDCK:  INC     BYTNUM          ;INCREMENT BYTE #
013474  005337  013514                  DEC     BYTCNT          ;DECREMENT BYTE COUNT
013500  005737  013514          UADCK:  TST     BYTCNT          ;DOUNTIL BYTE COUNT
013504  003274                          BGT     BADCK           ;EQUALS 0
013506  004737  013642          ENDDCK: CALL    CLRDAT          ;CALL CLEAR DATA BUFFER
013512  000207                          RTS     PC              ;RETURN
                                        ;-------------------------------------------------------------------
                                        ;
013514  000000                  BYTCNT: 0                       ;BYTE COUNT
013516  000000                  BYTNUM: 0                       ;BYTE NUMBER
013520  000000                  DAERCT: 0                       ;DATA ERR COUNT
013522  000000                  DATASB: 0                       ;DATA SHOULD BE
013524  000000                  DATAWS: 0                       ;DATA WAS
                                        ;-------------------------------------------------------------------
                                        ;
013526      045     116     045 DMSG1B: .ASCIZ  /%N%A TRK#%D3%A. SEC#%D2%A./
013561      045     116     045 DMSG1:  .ASCIZ  /%N%A BYTE#%S2%AGOOD%S6%ABAD/
013615      045     116     045 DMSG2:  .ASCIZ  /%N%S3%D3%S2%B8%S2%B8/
                                        .EVEN
                                        ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.CDB - CLEAR DATA BUFFER
                                ;-------------------------------------------------------------------
                                
013642  012705  036622  CLRDAT: MOV     #DATBUF,R5      ;GET BEGIN OF DATA BUFFER
013646  012704  000200          MOV     #128.,R4        ;SET WORD LENGTH OF TABLE
013652  005025          BACDB:  CLR     (R5)+           ;CLEAR WORD IN DATA BUFFER TABLE
013654  005304                  DEC     R4              ;DECREMENT WORD COUNT
013656  005704                  TST     R4              ;DO UNTIL
013660  001374          UACDB:  BNE     BACDB           ;ALL TABLE WORDS ZEROED
013662  000207                  RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.RCR - REGISTER CHECK & REPORT
                                ;-----------------------------------------------------------------
                                ;
                                ; BGNSUB
                                ;       IF FINI FLAG NOT SET
                                ;       :  THEN-
                                ;       :    GET TEST TABLE ADDRESS
                                ;       :    DOUNTIL TEST TABLE ENTRY=-1
                                ;       :    :  ADVANCE TEST TABLE ADDRESS
                                ;       :    ENDDO
                                ;       :    ADVANCE TEST TABLE ADDRESS
                                ;       :    GET COMMAND COUNTER
                                ;       :    DOUBLE COMMAND COUNTER
                                ;       :    ADDRESS OF REG TABLE THIS CMD=CMD COUNTER + TEST TABLE ADR
                                ;       :    GET ADDRESS OF REG TABLE THIS COMMAND
                                ;       :    SET RXCSR COMPARE WORD=COMPARE WORD FROM TABLE
                                ;       :    SET RXCSR MASK WORD=DON'T CARE BITS FROM REG TABLE
                                ;       :    SET RXESR COMPARE WORD=COMPARE WORD FROM TABLE
                                ;       :    SET RXESR MASK WORD=DON'T CARE BITS FROM REG TABLE
                                ;       :    SETUP CSR REG CK
                                ;       :    IF RXCSR NOT=CSRCMP
                                ;       :    :  THEN-CALL CK BITS
                                ;       :    ENDIF
                                ;       :    SETUP ESR REG CK
                                ;       :    IF ESR NOT=ESRCMP
                                ;       :    :  THEN-CALL CK BITS
                                ;       :    ENDIF
                                ;       ENDIF
                                ;       GET REGISTER ERR TABLE PTR
                                ;       TERMINATE ERROR TABLE
                                ;       ENDIF  .
                                ;       NOP
                                ; ENDSUB
                                ;-----------------------------------------------------------------
013664  000240                  REGSCK: NOP                     ;
013666  005037  014670                  CLR     RGETPT          ;CLEAR REG ERROR TABLE PTR
013672  005737  002454          IARCR:  TST     FIN             ;IF FINI FLAG
013676  001160                          BNE     EARCR           ;NOT SET, THEN
013700  004737  014276                  CALL    SURGCK          ;CALL SETUP REGS CHECK
013704  013701  002466                  MOV     TSTID,R1        ;GET TEST TABLE ADDRESS
013710  005721                  UBRCR:  TST     (R1)+           ;DO UNTIL TEST TABLE ENTRY
013712  100401                          BMI     EBRCR           ;EQUALS -1, ADVANCE TEST TABLE ADRS
013714  000775                          BR      UBRCR           ;END DO 'B'
013716  013702  002470          EBRCR:  MOV     TCMDCT,R2       ;GET TEST COMMAND CTR
013722  006302                          ASL     R2              ;DOUBLE COMMAND CTR
013724  060201                          ADD     R2,R1           ;CAL ADRS OF REG TABLE FOR THIS CMD
013726  011103                          MOV     (R1),R3         ;GET ADRS FROM TEST TABLE
013730  012337  014260                  MOV     (R3)+,CSRCMP    ;SET RXCSR COMPARE WORD=TABLE CSR CMP
013734  012337  014262                  MOV     (R3)+,CSRMSK    ;SET RXCSR MASK WORD=TABLE CSR MSK
013740  012337  014264                  MOV     (R3)+,ESRCMP    ;SET RXESR COMPARE WORD=TABLE ESR CMP
013744  011337  014266                  MOV     (R3),ESRMSK     ;SET RXESR MASK WORD=TABLE ESR MSK
013750  013701  002432          CSRCHK: MOV     RXCSR,R1        ;GET RXCS
013754  042701  172027                  BIC     #172027,R1      ;CLEAR OFF WRITE ONLY BIT-CK DRV SELECT BIT ****
013760  043701  014262                  BIC     CSRMSK,R1       ;MASK OFF BITS DON'T CARE ABOUT
013764  043737  014262  014270          BIC     CSRMSK,CSRSET   ;MASK OFF CSRSET BITS DON'T CARE
013772  053737  014270  014260          BIS     CSRSET,CSRCMP   ;SET CSR COMMAND VARIABLE BITS
014000  023701  014260                  CMP     CSRCMP,R1       ;IF RXCS CONTAINS
```

```
2712 014004  001437                          BEQ     4$              ;ERRORS, THEN
2713 014006  013737  014260  002436          MOV     CSRCMP,REGEXP   ;SAVE EXPECTED
2714 014014  010137  002440                  MOV     R1,REGACT       ;SAVE ACTUAL
2715 014020  032737  000002  002332          BIT     #FUNCTT,SWREG   ;IF FUNCTION TEST
2716 014026  001403                          BEQ     1$              ;MODE, THEN
2717 014030  005237  014274                  INC     FTERCT          ;INCREMENT ERROR COUNT
2718 014034  000420                          BR      3$              ;BR TO REST OF SETUP
2719 014036  010137  014702          1$:     MOV     R1,BADWRD       ;SET BAD WORD
2720 014042  013737  014260  014700          MOV     CSRCMP,CMPWRD   ;SET COMPARE WORD
2721 014050  012737  000004  014676          MOV     #4,BITOFF       ;SET # BITS TO OFFSET WORD
2722 014056  012737  000014  014674          MOV     #12.,BITLIM     ;SET # BITS TO CHECK
2723 014064  012737  014776  014704  2$:     MOV     #CSERTB,RTBADR  ;SET REG TAB ADR=CSR
2724 014072  004737  014522                  CALL    CKBITS          ;FIND BAD BITS & RELATED ERR #
2725 014076  012701  100000          3$:     MOV     #ERRFLG,R1      ;SET ERR
2726 014102  000401                          BR      XCSRCK          ;BR TO END
2727 014104  005001                  4$:     CLR     R1              ;CLEAR ERRORS
2728 014106  050137  002476          XCSRCK: BIS     R1,FLAGST       ;SET FLAGST ERR BIT-IF ERRORS
2729 014112  013701  002434          ESRCHK: MOV     RXESR,R1        ;GET RXES
2730 014116  042701  176000                  BIC     #176000,R1      ;MASK OFF BITS NOT USED IN RXES
2731 014122  043701  014266                  BIC     ESRMSK,R1       ;MASK OFF BITS DON'T CARE ABOUT
2732 014126  043737  014266  014272          BIC     ESRMSK,ESRSET   ;MASK OFF ESRSET BITS DON'T CARE
2733 014134  053737  014272  014264          BIS     ESRSET,ESRCMP   ;SET ESR COMMAND VARIBLE BITS
2734 014142  023701  014264                  CMP     ESRCMP,R1       ;IF RXES CONTAINS
2735 014146  001431                          BEQ     4$              ;ERRORS, THEN
2736 014150  032737  000002  002332          BIT     #FUNCTT,SWREG   ;IF FUNCTION TEST
2737 014156  001403                          BEQ     1$              ;MODE, THEN
2738 014160  005237  014274                  INC     FTERCT          ;INCREMENT ERROR COUNT
2739 014164  000417                          BR      3$              ;BR TO REST OF SETUP
2740 014166  010137  014702          1$:     MOV     R1,BADWRD       ;SET BAD WORD
2741 014172  013737  014264  014700          MOV     ESRCMP,CMPWRD   ;SET COMPARE WORD
2742 014200  005037  014676                  CLR     BITOFF          ;SET BIT OFFSET
2743 014204  012737  000014  014674          MOV     #12.,BITLIM     ;SET # BITS TO CHECK
2744 014212  012737  014746  014704  2$:     MOV     #ESERTB,RTBADR  ;SET REG ERR TAB ADR=ESR
2745 014220  004737  014522                  CALL    CKBITS          ;FIND BAD BITS & RELATED ERR #
2746 014224  012701  100000          3$:     MOV     #ERRFLG,R1      ;SET ERR
2747 014230  000401                          BR      XESRCK          ;BR TO END
2748 014232  005001                  4$:     CLR     R1              ;CLEAR ERRORS
2749 014234  050137  002476          XESRCK: BIS     R1,FLAGST       ;SET TEST ERROR FLAG, IF ERRORS
2750 014240  013705  014670          EARCR:  MOV     RGETPT,R5       ;GET REG ERR TBL PTR
2751 014244  006305                          ASL     R5              ;DOUBLE REG ERROR TAB PTR FOR ADDRESSING
2752 014246  012765  177777  014706          MOV     #-1,RGERTB(R5)  ;TERMINATE TBL
2753 014254  000240                          NOP                     ;
2754 014256  000207                  XREGCK: RTS     PC              ;RETURN
2755                                 ;-----------------------------------------------------------------
2756 014260  000000                  CSRCMP: 0                       ;CSR COMPARE WORD
2757 014262  000000                  CSRMSK: 0                       ;CSR MASK WORD
2758 014264  000000                  ESRCMP: 0                       ;ESR COMPARE WORD
2759 014266  000000                  ESRMSK: 0                       ;ESR MASK WORD
2760 014270  000000                  CSRSET: 0                       ;CSR SET - SETUP REGS CK
2761 014272  000000                  ESRSET: 0                       ;ESR SET - SETUP REGS CK
2762 014274  000000                  FTERCT: 0                       ;FUNCTION TEST ERROR COUNTER
2763                                 ;-----------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.SFT.SRC - SETUP REGISTER CHECK
                                        ;-------------------------------------------------------------------
                                        ;
014276  000240                  SURGCK: NOP                     ;
014300  005037  014272                  CLR     ESRSET          ;CLEAR ESR SET
014304  032737  040000  002400  IGSRC:  BIT     #RXINIT,CMD     ;IF CMD WAS RX INITIALIZE
014312  001406                          BEQ     EGSRC           ;THEN
014314  042737  001000  002400          BIC     #SIDE1,CMD      ;CLEAR SIDE #1 SELECT BIT
014322  042737  000400  002400          BIC     #DRIVE1,CMD     ;CLEAR DRIVE #1 SELECT BIT
014330  013705  002400          EGSRC:  MOV     CMD,R5          ;GET COMMAND
014334  042705  177761                  BIC     #177761,R5      ;CLEAR ALL BUT COMMAND
014340  022705  000016          IASRC:  CMP     #16,R5          ;IF COMMAND = READ ERROR CODE
014344  001015                          BNE     EASRC           ;THEN
014346  032737  000200  002500  IFSRC:  BIT     #RECTST,FLAGSP  ;IF FLAGSP NOT=REC TEST
014354  001011                          BNE     EASRC           ;THEN
014356  013737  002424  002400          MOV     LCMD,CMD        ;SET COMMAND=LAST COMMAND
014364  013737  002426  002432          MOV     LRXCSR,RXCSR    ;GET LAST RXCSR
014372  013737  002430  002434          MOV     LRXESR,RXESR    ;GET LAST RXESR
014400  013705  002400          EASRC:  MOV     CMD,R5          ;GET COMMAND
014404  010537  014270                  MOV     R5,CSRSET       ;SETUP CRS SET
014410  042737  176277  014270          BIC     #176277,CSRSET  ;SAVE ONLY: SIDE,DENS,INTR ENA,(DRV SEL CK) BITS
014416  032705  001000          IBSRC:  BIT     #SIDE1,R5       ;IF SIDE #1 SELECTED
014422  001403                          BEQ     ICSRC           ;THEN
014424  052737  001000  014272          BIS     #SIDE1,ESRSET   ;SETUP ESR SET -> SIDE1
014432  032705  000020          ICSRC:  BIT     #DRV1,R5        ;IF DRIVE #1 SELECTED
014436  001403                          BEQ     IDSRC           ;THEN
014440  052737  000400  014272          BIS     #DRIVE1,ESRSET  ;SETUP ESRSET -> DRIVE1
014446  032705  000400          IDSRC:  BIT     #DENBIT,R5      ;IF DOUBLE DENSITY SELECTED
014452  001403                          BEQ     EDSRC           ;THEN
014454  052737  000040  014272          BIS     #DRVDEN,ESRSET  ;SETUP ESR SET = DOUBLE DENSITY
014462  042705  177761          EDSRC:  BIC     #177761,R5      ;CLEAR ALL BUT COMMAND
014466  005737  002402          IESRC:  TST     DELDAT          ;IF DELETED DATA MODE
014472  001411                          BEQ     EESRC           ;AND
014474  022705  000006                  CMP     #RSCMD,R5       ;COMMAND=READ SECTOR
014500  001403                          BEQ     1$              ;OR
014502  022705  000014                  CMP     #WDDCMD,R5      ;COMMAND-WRITE DELETED DATA SECTOR
014506  001003                          BNE     EESRC           ;THEN
014510  052737  000100  014272  1$:     BIS     #DLDBIT,ESRSET  ;SETUP  ESR SET ->DELETED DATA BIT
014516  000240                  EESRC:  NOP                     ;
014520  000207                  XSRC:   RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------
```

```
                                     .SBTTL -  MOD U.SFT.BTK - BITS SET/NOT SET CHECK
                                     ;--------------------------------------------------------------------

014522  013702  014700               CKBITS: MOV     CMPWRD,R2          ;GET COMPARE WORD
014526  013701  014702                       MOV     BADWRD,R1          ;GET BAD WORD
014532  040201                               BIC     R2,R1              ;SET R1=BITS THAT SHOULDN'T BE SET
014534  005102                               COM     R2                 ;COMPLIMENT COMPARE WORD
014536  053702  014702                       BIS     BADWRD,R2          ;SET BAD BITS
014542  005102                               COM     R2                 ;SET R2=BITS THAT SHOULD BE SET
014544  050201                               BIS     R2,R1              ;SET R1=ALL BITS THAT SHOULD OR SHOULDN'T BE SET
014546  005737  014676                       TST     BITOFF             ;IF BIT OFFSET
014552  001407                               BEQ     2$                 ;NOT=0, THEN
014554  005337  014676               1$:     DEC     BITOFF             ;
014560  000241                               CLC                        ;CLEAR CARRY
014562  006001                               ROR     R1                 ;
014564  005737  014676                       TST     BITOFF             ;IF BIT OFFSET
014570  001371                               BNE     1$                 ;EQUALS 0, THEN
014572  005037  014672               2$:     CLR     BITCNT             ;CLEAR BIT COUNTER
014576  032701  000001               3$:     BIT     #1,R1              ;IF LSB
014602  001417                               BEQ     4$                 ;NOT=0, THEN
014604  013702  014672                       MOV     BITCNT,R2          ;GET BIT COUNTER
014610  006302                               ASL     R2                 ;DOUBLE IT FOR ADDRESSING
014612  063702  014704                       ADD     RTBADR,R2          ;ADD REG TABLE ADR
014616  011203                               MOV     (R2),R3            ;GET ERR# THIS BIT ERROR FROM TABLE
014620  005703                               TST     R3                 ;IF ERR #
014622  001407                               BEQ     4$                 ;NOT=0, THEN
014624  013704  014670                       MOV     RGETPT,R4          ;SET UP REG ERR TABLE POINTER
014630  006304                               ASL     R4                 ;DOUBLE IT FOR ADDRESSING
014632  010364  014706                       MOV     R3,RGERTB(R4)      ;SET THIS ERR# IN TABLE OF REG ERRORS
014636  005237  014670                       INC     RGETPT             ;ADVANCE TABLE POINTER TO NEXT LOCATION
014642  005237  014672               4$:     INC     BITCNT             ;INCREMENT BIT COUNTER
014646  000241                               CLC                        ;CLEAR CARRY
014650  006001                               ROR     R1                 ;SHIFT NEXT BIT FOR TEST
014652  023737  014674  014672               CMP     BITLIM,BITCNT      ;IF ALL BITS SPECIFIED
014660  101346                               BHI     3$                 ;DONE, THEN
014662  005037  014672                       CLR     BITCNT             ;RESET BIT COUNT
014666  000207                       XCRBIT: RETURN                     ;RETURN
                                     ;--------------------------------------------------------------------
014670  000000                       RGETPT: 0                          ;REG ERROR TABLE POINTER
014672  000000                       BITCNT: 0                          ;BIT COUNTER
014674  000000                       BITLIM: 0                          ;BIT REGISTER LIMIT
014676  000000                       BITOFF: 0                          ;BIT REGISTER OFFSET
014700  000000                       CMPWRD: 0                          ;COMPARE WORD
014702  000000                       BADWRD: 0                          ;BAD WORD
014704  000000                       RTBADR: 0                          ;REGISTER ERROR TABLE ADDRESS
                                     ;--------------------------------------------------------------------
```

```
2856                                    ;                       REGISTER ERROR #'S - TABLE
2857                                    ;-------------------------------------------------------------
2858 014706  000000                     RGERTB: .WORD   0               ;
2859 014710  177777                             .WORD   -1              ;
2860 014712  177777                             .WORD   -1              ;
2861 014714  177777                             .WORD   -1              ;
2862 014716  177777                             .WORD   -1              ;
2863 014720  177777                             .WORD   -1              ;
2864 014722  177777                             .WORD   -1              ;
2865 014724  177777                             .WORD   -1              ;
2866 014726  177777                             .WORD   -1              ;
2867 014730  177777                             .WORD   -1              ;
2868 014732  177777                             .WORD   -1              ;
2869 014734  177777                             .WORD   -1              ;
2870 014736  177777                             .WORD   -1              ;
2871 014740  177777                             .WORD   -1              ;
2872 014742  177777                             .WORD   -1              ;
2873 014744  177777                             .WORD   -1              ;
2874                                    ;-------------------------------------------------------------
2875
2876                                    ;                       TABLE - ESR ERROR #'S
2877                                    ;-------------------------------------------------------------
2878 014746  000004                     ESERTB: .WORD   CRCERR          ;BIT #00 - CRC ERR
2879 014750  000024                             .WORD   SDRDYE          ;BIT #01 - SIDE 1 RDY
2880 014752  000062                             .WORD   NOITDP          ;BIT #02 - INIT DONE
2881 014754  004050                             .WORD   ACLOWF!NEGTST   ;BIT #03 - AC LOW
2882 014756  004030                             .WORD   DENERR!NEGTST   ;BIT #04 - DEN ERR
2883 014760  004020                             .WORD   DENDSK!NEGTST   ;BIT #05 - DRV DEN-->NOT ERROR
2884 014762  000032                             .WORD   DLDTER          ;BIT #06 - DEL DATA
2885 014764  000025                             .WORD   DVRDYE          ;BIT #07 - DRV RDY
2886 014766  000027                             .WORD   DRVWRG          ;BIT #08 - UNIT SEL
2887 014770  000026                             .WORD   SIDWRG          ;BIT #09 - HEAD SEL
2888 014772  004051                             .WORD   WCOVFE!NEGTST   ;BIT #10 - WC OVFL
2889 014774  004052                             .WORD   NXMERR!NEGTST   ;BIT #11 - NXM
2890                                    ;-------------------------------------------------------------
2891
2892                                    ;                       TABLE - CSR ERROR #'S
2893                                    ;-------------------------------------------------------------
2894 014776  000033                     CSERTB: .WORD   CSRERR          ;BIT #04 - UNIT SEL     - R/W
2895 015000  000033                             .WORD   CSRERR          ;BIT #05 - "DONE"       - R
2896 015002  000033                             .WORD   CSRERR          ;BIT #06 - INTER ENB    - R/W
2897 015004  000033                             .WORD   CSRERR          ;BIT #07 - "TR"         - R
2898 015006  000033                             .WORD   CSRERR          ;BIT #08 - DENSITY      - R/W
2899 015010  000033                             .WORD   CSRERR          ;BIT #09 - HEAD SEL     - R/W
2900 015012  000033                             .WORD   CSRERR          ;BIT #10 -
2901 015014  000033                             .WORD   CSRERR          ;BIT #11 - RX02         - R
2902 015016  000033                             .WORD   CSRERR          ;BIT #12 -              - W
2903 015020  000033                             .WORD   CSRERR          ;BIT #13 -              - W
2904 015022  000033                             .WORD   CSRERR          ;BIT #14 -              - W
2905 015024  000033                             .WORD   CSRERR          ;BIT #15 - ERR BIT      - R
2906                                    ;-------------------------------------------------------------
```

```
                                .SBTTL -    PRESETUP REGISTER TABLES
                                ;-----------------------------------------------------------------------

                        000000  TN=0
015026                          REGTB   1,04040,0,0,-1          ;RXCS ONLY
015026  004040                          TORT1: .WORD    04040                   ;RXCSR SHOULD BE
015030  000000                                 .WORD    0                       ;RXCSR DONT CARE
015032  000000                                 .WORD    0                       ;RXESR SHOULD BE
015034  177777                                 .WORD    -1                      ;RXESR DONT CARE
015036                          REGTB   2,04040,0,0,0           ;RXCS & RXES/ALL
015036  004040                          TORT2: .WORD    04040                   ;RXCSR SHOULD BE
015040  000000                                 .WORD    0                       ;RXCSR DONT CARE
015042  000000                                 .WORD    0                       ;RXESR SHOULD BE
015044  000000                                 .WORD    0                       ;RXESR DONT CARE
015046                          REGTB   3,04040,0,4,177773      ;RXCS & RXES INITIALIZE CK
015046  004040                          TORT3: .WORD    04040                   ;RXCSR SHOULD BE
015050  000000                                 .WORD    0                       ;RXCSR DONT CARE
015052  000004                                 .WORD    4                       ;RXESR SHOULD BE
015054  177773                                 .WORD    177773                  ;RXESR DONT CARE
015056                          REGTB   4,04040,0,204,1440      ;RXCS & RXES INITIALIZE ALL CK
015056  004040                          TORT4: .WORD    04040                   ;RXCSR SHOULD BE
015060  000000                                 .WORD    0                       ;RXCSR DONT CARE
015062  000204                                 .WORD    204                     ;RXESR SHOULD BE
015064  001440                                 .WORD    1440                    ;RXESR DONT CARE
015066                          REGTB   5,04040,0,200,60        ;RXCS & RXES READ STATUS CK
015066  004040                          TORT5: .WORD    04040                   ;RXCSR SHOULD BE
015070  000000                                 .WORD    0                       ;RXCSR DONT CARE
015072  000200                                 .WORD    200                     ;RXESR SHOULD BE
015074  000060                                 .WORD    60                      ;RXESR DONT CARE
015076                          REGTB   6,04040,0,0,1440        ;RXCS & RXES NO DISK OPERATION
015076  004040                          TORT6: .WORD    04040                   ;RXCSR SHOULD BE
015100  000000                                 .WORD    0                       ;RXCSR DONT CARE
015102  000000                                 .WORD    0                       ;RXESR SHOULD BE
015104  001440                                 .WORD    1440                    ;RXESR DONT CARE
                                ;-----------------------------------------------------------------------
                        015026  CSONLY  =        TORT1           ;RXCS ONLY
                        015036  CSESAL  =        TORT2           ;RXCS & RXES ALL
                        015046  CEINIT  =        TORT3           ;RXCS & RXES INITIALIZE CK
                        015056  CSESIT  =        TORT4           ;RXCS &RXES INITIALIZE ALL
                        015066  CSESRS  =        TORT5           ;RXCS & RXES READ STATUS CK
                        015076  CSESND  =        TORT6           ;RXCS & RXES NO DISK OPERATION
                                ;-----------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SET.GEN - GET ERROR CODE-ERR #
                                ;-------------------------------------------------------------------
                                ;
015106  005002                  GTECEN: CLR     R2              ;CLEAR TEMP REG #2
015110  105737  002442          IAGEN:  TSTB    XERUUT          ;IF X ERR CODE UUT
015114  001422                          BEQ     XGTECN          ;NOT=0, THEN
015116  122737  000260  002442  IBGEN:  CMPB    #260,XERUUT     ;IF ERR CODE UUT
015124  101003                          BHI     LBGEN           ;EXCEEDS 260, THEN
015126  012702  000017                  MOV     #ILLERC,R2      ;SET ERR CODE #
015132  000407                          BR      EBGEN           ;BR TO END 'B'
015134  052737  100000  002476  LBGEN:  BIS     #ERPFLG,FLAGST  ;SET FLAGS-ERR FLAG
015142  004737  017106                  CALL    GTECOF          ;CALL GET ERROR CODE OFFSET
015146  016102  015164                  MOV     ECERNT(R1),R2   ;GET ERROR CODE ERR # FROM TABLE
015152  010237  002462          EBGEN:  MOV     R2,RECERN       ;READ ERR CODE ERR #
015156  010237  020164                  MOV     R2,ECERNB       ;PASS ERR CODE ERR # TO "ERRCHK" MOD
015162  000207                  XGTECN: RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
                                ;
                                ;       ERROR CODE ERROR # TABLE
                                ;-------------------------------------------------------------------
                                ;
015164  000000                  ECERNT: .WORD                   ; 00->NO ERROR                  -
015166  000006                          .WORD   SEKERR          ; 10->NO HOME DRV0              -SEEK
015170  000006                          .WORD   SEKERR          ; 20->NO HOME DRV1              -SEEK
015172  000017                          .WORD   ILLERC          ; 30-> --                       -
015174  004041                          .WORD   TRKAER!NEGTST   ; 40->ACC TK > 76               -TRACK ERR
015176  000006                          .WORD   SEKERR          ; 50->HOME BEFORE TRK           -SEEK
015200  000017                          .WORD   ILLERC          ; 60-> --                       -
015202  004003                          .WORD   RDERR!NEGTST    ; 70->NO SEC-52 TRIES           -READ
015204  000017                          .WORD   ILLERC          ;100-> --                       -
015206  000003                          .WORD   RDERR           ;110->NO STEP CLOCK             -READ
015210  000003                          .WORD   RDERR           ;120->NO PREAMBLE               -READ
015212  000003                          .WORD   RDERR           ;130->PREAMBLE-NO I.D.          -READ
015214  000017                          .WORD   ILLERC          ;140-> --                       -
015216  000006                          .WORD   SEKERR          ;150->GD TRK NOT=TRK            -SEEK
015220  000003                          .WORD   RDERR           ;160->TOO MY TRIES IDAM         -READ
015222  000003                          .WORD   RDERR           ;170->DATA AM NOT FND           -READ
015224  000004                          .WORD   CRCERR          ;200->CRC                       -CRC
015226  000017                          .WORD   ILLERC          ;210-> --                       -
015230  000056                          .WORD   HDSFDG          ;220->SELF DIAG                 -SELF DIAG
015232  004051                          .WORD   WCOVFE!NEGTST   ;230->WRD COUNT OVF             -WRD CTOV
015234  004030                          .WORD   DENERR!NEGTST   ;240->DENSITY ERR               -DEN ERR
015236  004036                          .WORD   SDKYWD!NEGTST   ;250->WRG KEYWD-S.D.            -WRG KEY
                                ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.PRT.STA - PRINT UNIT STATUS
                                        ;-------------------------------------------------------------------
                                        
015240  012701  015446          PRTSTA: MOV     #IDENT1,R1      ;SETUP FORMAT MSG
015244  013702  002512                  MOV     UNTPRT,R2       ;SETUP UNIT PRT
015250  013703  002432                  MOV     RXCSR,R3        ;SETUP RXCSR
015254  013704  002434                  MOV     RXESR,R4        ;SETUP RXESR
015260  013705  002400                  MOV     CMD,R5          ;SETUP COMMAND
015264  004737  002664                  CALL    PRTB4S          ;CALL PRINT BASIC 4-PARM.
015270  005737  002400          IBSTA:  TST     CMD             ;IF CMD
015274  001417                          BEQ     IASTA           ;NOT = 0, THEN
015276  032737  040000  002400  ICSTA:  BIT     #BIT14,CMD      ;IF PROG INIT
015304  001403                          BEQ     LCSTA           ;THEN
015306  012701  007452                  MOV     #CMDM8,R1       ;SETUP PROG INIT MSG
015312  000406                          BR      ECSTA           ;BR TO END 'C'
015314  013705  002400          LCSTA:  MOV     CMD,R5          ;GET COMMAND
015320  042705  177761                  BIC     #177761,R5      ;CLR ALL BUT CMD
015324  016501  007164                  MOV     CMDMSG(R5),R1   ;GET CMD MSG
015330  004737  002550          ECSTA:  CALL    PRTBOS          ;CALL PRINT BASIC 0 - PAR
015334  032737  000200  002476  IASTA:  BIT     #RECFLG,FLAGST  ;IF ERR CODE FLAG
015342  001435                          BEQ     XPTSTA          ;SET, THEN
015344  004737  015744                  CALL    PRTECD          ;CALL PRINT ERROR CODE
015350  004737  017124                  CALL    CLRRGS          ;CALL CLEAR REGISTER
015354  012701  015531                  MOV     #XER2,R1        ;SETUP FORMAT MSG
015360  113702  002443                  MOVB    WC,R2           ;SETUP WORD COUNT
015364  113703  002444                  MOVB    CTK0,R3         ;SETUP CTK0
015370  113704  002445                  MOVB    CTK1,R4         ;SETUP CTK1
015374  004737  003002                  CALL    PRTX3S          ;CALL PRINT-EXT 3 PARAMETERS
015400  012701  015627                  MOV     #XER3,R1        ;SETUP FORMAT MSG
015404  113702  002446                  MOVB    TTRK,R2         ;SETUP TTRK
015410  113703  002447                  MOVB    TSEC,R3         ;SETUP TSEC
015414  113704  002450                  MOVB    SFTSTS,R4       ;SETUP SFTSTS
015420  113705  002451                  MOVB    BTRK,R5         ;SETUP BTRK
015424  004737  003030                  CALL    PRTX4S          ;CALL PRINT-EXT 4 PAR
015430  042737  000200  002476          BIC     #RECFLG,FLAGST  ;CLEAR ERROR CODE FLAG
015436  005037  015444          XPTSTA: CLR     ERRREG          ;CLEAR ERROR REGISTER
015442  000207                          RTS     PC              ;RETURN
                                        ;-------------------------------------------------------------------
015444  000000                  ERRREG: 0                       ;
                                        ;-------------------------------------------------------------------
                                        ;
015446      045     116     045 IDENT1: .ASCIZ  /%N%A  UNIT#%O1%A RXCSR=%O%A RXESR=%O%A CMD=%O%A ->/
015531      045     116     045 XER2:   .ASCIZ  /%N%A  WORD CNT=%O3%N%A  CUR TRK DV0=%D2%A. CUR TRK DV1-%D2%A./
015627      045     116     045 XER3:   .ASCIZ  /%N%A  TARGET TRK =%D2%A. TARGET SEC =%D2%A. SOFT STAT-%O3%A BAD TRK=%D2%A.%
                                        .EVEN
                                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.PRT.EC  - PRINT UNIT ERROR CODE
                                        ;-------------------------------------------------------------------
                                        
015744  012701  016014          PRTECD: MOV     #XER1,R1        ;SETUP FORMAT MSG
015750  113702  002442                  MOVB    XERUUT,R2       ;GET ERROR CODE
015754  042702  177400                  BIC     #177400,R2      ;CEAR TOP R2
015760  004737  002734                  CALL    PRTX1S          ;CALL PRINT EXTENDED-1 ARG
015764  105737  002442                  TSTB    XERUUT          ;IF ERROR
015770  001410                          BEQ     ENDXER          ;NOT=0, THEN
015772  004737  017106                  CALL    GTECOF          ;CALL GET ERROR CODE OFFSET
015776  016101  016042                  MOV     ECTAB-2(R1),R1  ;SET ADR OF ERROR MSG FOR PRINT
016002  004737  002714                  CALL    PRTXOS          ;CALL PRINT EXTENDED-NO ARG
016006  105037  002442                  CLRB    XERUUT          ;CLEAR ERROR CODE
016012  000207                  ENDXER: RTS     PC              ;RETURN
                                        ;-------------------------------------------------------------------
016014      045     116     045 XER1:   .ASCIZ  /%N%A  ERR CODE=%03%A ->/
                                        .EVEN
                                        ;-------------------------------------------------------------------
                                        
016044  016136          ECTAB:  .WORD   EC1
016046  016175                  .WORD   EC2
016050  016116                  .WORD   EC0
016052  016234                  .WORD   EC4
016054  016274                  .WORD   EC5
016056  016116                  .WORD   EC0
016060  016337                  .WORD   EC7
016062  016116                  .WORD   EC0
016064  016407                  .WORD   EC11
016066  016451                  .WORD   EC12
016070  016477                  .WORD   EC13
016072  016116                  .WORD   EC0
016074  016567                  .WORD   EC15
016076  016640                  .WORD   EC16
016100  016670                  .WORD   EC17
016102  016716                  .WORD   EC20
016104  016116                  .WORD   EC0
016106  016753                  .WORD   EC22
016110  017013                  .WORD   EC23
016112  017033                  .WORD   EC24
016114  017052                  .WORD   EC25
                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -    UNIT ERROR CODE MESSAGES
                                        ;-------------------------------------------------------------------
                                        ;
016116      045     101     040     EC0:    .ASCIZ  /%A ILL ERR CODE/
016136      045     101     116     EC1:    .ASCIZ  /%ANO HOME ON INITIALIZE DRV 0./
016175      045     101     116     EC2:    .ASCIZ  /%ANO HOME ON INITIALIZE DRV 1./
                                    ;EC3:   .ASCIZ  /%AILL ERR CDE./
016234      045     101     124     EC4:    .ASCIZ  /%ATRIED TO ACCESS A TRACK > 76./
016274      045     101     110     EC5:    .ASCIZ  /%AHOME FOUND BEFORE DESIRED TRACK./
                                    ;EC6:   .ASCIZ  /%AILL ERR CDE./
016337      045     101     065     EC7:    .ASCIZ  /%A52 HEADERS PASSED & SECTOR NOT FOUND./
                                    ;EC10:  .ASCIZ  /%AILL ERR CDE./
016407      045     101     116     EC11:   .ASCIZ  /%ANO STEPCLK SEEN IN 40 MICROSEC./
016451      045     101     120     EC12:   .ASCIZ  /%APREAMBLE NOT FOUND./
016477      045     101     120     EC13:   .ASCIZ  /%APREAMBLE FOUND BUT NO ID MARK IN TIME./
016550      045     101     111     EC14:   .ASCIZ  /%AILL ERR CDE./
016567      045     101     107     EC15:   .ASCIZ  /%AGOOD HEADER TRACK ADR NOT=SELECTED TRK/
016640      045     101     111     EC16:   .ASCIZ  /%AIDAM->TOO MANY TRIES./
016670      045     101     116     EC17:   .ASCIZ  /%ANO DATA AM IN TIME./
016716      045     101     103     EC20:   .ASCIZ  /%ACRC ERR ON READING SECTOR./
                                    ;EC21:  .ASCIZ  /%AILL ERR CDE./
016753      045     101     122     EC22:   .ASCIZ  /%AR-W ELECT. FAILED MAINT. TST./
017013      045     101     127     EC23:   .ASCIZ  /%AWORD CNT OVF./
017033      045     101     104     EC24:   .ASCIZ  /%ADENSITY ERR./
017052      045     101     123     EC25:   .ASCIZ  /%ASET DENSITY WRG KEY WORD./
                                    ;-------------------------------------------------------------------
                                            .EVEN
                                    .SBTTL -  MOD U.SFT.GEO - GET ERROR CODE OFFSET
                                    ;-------------------------------------------------------------------
                                    ;
017106  013701  002442          GTECOF: MOV     XERUUT,R1       ;SAVE EXTENDED ERROR CODE IN TEMP #1
017112  006201                          ASR     R1              ;FORMAT E.C.
017114  006201                          ASR     R1              ;FORMAT E.C. FOR ADR
017116  042701  177700                  BIC     #177700,R1      ;CLR TOP BYTE
017122  000207                          RETURN                  ;RETURN
                                    ;-------------------------------------------------------------------
                                    ;
                                    .SBTTL -  MOD U.SFT.CRS - CLEAR REGISTERS
                                    ;-------------------------------------------------------------------
                                    ;
017124  005001                  CLRRGS: CLR     R1
017126  005002                          CLR     R2
017130  005003                          CLR     R3
017132  005004                          CLR     R4
017134  005005                          CLR     R5
017136  000207                          RETURN                  ;RETURN
                                    ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.DSC - DEVICE STATE CHECK
                                ;-----------------------------------------------------------------
                                ; BGNSUB
                                ;       IF RXCS ERROR BIT SET
                                ;       : THEN
                                ;       :   IF RXCS DONE BIT SET
                                ;       :   : THEN
                                ;       :   :   IF RXES ACLOW BIT SET
                                ;       :   :   : THEN-SETUP ERROR
                                ;       :   :   :       SETUP MSG->''NO PWR, CABLED BACK, RX01 STRAP, PDP-8''
                                ;       :   :   :       CALL ERROR
                                ;       :   :   :       SETUP DROP UNIT
                                ;       :   :   :       DO DROP UNIT
                                ;       :   :   ENDIF
                                ;       :   ENDIF
                                ;       ENDIF
                                ; ENDSUB
                                ;-----------------------------------------------------------------

017140  013701  002350          DVSTCK: MOV     RXCS,R1         ;SET R1=RXCS ADDRESS
017144  032711  100000          IADSC:  BIT     #ERRBIT,(R1)    ;IF RXCS REG=ERR BIT
017150  001423                          BEQ     EADSC           ;SET, THEN
017152  032721  000040          IBDSC:  BIT     #DNBIT,(R1)+    ;IF RXCS REG=DONE BIT
017156  001420                          BEQ     EADSC           ;SET, THEN
017160  032711  000010          ICDSC:  BIT     #ACLOW,(R1)     ;IF RXES REG=AC LOW BIT
017164  001415                          BEQ     EADSC           ;SET, THEN
017166  012737  000050  002520          MOV     #ACLOWF,ERRNBR  ;SET ERR NBR=AC LOW FATAL ERROR
017174  004737  003060                  CALL    ERROR           ;CALL ERROR
017200  012701  017222                  MOV     #STATER,R1      ;SET MSG->''NO PWR, CABLE BACK...ETC.''
017204  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
017210                                  DODU    UNIT            ;DROP UNIT
017216                                  DOCLN                   ;DO CLEAN
017220  000207                  EADSC:  RETURN                  ;RETURN
                                ;-----------------------------------------------------------------
017222     045     116     045  STATER: .ASCIZ  /%N%A ->NO PWR, CABLED BACKWARDS, STRAPPED RX01, PDP-8/
                                        .EVEN
                                ;-----------------------------------------------------------------
```

```
3151
3152                                    .SBTTL -  MOD U.SFT.DRC - DEVICE READY CHECK
3153                                    ;-------------------------------------------------------------------
3154                                    ; BGNSUB
3155                                    ;       CALL CLEAR DEVICE
3156                                    ;       IF RXES DRV RDY NOT SET                                 [A]
3157                                    ;       :  THEN-SET SYS ERR-DRV RDY ERR
3158                                    ;       :       SETUP ERR # DRV RDY ERR
3159                                    ;       :       CALL ERR
3160                                    ;       ENDIF
3161                                    ; ENDSUB
3162                                    ;-------------------------------------------------------------------
3163
3164 017310  000240                    DVRYCK: NOP                     ;
3165 017312  004737  010472                    CALL    CLRDEV          ;CALL CLEAR DEVICE
3166 017316  032777  000200  163026    IADRC:  BIT     #DRVRDY,@RXDB   ;IF RXDB-DRIVE RDY
3167 017324  001010                            BNE     EADRC           ;NOT SET, THEN
3168 017326  052737  000040  002456            BIS     #BIT5,SYSERR    ;SET SYS ERR=DRV RDY ERR
3169 017334  012737  000025  002520            MOV     #DVRDYE,ERRNBR  ;SET ERR NBR=DRV RDY ERROR
3170 017342  004737  003060                    CALL    ERROR           ;CALL ERROR
3171 017346  000207                    EADRC:  RETURN                  ;BR TO EXIT
3172                                    ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.DDC - DEVICE DENSITY CK
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       CALL DEVICE READY CK
                                ;       IF SYS ERR=DEVICE READY ERR NOT SET
                                ;       :       THEN-SET TRACK=0, SECTOR=10
                                ;       :       CALL READ SECTOR
                                ;       :       IF FINI NOT SET                                 [A]
                                ;       :       :  THEN
                                ;       :       :    IF RXES DRIVE DENSITY=DOUBLE DEN           [B]
                                ;       :       :    :  THEN-SET DENSITY STATUS=DOUBLE DENSITY
                                ;       :       :    :  ELSE-SET DENSITY STATUS=SINGLE DENSITY
                                ;       :       :    ENDIF
                                ;       :       :    SET TRACK=76, SECTOR=10
                                ;       :       :    CALL READ SECTOR
                                ;       :       :    IF RXES DRIVE DENSITY NOT=DENSITY STATUS   [C]
                                ;       :       :    :  THEN-
                                ;       :       :    :    SETUP ERROR # & ERROR MSG=>''DISKETTE-MIXED DENSITY''
                                ;       :       :    :    CALL ERROR
                                ;       :       :    :    DO DROP UNIT
                                ;       :       :    ENDIF
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDSUB
                                ;-------------------------------------------------------------------
017350  004737  017310          DENCHK: CALL    DVRYCK          ;CALL DEVICE READY CK
017354  032737  000040  002456  IDDDC:  BIT     #BIT5,SYSERR    ;IF SYS ERR=DEVICE RDY ERR
017362  001054                          BNE     EADDC           ;NOT SET, THEN
017364  005037  002374                  CLR     TRACK           ;SET TRACK=0
017370  012737  000012  002376          MOV     #10.,SECTOR     ;SET SECTOR=10
017376  004737  011062                  CALL    READ            ;CALL READ SECTOR
017402  005737  002454          IADDC:  TST     FIN             ;IF FINI
017406  001042                          BNE     EADDC           ;NOT SET, THEN
017410  032777  000040  162734  IBDDC:  BIT     #DRVDEN,@RXDB   ;IF DRIVE DEN-DOUBLE DEN BIT
017416  001404                          BEQ     LBDDC           ;SET, THEN
017420  012737  000400  002414          MOV     #DENBIT,DENSTA  ;SET DENSITY STATUS=DOUBLE DEN
017426  000402                          BR      EBDDC           ;BR TO END 'B'
017430  005037  002414          LBDDC:  CLR     DENSTA          ;SET DENSITY STATUS=SINGLE DEN
017434  012737  000114  002374  EBDDC:  MOV     #76.,TRACK      ;SET TRACK=76.
017442  004737  011062                  CALL    READ            ;CALL READ SECTOR
017446  017701  162700                  MOV     @RXDB,R1        ;GET RXES
017452  042701  177737                  BIC     #^CDRVDEN,R1    ;CLEAR ALL BUT DRIVE DENSITY
017456  006301                          ASL     R1              ;    ADV DRIVE DENSITY
017460  006301                          ASL     R1              ;      SO EQUAL TO
017462  006301                          ASL     R1              ;        DENSITY STATUS
017464  020137  002414          ICDDC:  CMP     R1,DENSTA       ;IF RXES DRIVE DENSITY & DENSITY STATUS
017470  001411                          BEQ     EADDC           ;NOT=, THEN
017472  012737  000020  002520          MOV     #DENDSK,ERRNBR  ;SET ERR NBR=DISK DENSITY ERROR
017500  004737  003060                  CALL    ERROR           ;CALL ERROR-MOD
017504                                  DODU    UNIT            ;DROP UNIT
017512                                  DOCLN                   ;DO CLEAN
017514  000207                  EADDC:  RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
```

```
                        .SBTTL -  MOD U.SFT.TKE - TRACK ERROR CHECK
                        ;-------------------------------------------------------------------
                        ; BGNSUB
                        ;       IF LAST COMMAND=READ OR WRITE SECTOR                    [A]
                        ;       :  THEN-IF FLAG=READ ERROR CODE BIT SET                 [B]
                        ;       :       :  THEN-IF DRIVE #0 SELECTED                    [C]
                        ;       :       :       :  THEN-IF CURRENT TRK DRV #0 NOT=TRACK [D]
                        ;       :       :       :       :  THEN-
                        ;       :       :       :       :     IF FLAGS=NEG TST NOT SET  [E]
                        ;       :       :       :       :     :  THEN-SETUP ERROR #
                        ;       :       :       :       :     :       SET PRINT TRACKS-PRINT FLAGS
                        ;       :       :       :       :     :       CALL ERROR REPORT
                        ;       :       :       :       :     ENDIF
                        ;       :       :       :       ENDIF
                        ;       :       :       :  ELSE-IF CURRENT TRK DRV #1 NOT=TRACK [F]
                        ;       :       :       :       :  THEN-
                        ;       :       :       :       :     IF FLAGS=NEG TST NOT SET  [G]
                        ;       :       :       :       :     :  THEN-SETUP ERROR
                        ;       :       :       :       :     :       SET PRINT TRACKS-PRINT FLAGS
                        ;       :       :       :       :     :       CALL ERROR REPORT
                        ;       :       :       :       :     ENDIF
                        ;       :       :       :       ENDIF
                        ;       :       :       ENDIF
                        ;       :       :  ELSE-IF ERROR ON COMMAND                     [H]
                        ;       :       :       :  THEN-
                        ;       :       :       :     IF FLAGS=NEG TEST NOT SET         [I]
                        ;       :       :       :     :  THEN-SETUP ERR #
                        ;       :       :       :     :       SET PRINT TRACKS-PRINT FLAGS
                        ;       :       :       :     :       CALL ERR REPORT
                        ;       :       :       :     ENDIF
                        ;       :       :       ENDIF
                        ;       :       ENDIF
                        ;       ENDIF
                        ;       NOP
                        ; ENDSUB
                        ;-------------------------------------------------------------------
```

```
3268 017516  000240                    TKERCK: NOP                     ;
3269 017520  022737  000017  002424    IATKE:  CMP     #17,LCMD        ;IF LAST COMMAND
3270 017526  001471                            BEQ     EATKE           ;  WAS
3271 017530  032737  000004  002400            BIT     #4,CMD          ;    READ OR WRITE
3272 017536  001465                            BEQ     EATKE           ;THEN
3273 017540  032737  000200  002476    IBTKE:  BIT     #RECFLG,FLAGST  ;IF FLAGS=READ ERROR CODE BIT
3274 017546  001442                            BEQ     IHTKE           ;SET, THEN
3275 017550  005737  002406            ICTKE:  TST     DRIVE           ;IF DRIVE# 0
3276 017554  001016                            BNE     IFTKE           ;SELECTED, THEN
3277 017556  123737  002444  002374    IDTKE:  CMPB    CTK0,TRACK      ;IF CURRENT TRACK DRIVE 0 & TRACK
3278 017564  001452                            BEQ     EATKE           ;NOT=, THEN
3279 017566  032737  004000  002476    IETKE:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NEG TEST BIT
3280 017574  001046                            BNE     EATKE           ;NOT SET, THEN
3281 017576  012737  000041  002520            MOV     #TRKAER,ERRNBR  ;SET ERR NBR=TRACK ADDRESS ERROR
3282 017604  004737  003060                    CALL    ERROR           ;CALL ERROR
3283 017610  000440                            BR      EATKE           ;BR TO END 'A'
3284 017612  123737  002445  002374    IFTKE:  CMPB    CTK1,TRACK      ;IF CURRENT TRACK DRIVE 1 & TRACK
3285 017620  001434                            BEQ     EATKE           ;NOT=, THEN
3286 017622  032737  004000  002476    IGTKE:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NE TEST BIT
3287 017630  001030                            BNE     EATKE           ;NOT SET, THEN
3288 017632  012737  000041  002520            MOV     #TRKAER,ERRNBR  ;SET ERR NBR=TRACK ADDRESS ERROR
3289 017640  052737  000001  002500            BIS     #TKPRT,FLAGSP   ;SET PRINT TRACKS FLAG-PROGRAM FLAGS
3290 017646  004737  003060                    CALL    ERROR           ;CALL ERROR
3291 017652  000417                            BR      EATKE           ;BR TO END 'A'
3292 017654  005737  002432            IHTKE:  TST     RXCSR           ;IF ERROR ON COMMAND (READ OR WRITE)
3293 017660  100014                            BPL     EATKE           ;SET, THEN
3294 017662  032737  004000  002476    IITKE:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NEG TEST BIT
3295 017670  001010                            BNE     EATKE           ;SET, THEN
3296 017672  012737  000041  002520            MOV     #TRKAER,ERRNBR  ;SET ERR NBR=TRACK ADDRESS ERROR
3297 017700  052737  000001  002500            BIS     #TKPRT,FLAGSP   ;SET PRINT TRACKS FLAG
3298 017706  004737  003060                    CALL    ERROR           ;CALL ERROR
3299 017712  000240                    EATKE:  NOP                     ;
3300 017714  042737  000001  002500            BIC     #TKPRT,FLAGSP   ;CFAR PRINT TRACKS FLAG
3301 017722  000207                    XTKECK: RETURN                  ;RETURN
3302                                    ;-----------------------------------------------------------------------
```

```
3305                    .SBTTL -  MOD U.SFT.ECK - ERROR CHECK
3306                    ;-------------------------------------------------------------------
3307                    ; BGNSUB
3308                    ;       IF REG CHECK SET                                        [A]
3309                    ;       : THEN-CALL REGISTER CHECK
3310                    ;       ENDIF
3311                    ;       IF READ ERROR CODE SET                                  [B]
3312                    ;       : THEN-IF FLAGSP=READ ERROR CODE TEST NOT SET           [N]
3313                    ;       :       : THEN-CALL READ ERROR CODE CHECK
3314                    ;       :       :       CALL ERROR NEG TEST CK
3315                    ;       :       ENDIF
3316                    ;       ENDIF
3317                    ;       IF ERROR FLAG SET                                       [C]
3318                    ;       : THEN
3319                    ;       :   IF ERR NUMBER NOT SET=SYSFTL ERROR                  [D]
3320                    ;       :   : THEN-CLEAR REG ERR #
3321                    ;       :   : DOWHILE REG ERR # TABLE ENTRY NOT=-1              [E]
3322                    ;       :   : : SET TEMP R2=REG ERR # TABLE ENTRY
3323                    ;       :   : : IF TEMP REG #2 > REG ERR #                      [I]
3324                    ;       :   : : : THEN-SET REG ERR #=TEMP REG
3325                    ;       :   : : ENDIF
3326                    ;       :   : ENDDO
3327                    ;       :   : IF REG ERR # > ERR CODE ERR #                     [M]
3328                    ;       :   : : THEN-SET ERR NUMBER=REG ERR #
3329                    ;       :   : : ELSE-SET ERR NUMBER=ERR CODE ERR #
3330                    ;       :   : ENDIF
3331                    ;       :   ENDIF
3332                    ;       :   CLEAR REG ERR #
3333                    ;       :   CLEAR ERR CODE ERR #
3334                    ;       :   CALL ERROR
3335                    ;       ENDIF
3336                    ; ENDSUB
3337                    ;-------------------------------------------------------------------
```

```
3340 017724  000240                    ERRCHK: NOP                     ;
3341 017726  032737  000001  002476    IAECK:  BIT     #REGCK,FLAGST   ;IF FLAGS=REG CK BIT
3342 017734  001402                            BEQ     IBECK           ;SET, THEN
3343 017736  004737  013664                    CALL    REGSCK          ;CALL REGISTER CHECK
3344 017742  032737  000200  002476    IBECK:  BIT     #RECFLG,FLAGST  ;IF FLAGS=READ ERROR CODE BIT
3345 017750  001420                            BEQ     ICECK           ;SET, THEN
3346 017752  032737  000200  002500    INECK:  BIT     #RECTST,FLAGSP  ;IF FLAGSP=READ ERROR CODE TEST
3347 017760  001014                            BNE     ICECK           ;NOT SET, THEN
3348 017762  032737  100000  002432    IOECK:  BIT     #ERRBIT,RXCSR   ;IF RXCSR ERR BIT
3349 017770  001410                            BEQ     ICECK           ;SET, THEN
3350 017772  004737  015106                    CALL    GTECEN          ;CALL GET READ ERROR CODE ERR #
3351 017776  013702  020164                    MOV     ECERNB,R2       ;PASS ERROR CODE ERR # TO "NEG TEST CK" MOD
3352 020002  004737  020170                    CALL    ERNTCK          ;CALL ERROR NEG TEST CHECK
3353 020006  010237  020164                    MOV     R2,ECERNB       ;SAVE REC ERR
3354 020012  032737  100000  002476    ICECK:  BIT     #ERRFLG,FLAGST  ;IF FLAGS=ERROR FLAG
3355 020020  001460                            BEQ     XERRCK          ;SET, THEN
3356 020022  022737  000047  002520    IDECK:  CMP     #39.,ERRNBR     ;IF ERR NUMBER NOT=SYS FTL ERR
3357 020030  103434                            BLO     EDECK           ;THEN
3358 020032  005037  020166                    CLR     RGERNB          ;CLEAR REGISTER ERROR #
3359 020036  005001                            CLR     R1              ;CLEAR REGISTER ERROR TABLE PTR
3360 020040  005761  014706            WEECK:  TST     RGERTB(R1)      ;DOWHILE REG ERR TABLE ENTRY
3361 020044  100413                            BMI     IMECK           ;NOT=-1, THEN
3362 020046  016102  014706                    MOV     RGERTB(R1),R2   ;PASS REG ERR # TABLE ENTRY TO "NEG TEST CK" MOD VIA "R2"
3363 020052  004737  020170                    CALL    ERNTCK          ;CALL ERROR NEG TEST CHECK
3364 020056  020237  020166            IIECK:  CMP     R2,RGERNB       ;IF TEMP R2 > REG ERR NBR
3365 020062  103402                            BLO     EIECK           ;THEN
3366 020064  010237  020166                    MOV     R2,RGERNB       ;SET REG ERR NUMBER=R2
3367 020070  005721                    EIECK:  TST     (R1)+           ;INCREMENT INDEX
3368 020072  000762                    EEECK:  BR      WEECK           ;BR TO DOWHILE 'E'
3369 020074  023737  020166  020164    IMECK:  CMP     RGERNB,ECERNB   ;IF REG ERR# > ERR CODE ERR#
3370 020102  103404                            BLO     LMECK           ;THEN
3371 020104  013737  020166  002520            MOV     RGERNB,ERRNBR   ;SET ERR NUMBER=REG ERR #
3372 020112  000403                            BR      EDECK           ;BR TO END 'D'
3373 020114  013737  020164  002520    LMECK:  MOV     ECERNB,ERRNBR   ;SET ERR NUMBER=ERR CODE ERR#
3374 020122  000240                    EDECK:  NOP                     ;
3375 020124  032737  020000  002332    IPECK:  BIT     #BIT13,SWREG    ;IF SW REG BIT #13
3376 020132  001402                            BEQ     EPECK           ;SET, THEN
3377 020134  004737  020240                    CALL    TSTDBG          ;**
3378 020140  005037  020166            EPECK:  CLR     RGERNB          ;CLEAR REG ERR #
3379 020144  005037  020164                    CLR     ECERNB          ;CLEAR ERR CODE ERR #
3380 020150  004737  003060                    CALL    ERROR           ;CALL ERROR
3381 020154  042737  000200  002500            BIC     #RECFLG,FLAGSP  ;CLEAR RD ERR CODE FLG
3382 020162  000207                    XERRCK: RETURN                  ;RETURN
3383                                    ;-----------------------------------------------------------------------
3384 020164  000000                    ECERNB: 0                       ;ERR CODE ERR #
3385 020166  000000                    RGERNB: 0                       ;REG ERR #
3386                                    ;-----------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.ENC - ERROR NEG TEST CHECK
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       IF TEMP REG #2=NEG TEST FLAG SET                        [A]
                                ;       :  THEN-CLEAR NEG TEST FLAG FROM ERR #
                                ;       :       IF FLAGS=NEG TEST FLAG SET                      [B]
                                ;       :       :  THEN-IF NEG TEST ERR #=SET NEG TEST ERR      [C]
                                ;       :       :       :  THEN-CLEAR THE ERROR
                                ;       :       :       :  ELSE-IF REG #2=DISK ERROR            [D]
                                ;       :       :       :       :  THEN-CLEAR-NOT ERROR
                                ;       :       :       :      ENDIF
                                ;       :       :      ENDIF
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDSUB
                                ;-------------------------------------------------------------------

020170  000240          ERNTCK: NOP                     ;
020172  032702  004000  IAENC:  BIT     #NEGTST,R2      ;IF TEMP REG=NEG TEST FLAG
020176  001417                  BEQ     XENTCK          ;SET, THEN
020200  042702  004000          BIC     #NEGTST,R2      ;CLEAR NEG TEST FLAG
020204  032737  004000  002476 IBENC:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NEG TEST BIT
020212  001411                  BEQ     XENTCK          ;SET, THEN
020214  023702  002464  ICENC:  CMP     NGTSER,R2       ;IF NEG TEST ERR # & SET NEG TEST ERR
020220  001002                  BNE     IDENC           ;ARE EQUAL, THEN
020222  005002                  CLR     R2              ;OK, CLEAR THE ERROR !!
020224  000404                  BR      XENTCK          ;BR TO IF 'I'
020226  022702  000020  IDENC:  CMP     #DENDSK,R2      ;IF DISK DEN
020232  001001                  BNE     XENTCK          ;ERROR, THEN
020234  005002                  CLR     R2              ;CLEAR-NOT ERROR<-----
020236  000207          XENTCK: RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.DBG - TEST STATUS
                                ;-------------------------------------------------------------------
                                ;
020240  013702  002476          TSTDBG: MOV     FLAGST,R2
020244  013703  002500                  MOV     FLAGSP,R3
020250  013704  002522                  MOV     ERRMSG,R4
020254  012701  020306                  MOV     #TSDGMS,R1
020260  004737  002636                  CALL    PRTB3S
020264  012701  020364                  MOV     #TSDGM1,R1
020270  013702  020166                  MOV     RGERNB,R2
020274  013703  020164                  MOV     ECERNB,R3
020300  004737  002612                  CALL    PRTB2S
020304  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
                                ;
020306      045     116     045 TSDGMS: .ASCIZ  /%N%A->FLAGST=%O%A FLAGSP=%O%A ERRMSG ADR=%O%N/
020364      045     101     040 TSDGM1: .ASCIZ  /%A REG ERR #%O%A ERR CODE ERR #%O%N/
                                        .EVEN
                                ;-------------------------------------------------------------------
                                ;
                                .SBTTL -  MOD U.SFT.CDC - COMPLIMENT DENSITY CONTROL
                                ;-------------------------------------------------------------------
                                ;
020430  000240                  CDENC:  NOP                     ;
020432  005737  002412          IACDC:  TST     DENSTY          ;IF CONTROL DENSITY
020436  001406                          BEQ     LACDC           ;EQUALS DOUBLE, THEN
020440  042737  000002  002476          BIC     #DDCFLG,FLAGST  ;CLEAR DOUBLE DENSITY CONTROL FLAG
020446  005037  002412                  CLR     DENSTY          ;SET CONTROL DENSITY=SINGLE
020452  000406                          BR      XCDENC          ;BR TO 'X'
020454  012737  000400  002412  LACDC:  MOV     #DENBIT,DENSTY  ;SET CONTROL DENSTY=DOUBLE
020462  052737  000002  002476          BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
020470  000207                  XCDENC: RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
                                ;
                                .SBTTL -  MOD U.SFT.SDC - SETUP DENSITY CONTROL
                                ;-------------------------------------------------------------------
                                ;
020472  013737  002414  002412  SDENC:  MOV     DENSTA,DENSTY   ;SET DENSTY CONTROL=DENSITY STATUS
020500  005737  002414          IASDC:  TST     DENSTA          ;IF DENSITY STATUS SET TO
020504  001407                          BEQ     LASDC           ;DOUBLE DENSITY, THEN
020506  052737  000002  002476          BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
020514  012737  000200  002370          MOV     #128.,WDCNT     ;SET WORD COUNT=128
020522  000406                          BR      XSDC            ;BR TO EXIT
020524  042737  000002  002476  LASDC:  BIC     #DDCFLG,FLAGST  ;CLEAR DOUBLE DENSITY CONTROL FLAG
020532  012737  000100  002370          MOV     #64.,WDCNT      ;SET WORD COUNT-64
020540  000207                  XSDC:   RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.PRT.UNT - PRINT UNIT IDENT
                                ;-------------------------------------------------------------------
                                ;BGNSUB
                                ;       GET UNIT #
                                ;       GET UNIT MSG
                                ;       CALL PRINT-1 ARG
                                ;ENDSUB
                                ;-------------------------------------------------------------------

020542  013702  002512                  MOV     UNTPRT,R2       ;GET UNIT #
020546  012701  020560                  MOV     #PTUTMS,R1      ;GET UNIT MSG
020552  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 ARG
020556  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
020560      045     116     045 PTUTMS: .ASCIZ  /%N%A UNIT #%D2/
                                        .EVEN
                                ;-------------------------------------------------------------------

                                .SBTTL -  MOD U.PRT.DID - PRINT DRIVE IDENT
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       GET DRIVE #
                                ;       GET SIDE #
                                ;       IF DOUBLE SIDED DEVICE
                                ;       : THEN-SETUP PRINT IDENT DOUBLE SIDED DEVICE
                                ;       :       CALL PRINT BASIC-2 PAR.
                                ;       : ELSE-SETUP PRINT IDENT SINGLE SIDED DEVICE
                                ;       :       CALL PRINT BASIC-1 PAR.
                                ;       ENDIF
                                ; ENDSUB
                                ;-------------------------------------------------------------------

020600  013702  002514          PRTDID: MOV     DRVPRT,R2       ;SETUP R2=DRV #
020604  012701  020657                  MOV     #IDSSMS,R1      ;SETUP PRINT IDENT SINGLE SIDED DEVICE
020610  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
020614  032737  010000  002332  IADID:  BIT     #SIDFLG,SWREG   ;IF DOUBLE SIDED DEVICE
020622  001406                          BEQ     XPTDID          ;FLAG SET, THEN
020624  013702  002515                  MOV     SIDPRT,R2       ;SETUP R3=SID #
020630  012701  020642                  MOV     #IDDSMS,R1      ;SETUP PRINT IDENT DOUBLE SIDED DEVICE
020634  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-2 PAR.
020640  000207                  XPTDID: RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
020642      045     101     040 IDDSMS: .ASCIZ  /%A SIDE #%01/
020657      045     116     045 IDSSMS: .ASCIZ  /%N%A DRIVE #%01/
                                        .EVEN
                                ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.TST.FTS - FUNCTION TEST SETUP
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       SET FUNCTION TEST BIT-FLAGS
                                ;       SETUP TEST IDENT MSG IN "ERRMSG"
                                ;       SET FLAGS REGISTER CHECK
                                ;       NOP
                                ; ENDSUB
                                ;-------------------------------------------------------------------
020700  000240                  FTSTUP: NOP                     ;
020702  004737  021122                  CALL    CLRCR           ;CALL CLEAR CTRS & REGS
020706  012737  000040  002476          MOV     #FUNTST,FLAGST  ;SET FUNCTION TEST BIT-FLAGS
020714  017737  161546  002522          MOV     @TSTID,ERRMSG   ;SETUP TEST IDENT MSG
020722  052737  000001  002476          BIS     #REGCK,FLAGST   ;SET FLAGS-REGISTER CHECK
020730  004737  021014                  CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
020734  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------

                                .SBTTL -  MOD U.TST.LTS - LOGIC TEST SETUP
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       CLEAR FUNCTION TEST BIT-FLAGS
                                ;       SETUP TEST IDENT MSG IN "ERRMSG"
                                ;       GET TEST TABLE ADDRESS
                                ;       INCREMENT TO NEXT ADDRESS
                                ;       SET ANY FLAGS FROM THAT ADDRESS
                                ;       SET FLAGS REGISTER CHECK
                                ;       NOP
                                ; ENDSUB
                                ;-------------------------------------------------------------------
020736  000240                  LTSTUP: NOP                     ;
020740  004737  021122                  CALL    CLRCR           ;CALL CLEAR CTRS & REGS
020744  042737  000040  002476          BIC     #FUNTST,FLAGST  ;CLEAR FUNCTION TEST BIT-FLAGS
020752  017737  161510  002522          MOV     @TSTID,ERRMSG   ;SETUP TEST IDENT MSG
020760  004737  020772                  CALL    SUTSFG          ;CALL SETUP TEST FLAGS
020764  004737  021014                  CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
020770  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------

                                .SBTTL -  MOD U.TST.SFG - SETUP TEST FLAGS
                                ;-------------------------------------------------------------------
020772  000240                  SUTSFG: NOP                     ;
020774  013701  002466                  MOV     TSTID,R1        ;GET TEST TABLE ADDRESS
021000  005721                          TST     (R1)+           ;INC TEST TABLE ADDRESS
021002  012137  002476                  MOV     (R1)+,FLAGST    ;SET TEST FLAGS FROM TABLE
021006  111137  002500                  MOVB    (R1),FLAGSP     ;SET PRINT FLAGS FROM TABLE
021012  000207                          RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.SFT.SDC - SETUP DEVICE COMMANDS
                                        ;-------------------------------------------------------------
                                        ;
021014  012737  036622  002360  SUDVCD: MOV     #DATBUF,EMPADR  ;SETUP EMPTY BUFFER ADDRESS
021022  012737  000111  002372          MOV     #'I,VARIFY      ;SETUP SET DENSITY KEYWORD="I"
021030  012737  036222  002362          MOV     #DATPAT,FILADR  ;SETUP FILL BUFFER ADDRESS
021036  032737  000002  002476  1$:     BIT     #DDCFLG,FLAGST  ;IF DOUBLE DENSITY FLAGS
021044  001407                          BEQ     2$              ;SET, THEN
021046  012737  000400  002412          MOV     #DENBIT,DENSTY  ;SET DEVICE DENSITY=DOUBLE
021054  012737  000200  002370          MOV     #128.,WDCNT     ;SET WORD COUNT=DOUBLE DEN SIZE
021062  000405                          BR      3$              ;BR
021064  005037  002412          2$:     CLR     DENSTY          ;SET DEVICE DENSITY-SINGLE
021070  012737  000100  002370          MOV     #64.,WDCNT      ;SET WORD COUNT=SINGLE DEN SIZE
021076  012737  002442  002364  3$:     MOV     #XERUUT,RECADR  ;SET READ ERROR CODE ADR=NORMAL ADR
021104  012737  000001  002374          MOV     #1,TRACK        ;SETUP TRACK=1
021112  012737  000001  002376          MOV     #1,SECTOR       ;SETUP SECTOR=1
021120  000207                          RETURN                  ;RETURN
                                        ;-------------------------------------------------------------
                                        .SBTTL -  MOD U.TST.CCR - CLEAR TEST CTRS & ERROR REGS
                                        ;-------------------------------------------------------------
                                        ; BGNSUB
                                        ;       CLEAR ANY ERRORS FROM PREVIOUS TESTS
                                        ; ENDSUB
                                        ;-------------------------------------------------------------
021122  005037  002400          CLRCR:  CLR     CMD             ;CLEAR COMMAND WORD
021126  005037  002454                  CLR     FIN             ;CLEAR COMMAND FINI FLAG
021132  005037  002460                  CLR     TYPERR          ;CLEAR TYPE ERROR
021136  005037  002470                  CLR     TCMDCT          ;CLEAR TEST COMMAND CTR
021142  005037  002442                  CLR     XERUUT          ;CLEAR READ ERR CODE WORD
021146  005037  002510                  CLR     TKSCFG          ;CLEAR TRK & SEC FLAGS
021152  005037  002402                  CLR     DELDAT          ;CLEAR DELETED DATA MODE
021156  005037  002504                  CLR     TTEMP1          ;CLEAR TEST TEMP #1
021162  000240                          NOP                     ;
021164  000240                          NOP                     ;
021166  000240                          NOP                     ;
021170  000240                          NOP                     ;
021172  000207                          RETURN                  ;RETURN
                                        ;-------------------------------------------------------------
                                        .SBTTL -  MOD U.TST.T76 - SET TRACK=76
                                        ;-------------------------------------------------------------
021174  012737  000114  002374  STTK76: MOV     #76.,TRACK      ;SET TRACK=76.
021202  012737  000012  002376          MOV     #10.,SECTOR     ;SET SECTOR=10.
021210  000207                          RETURN                  ;RETURN
                                        ;-------------------------------------------------------------
021212                                  ENDMOD
```

```
                                .TITLE MISCELLANEOUS SECTIONS
                                .SBTTL  REPORT CODING SECTION

021212                                  BGNMOD

                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;--

021212                                  BGNRPT

021212                                  ENDRPT

                                        .EVEN
```

```
                                        .SBTTL  INITIALIZE SECTION

                                        ;++
                                        ; THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                                        ; AT THE BEGINNING OF EACH PASS.
                                        ;--

021214                                          BGNINIT

021214  000240                  INIT:   NOP
021216                                  RFLAGS  FLGDRS
021224                                  READEF  #EF.CONTINUE    ;IF CONTINUE
021232                                  BCOMPLETE XINIT         ;NOT SET, THEN
021234                                  READEF  #EF.PWR         ;IF POWER FAIL
021242                                  BCOMPLETE XINIT         ;NOT SET, THEN
021244  042737  140000  002500          BIC     #RESFLG!STAFLG,FLAGSP ;CLEAR RESTART & START FLAGS
021252                          START:  READEF  #EF.START       ;IF START FLAG
021260                                  BNCOMPLETE RESTAR       ;SET, THEN
021262                          START0: READBUS                 ;IF BUS IS "LSI-BUS"
021264                                  BNCOMPLETE UN1          ;THEN
021266  052737  000400  002500          BIS     #LSIFLG,FLAGSP  ;SET LSI FLAG-PROGRAM FLAGS
021274  022737  004177  002120          CMP     #4177,L$HIMEM   ;IF HI MEMORY (417776=HI LIMIT 124K)
021302  101007                          BHI     START1          ;IS 124K OR HIGHER, THEN
021304  052737  010000  002500          BIS     #FONZFG,FLAGSP  ;SET LSI 11/23 FLAG
021312  000403                          BR      START1          ;BR TO "START1"
021314  042737  000400  002500  UN1:    BIC     #LSIFLG,FLAGSP  ;CLEAR LSI FLAG-PROGRAM FLAGS
021322  052737  100000  002500  START1: BIS     #STAFLG,FLAGSP  ;SET START FLAG
021330  000414                          BR      SETUP           ;BR TO "SET UP"
021332                          RESTAR: READEF  #EF.RESTART     ;IF RESTART FLAG
021340                                  BNCOMPLETE NEW          ;SET, THEN
021342  052737  040000  002500          BIS     #RESFLG,FLAGSP  ;SET RESTART FLAG
021350  000404                          BR      SETUP           ;BR TO "SETUP"
021352                          NEW:    READEF  #EF.NEW         ;IF NEW PASS FLAG
021360                                  BNCOMPLETE NEXT         ;THEN
021362  012737  177777  021526  SETUP:  MOV     #-1,UNIT        ;SETUP TO START GETING UNITS OVER
021370  062737  000001  021526  NEXT:   ADD     #1,UNIT         ;BUMP UNIT TO NEXT UNIT
021376  023737  002012  021526          CMP     L$UNIT,UNIT     ;IF "DRS" UNIT CNT & DIAG UNIT
021404  001426                          BEQ     INITER          ;NOT EXCEEDED, THEN
021406                                  GPHARD  UNIT,PLOC       ;GET NEXT UNIT
021420                                  BNCOMPLETE NEXT         ;IF FOUND A UNIT,THEN
021422  004737  021742                  CALL    INITBL          ;CALL INITIALIZE TABLES
021426  004737  021572                  CALL    UNPKHP          ;UNPACK HARDAWRE P-TABLES
021432                                  SETVEC  VECT,#INTRHD,#PR107
021460  000414                          BR      XINIT
021462                          INITER: PRINTF  #INTER1         ;PRINT "TOO MANY UNITS"
021502  012737  000001  002452          MOV     #1,ABORT        ;SET ABORT FLAG
021510                                  DOCLN
021512  000240                  XINIT:  NOP                     ;
021514  013737  021526  002512          MOV     UNIT,UNITPRT    ;SET USER # = LOGICAL UNIT #
021522                                  ENDINIT
                                        ;-------------------------------------------------------------------------
021524  000000                  PLOC:   .WORD   0               ;P-TABLE LOCATION
021526  177777                  UNIT:   .WORD   -1              ;LOGICAL UNIT# UNDER TEST
                                        ;-------------------------------------------------------------------------
021530      045     116     045 INTER1: .ASCIZ  /%N%ASTART OVER -> TOO MANY UNITS/
                                        .EVEN
                                        ;-------------------------------------------------------------------------
```

```
3779                                    .SBTTL -  MOD 1.1 - UNPACK HARDWARE P-TABLES
3780                                    ;-------------------------------------------------------------------
3781
3782 021572  013701  021524        UNPKHP: MOV     PLOC,R1         ;SAVE P-TABLE LOCATION
3783 021576  012137  002350                MOV     (R1)+,RXCS      ;LOAD UNIT BUS ADR-CSR
3784 021602  013737  002350  002352        MOV     RXCS,RXDB       ;LOAD UNIT BUS ADR-DBR
3785 021610  062737  000002  002352        ADD     #2,RXDB         ;SET UNIT BUS ADR-DBR
3786 021616  012137  002354                MOV     (R1)+,VECT      ;LOAD UNIT VECTOR
3787 021622  005721                IA11:   TST     (R1)+           ;IF DRIVE #0
3788 021624  001007                        BNE     LA11            ;THEN
3789 021626  005037  002406                CLR     DRIVE           ;SETUP TO SELECT DRIVE #0
3790 021632  005037  002420                CLR     DRVOFF          ;SETUP DRIVE BYTE OFFSET DRV0
3791 021636  105037  002514                CLRB    DRVPRT          ;SET PRINT DRV #=0
3792 021642  000411                        BR      IB11            ;BR TO IF 'B'
3793 021644  012737  000020  002406  LA11:   MOV     #DRV1,DRIVE     ;SETUP TO SELECT DRIVE #1
3794 021652  012737  000001  002420        MOV     #1,DRVOFF       ;SETUP DRIVE BYTE OFFSET DRV1
3795 021660  112737  000001  002514        MOVB    #1,DRVPRT       ;SET PRINT DRV #=1
3796 021666  005721                IB11:   TST     (R1)+           ;IF SIDE #0 SELECTED
3797 021670  001005                        BNE     LB11            ;THEN
3798 021672  005037  002410                CLR     SIDE            ;SETUP TO SELECT SIDE #0
3799 021676  105037  002515                CLRB    SIDPRT          ;SET PRINT SID #=0
3800 021702  000406                        BR      EB11            ;BR TO END 'B'
3801 021704  012737  001000  002410  LB11:   MOV     #SIDE1,SIDE     ;SETUP TO SELECT SIDE #1
3802 021712  112737  000001  002515        MOVB    #1,SIDPRT       ;SET PRINT SID #=1
3803 021720  011102                EB11:   MOV     (R1),R2         ;GET DEVICE PRIORITY
3804 021722  116237  021732  002356        MOVB    PRITAB(R2),RXPRI  ;SETUP PROPER DEVICE PRIORITY
3805 021730  000207                        RETURN                  ;RETURN
3806                                    ;-------------------------------------------------------------------
3807 021732     000                PRITAB: .BYTE   PR100           ;PRIORITY 0
3808 021733     040                        .BYTE   PR101           ;PRIORITY 1
3809 021734     100                        .BYTE   PR102           ;PRIORITY 2
3810 021735     140                        .BYTE   PR103           ;PRIORITY 3
3811 021736     200                        .BYTE   PR104           ;PRIORITY 4
3812 021737     240                        .BYTE   PR105           ;PRIORITY 5
3813 021740     300                        .BYTE   PR106           ;PRIORITY 6
3814 021741     340                        .BYTE   PR107           ;PRIORITY 7
3815                                    ;-------------------------------------------------------------------
3816
3817                                    .SBTTL -  MOD 1.2 - INITIALIZE TABLES
3818                                    ;-------------------------------------------------------------------
3819
3820 021742  000240                INTTBL: NOP                     ;
3821 021744  012701  002452                MOV     #ABORT,R1       ;GET ADDRES SOF TABLE TO CLEAR
3822 021750  012702  000010                MOV     #10,R2          ;SET TABLE LENGTH
3823 021754  005021                1$:     CLR     (R1)+           ;CLEAR LOCATOIN
3824 021756  005302                        DEC     R2              ;DECREMENT TABLE COUNT
3825 021760  001375                        BNE     1$              ;IF DONE, THEN
3826 021762  000207                        RETURN                  ;RETURN
3827                                    ;-------------------------------------------------------------------
```

```
                                .SBTTL  CLEANUP CODING SECTION

                                ;++
                                ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
                                ; AFTER THE HARDWARE TESTS HAVE BEEN PERFORMED.
                                ;--

021764                                  BGNCLN
021764                                  CLRVEC  VECT    ;CLEAR VECTOR
021772                                  BRESET          ;BUS RESET
021774                                  ENDCLN
                                        .EVEN
                                ;-------------------------------------------------------------------

                                .SBTTL  DROP UNIT SECTION
                                ;++
                                ; THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE TO NO
                                ; LONGER BE TESTED.
                                ;-------------------------------------------------------------------
021776                                  BGNDU
021776  010002                          MOV     R0,R2           ;GET LOGICAL UNIT #
022000  012701  022012                  MOV     #DUMSG1,R1      ;SET DROP MSG
022004  004737  002570                  CALL    PRTB1S          ;CALL PRINTB 1 ARG
022010                                  ENDDU
                                ;-------------------------------------------------------------------
022012      045     116     045 DUMSG1: .ASCIZ  /%N%A DROP UNIT#%D1%A FROM TEST%N/
                                ;-------------------------------------------------------------------
                                        .EVEN


                                .SBTTL  AUTO DROP UNIT SECTION
                                ;-------------------------------------------------------------------
022054                                  BGNAUTO
022054  004737  022066                  CALL    ADRTST          ;CALL ADDRESSING TST
022060                                  ENDAUTO
                                ;-------------------------------------------------------------------


                                .SBTTL  ADD UNIT SECTION
                                ;-------------------------------------------------------------------
                                ;++
                                ; THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
                                ;  TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
                                ;  TO THE TEST CYCLE.
                                ;-------------------------------------------------------------------
022062                                  BGNAU
022062  000240                          NOP
022064                                  ENDAU
                                ;-------------------------------------------------------------------
                                        .EVEN
022066                                  ENDMOD
```

```
                                .TITLE HARDWARE TESTS
                                
                                        BGNMOD
                                
                                .SBTTL  TEST 0 - ADDRESSING TEST
                                ;++
                                ; TEST TO ASSURE THAT THE DEVICE WILL RESPOND WITHOUT A BUS TRAP.
                                ;-------------------------------------------------------------------
                                ; BGNSUB
                                ;       SETUP TEST
                                ;       SETUP BUS TRAPS
                                ;       READ RXCSR
                                ;       RESET BUS TRAPS
                                ;       IF TRAP
                                ;       : THEN-SET SYSTEM  FATAL FLAG
                                ;       :       CALL FUNCTION TEST ERROR
                                ;       :       REPORT BUS TRAP ON RXCSR
                                ;       ENDIF
                                ;       READ RXDBR
                                ;       IF TRAP
                                ;       : THEN-SET SYSTEM FATAL FLAG
                                ;       :       CALL FUNCTION TEST ERROR
                                ;       :       REPORT BUS TRAP ON RXDBR
                                ;       ENDIF
                                ;       RESET BUS TRAPS
                                ; ENDSUB
                                ;-------------------------------------------------------------------
022066  000240                  ADRTST: NOP                     ;
022070  005037  002452                  CLR     ABORT           ;CLEAR ABORT FLAG
022074                                  SETVEC  #BTRP4,#TRAP,#PR107
022122  017701  160222                  MOV     @RXCS,R1        ;READ RXCSR
022126                                  CLRVEC  #BTRP4
022134  005737  002452                  TST     ABORT           ;IF ABORT FLAG
022140  001413                          BEQ     1$              ;SET, THEN
022142  012701  022212                  MOV     #TRPMS1,R1      ;SET TRAP MESSAGE
022146  013702  002350                  MOV     RXCS,R2         ;SET TRAP ADDRESS
022152                                  ERRSF   60,TOMSG,PRTB1
022162                                  DODU    UNIT
022170  000207                  1$:     RETURN                  ;RETURN
                                ;-------------------------------------------------------------------
022172     101     104     104  TOMSG:  .ASCIZ  /ADDRESSING TEST/
022212     045     101     040  TRPMS1: .ASCII  /%A BUS TRAP AT ADDRESS:%06%N/
022246     045     101     040          .ASCIZ  /%A INTERFACE BAD OR NOT SET TO ABOVE ADDRESS/
                                        .EVEN
                                ;-------------------------------------------------------------------
```

```
                                .SBTTL -  MOD U.SFT.TRP - BUS TRAP HANDLER
                                ;++
                                ; FUNCTIONAL DESCRIPTION:  SUBR TO HANDLE DEVICE BUS TRAP
                                ; INPUTS:  NONE
                                ; IMPLICIT INPUTS:  BUS TRAP
                                ; OUTPUTS:  ABORT FLAG
                                ; IMPLICIT OUTPUTS:  NONE
                                ; SUBORDINATE ROUTINES USED:  NONE
                                ; FUNCTIONAL SIDE EFFECTS:  NONE
                                ; CALLING SEQUENCE:  INTERRUPT
                                ;--

                                ;-------------------------------------------------------------------------

022324  005237  002452          TRAP:   INC     ABORT           ;SET ABORT FLAG
022330  000002                          RTI                     ;RETURN FROM TRAP INTERRUPT
                                ;-------------------------------------------------------------------------
                                ;
                                ;
                                ;       TEST SETUP DEFINITIONS
                                ;
                        000000          FRUS1=0
                        000000          TN=0
                        000001          FUNCT=1
```

```
4053                                    .SBTTL  TEST 1 -   INITIALIZE - FNC TST
     022332  000414                             BR      BGNT1           ;BR TO BGN TST
     022334    040     040     111   T1MSG: .ASCIZ   /  INITIALIZE - FNC TST/
                                              .EVEN
4054
4055                                    ;++
4056                                    ; TEST TO VERIFY THAT AN RX INITIALIZE WILL RETURN THE DEVICE TO A VALID
4057                                    ; STATE.
4058                                    ;-------------------------------------------------------------------------
4059                                    ; BGNTST
4060                                    ;       IF FUNCTION TEST
4061                                    ;       : THEN-SETUP TEST I.D.
4062                                    ;       :       CALL FUNCTION TEST SETUP
4063                                    ;       :       BUS INITIALIZE
4064                                    ;       :       CALL ERROR CHECK
4065                                    ;       :       CALL DEVICE STATE CHECK
4066                                    ;       :       INCREMENT COMMAND PTR
4067                                    ;       :       PROGRAM INITIALIZE RX
4068                                    ;       :       CALL ERROR CHECK
4069                                    ;       ENDIF
4070                                    ; ENDTST
4071                                    ;-------------------------------------------------------------------------
4072
4073 022364                                      TSETUP
     022364  012737  022444  002466   BGNT1:  MOV     #T1TBL,TSTID    ;SETUP TEST ID TBL-TEST# 1
     022372  032737  000002  002324   IAT1:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
     022400  001417                           BEQ     XT1             ;BIT SET, THEN
     022402  004737  020700                   CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
4074 022406                                   BRESET
4075 022410  004737  011610                   CALL    WAIT
4076 022414  004737  012244                   CALL    GETREG          ;CALL GET REGS
4077 022420  004737  017724                   CALL    ERRCHK          ;CALL ERROR CHECK
4078 022424  004737  017140                   CALL    DVSTCK          ;CALL DEVICE CK
4079 022430  004737  010440                   CALL    INTIAL          ;CALL PROG INITIALIZE
4080 022434  004737  017724                   CALL    ERRCHK          ;CALL ERROR CHECK
4081 022440                           XT1:    EXIT    TST
4082 022444                                   REGTBL  CSONLY
             015026                                   REGS1=CSONLY
4083 022444                                   TTBL
     022444  022334                                   T1TBL: .WORD    T1MSG
     022446  177777                                          .WORD    -1
     022450                                           T1RTB:
     022450  015026                                         .WORD    REGS1
     022452  177777                                         .WORD    -1
4084 022454                                   ENDTST
```

```
4087                                    .SBTTL  TEST 2 -   READ ERROR CODE - FNC TST
     022456  000416                             BR      BGNT2           ;BR TO BGN TST
     022460     040     040     122    T2MSG: .ASCIZ   /  READ ERROR CODE - FNC TST/
                                               .EVEN
4088
4089                                    ;++
4090                                    ; TEST TO VERIFY THAT THE DEVICE WILL COMPLETE A READ ERROR CODE COMMAND
4091                                    ; WITHOUT ENCOUNTERING AN ERROR.
4092                                    ;-------------------------------------------------------------------------
4093                                    ; BGNTST
4094                                    ;       IF FUNCTION TEST
4095                                    ;       : THEN-SETUP TEST IDENT
4096                                    ;       :       CALL FUNCTION TEST SETUP
4097                                    ;       :       PROGRAM INITIALIZE RX
4098                                    ;       :       CALL ERROR CHECK
4099                                    ;       :       SETUP ERROR CODE ADDRESS
4100                                    ;       :       CALL READ ERROR CODE
4101                                    ;       :       CALL ERROR CHECK
4102                                    ;       ENDIF
4103                                    ; ENDTST
4104                                    ;-------------------------------------------------------------------------
4105
4106 022514                                     TSETUP
     022514  012737  022604  002466    BGNT2:  MOV     #T2TBL,TSTID    ;SETUP TEST ID TBL-TEST# 2
     022522  032737  000002  002324    IAT2:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
     022530  001423                             BEQ     XT2             ;BIT SET, THEN
     022532  004737  020700                     CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
4107 022536  004737  010440                     CALL    INTIAL          ;CALL PROGRAM INITIALIZE
4108 022542  004737  017724                     CALL    ERRCHK          ;CALL ERROR CHECK
4109 022546  012737  002442  002364            MOV     #XERUUT,RECADR  ;SETUP READ ERROR CODE ADDRESS
4110 022554  052737  000200  002500            BIS     #RECTST,FLAGSP  ;SET READ ERROR CODE TEST=FLAGSP
4111 022562  004737  011340                     CALL    RDERCD          ;CALL READ ERROR CODE
4112 022566  004737  017724                     CALL    ERRCHK          ;CALL ERROR CHECK
4113 022572  042737  000200  002500            BIC     #RECTST,FLAGSP  ;CLEAR READ ERROR CODE TEST=FLAGSP
4114 022600                             XT2:    EXIT    TST
4115 022604                                     REGTBL  CSONLY
     015026                                                 REGS1=CSONLY
4116 022604                                     TTBL
     022604  022460                                 T2TBL: .WORD    T2MSG
     022606  177777                                        .WORD    -1
     022610                                         T2RTB:
     022610  015026                                        .WORD    REGS1
     022612  177777                                        .WORD    -1
4117 022614                                     ENDTST
```

```
4120                                    .SBTTL  TEST 3 -   FILL BUFFER - FNC TST
     022616  000414                             BR      BGNT3           ;BR TO BGN TST
     022620     040     040     106    T3MSG: .ASCIZ   /  FILL BUFFER - FNC TST/
                                               .EVEN
4121
4122                                    ;++
4123                                    ; TEST TO VERIFY THE DEVICE BUFFER WILL FILL WITH NO RESULTING ERROR.
4124                                    ;-------------------------------------------------------------------
4125                                    ; BGNTST
4126                                    ;       IF FUNCTION TEST
4127                                    ;       : THEN-SETUP TEST IDENT
4128                                    ;       :       SETUP DENSITY CONTROL
4129                                    ;       :       CALL SETUP DEVICE COMMANDS
4130                                    ;       :       CALL FILL BUFFER
4131                                    ;       :       NOP
4132                                    ;       ENDIF
4133                                    ; ENDTST
4134                                    ;-------------------------------------------------------------------
4135
4136 022650                                     TSETUP
     022650  012737  022720  002466    BGNT3:  MOV     #T3TBL,TSTID    ;SETUP TEST ID TBL-TEST# 3
     022656  032737  000002  002324    IAT3:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
     022664  001413                            BEQ     XT3             ;BIT SET, THEN
     022666  004737  020700                    CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
4137 022672  052737  000002  002476           BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG COMMANDS
4138 022700  004737  021014                    CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
4139 022704  004737  010510                    CALL    FILBUF
4140 022710  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
4141 022714                             XT3:    EXIT    TST
4142 022720                                     REGTBL  CSONLY
          015026                                        REGS1=CSONLY
4143 022720                                     TTBL
     022720  022620                                T3TBL: .WORD    T3MSG
     022722  177777                                       .WORD    -1
     022724                                      T3RTB:
     022724  015026                                       .WORD    REGS1
     022726  177777                                       .WORD    -1
4144 022730                                     ENDTST
```

```
4147                                    .SBTTL  TEST 4 -   EMPTY BUFFER - FNC TST
     022732  000415                             BR      BGNT4           ;BR TO BGN TST
     022734      040     040     105    T4MSG: .ASCIZ   /  EMPTY BUFFER - FNC TST/
                                                .EVEN
4148
4149                                    ;++
4150                                    ; TEST TO VERIFY THE DEVICE BUFFER WILL EMPTY WITHOUT ERRORS.
4151                                    ;-------------------------------------------------------------------------
4152                                    ; BGNTST
4153                                    ;       IF FUNCTION TEST
4154                                    ;       : THEN-SETUP TEST IDENT
4155                                    ;       :       SETUP DENSITY CONTROL
4156                                    ;       :       CALL SETUP DEVICE COMMANDS
4157                                    ;       :       CALL EMPTY BUFFER
4158                                    ;       :       CALL ERROR CHECK
4159                                    ;       :       NOP
4160                                    ;       ENDIF
4161                                    ; ENDTST
4162                                    ;-------------------------------------------------------------------------
4163
4164 022766                                         TSETUP
     022766  012737  023036  002466    BGNT4:  MOV     #T4TBL,TSTID    ;SETUP TEST ID TBL-TEST# 4
     022774  032737  000002  002324    IAT4:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
     023002  001413                            BEQ     XT4             ;BIT SET, THEN
     023004  004737  020700                    CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
4165 023010  052737  000002  002476           BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
4166 023016  004737  021014                    CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
4167 023022  004737  010626                    CALL    EMPBUF          ;CALL EMPTY BUFFER
4168 023026  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
4169 023032                            XT4:    EXIT    TST
4170 023036                                    REGTBL  CSONLY
             015026                                             REGS1=CSONLY
4171 023036                                    TTBL
     023036  022734                                    T4TBL: .WORD    T4MSG
     023040  177777                                           .WORD    -1
     023042                                             T4RTB:
     023042  015026                                           .WORD    REGS1
     023044  177777                                           .WORD    -1
4172 023046                                    ENDTST
```

```
                                .SBTTL  TEST 5 -   READ STATUS - FNC TST
023050  000414                        BR      BGNT5           ;BR TO BGN TST
023052     040     040     122  T5MSG: .ASCIZ   /  READ STATUS - FNC TST/
                                      .EVEN

                                ;++
                                ; TEST TO VERIFY THAT A DEVICE MAINTENANCE READ STATUS (RXES) COMMAND
                                ; WILL EXECUTE WITHOUT ERROR.
                                ;--------------------------------------------------------------------
                                ; BGNTST
                                ;       IF FUNCTION TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       SETUP DENSITY CONTROL=SINGLE
                                ;       :       CALL SETUP DEVICE COMMANDS
                                ;       :       CALL READ MAINT STATUS
                                ;       :       CALL ERROR CHECK
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;--------------------------------------------------------------------

023102                                TSETUP
023102  012737  023154  002466  BGNT5:  MOV     #T5TBL,TSTID    ;SETUP TEST ID TBL-TEST# 5
023110  032737  000002  002324  IAT5:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
023116  001414                        BEQ     XT5             ;BIT SET, THEN
023120  004737  020700                CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
023124  042737  000002  002476        BIC     #DDCFLG,FLAGST  ;CLEAR DOUBLE DENSITY CONTROL FLAG
023132  000240                        NOP                     ;
023134  004737  021014                CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
023140  004737  011266                CALL    RDSTAT          ;CALL READ MAINT STATUS
023144  004737  017724                CALL    ERRCHK          ;CALL ERROR CHECK
023150                          XT5:  EXIT    TST
023154                                REGTBL  CSONLY
015026                                        REGS1=CSONLY
023154                                TTBL
                                              T5TBL: .WORD    T5MSG
023154  023052                                         .WORD    -1
023156  177777                                T5RTB:
023160                                         .WORD    REGS1
023160  015026                                 .WORD    -1
023162  177777
023164                                ENDTST
```

```
                                .SBTTL  TEST 6 -   FILL & EMPTY BUFFER - FNC TST
023166  000420                  BR      BGNT6           ;BR TO BGN TST
023170    040     040     106   T6MSG: .ASCIZ   /  FILL & EMPTY BUFFER - FNC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THE DEVICE BUFFER DATA IS VALID AFTER A FILL/EMPTY
                                ; BUFFER COMMAND SEQUENCE.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF FUNCTION TEST
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       SETUP DENSITY CONTROL=DOUBLE
                                ;       :       CALL SETUP DEVICE COMMANDS
                                ;       :       SET DATA PATTERN=RANDOM
                                ;       :       CALL DATA PATTERN SETUP
                                ;       :       CALL FILL BUFFER
                                ;       :       CALL ERROR CHECK
                                ;       :       CALL EMPTY BUFFER
                                ;       :       CALL ERROR CHECK
                                ;       :       SET EMPTY BUFFER FLAG
                                ;       :       CALL DATA CHECK
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------

                                TSETUP
023230  012737  023340  002466  BGNT6:  MOV     #T6TBL,TSTID    ;SETUP TEST ID TBL-TEST# 6
023236  032737  000002  002324  IAT6:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
023244  001433                  BEQ     XT6             ;BIT SET, THEN
023246  004737  020700          CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
023252  052737  000002  002476  BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
023260  004737  021014          CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
023264  005037  012660          CLR     PAT             ;SET DATA PATTERN=RANDOM
023270  004737  012306          CALL    STDATP          ;CALL SET DATA PATTERN
023274  004737  010510          CALL    FILBUF          ;CALL FILL BUFFER
023300  004737  017724          CALL    ERRCHK          ;CALL ERROR CHECK
023304  004737  010626          CALL    EMPBUF          ;CALL EMPTY BUFFER
023310  004737  017724          CALL    ERRCHK          ;CALL ERROR CHECK
023314  052737  000020  002476  BIS     #EMBUFF,FLAGST  ;SET EMPTY BUFFER FLAG
023322  004737  013246          CALL    DATACK          ;CALL DATA CHECK
023326  042737  000020  002476  BIC     #EMBUFF,FLAGST  ;CLEAR EMPTY BUFFER FLAG
023334                  XT6:    EXIT    TST
023340                          REGTBL  CSONLY
        015026                                          REGS1=CSONLY
023340                          TTBL
023340  023170                                  T6TBL: .WORD    T6MSG
023342  177777                                         .WORD    -1
023344                                          T6RTB:
023344  015026                                         .WORD    REGS1
023346  177777                                         .WORD    -1
023350                          ENDTST
```

```
                                .SBTTL  TEST 7 -   READ & WRITE SECTOR - FNC TST
023352  000420                        BR      BGNT7           ;BR TO BGN TST
023354     040     040     122  T7MSG: .ASCIZ   /  READ & WRITE SECTOR - FNC TST/
                                      .EVEN

                                ;++
                                ; TEST TO VERIFY THE DEVICE WILL READ AND WRITE IN BOTH DENSITIES WITHOUT
                                ; AN ERROR.
                                ;--------------------------------------------------------------------
                                ; BGNTST
                                ;       IF FUNCTION TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       CALL DENSITY CHECK
                                ;       :       SETUP TRACK=0, SECTOR=10
                                ;       :       CLEAR ENDDO FLAG
                                ;       :       BGNDO
                                ;       :       :  SET DENSITY CONTROL WORD=OPPOSITE DENSITY STATUS
                                ;       :       :  SET NEGATIVE TEST FLAG
                                ;       :       :  SETUP EXPECTED DEN ERR
                                ;       :       :  CALL WRITE SECTOR
                                ;       :       :  CALL ERROR CK
                                ;       :       .  CALL READ SECTOR
                                ;       :       :  CALL ERROR CK
                                ;       :       :  SET DENSITY CONTROL WORD=DOUBLE DEN
                                ;       :       :  CALL WRITE SECTOR
                                ;       :       :  CALL ERROR CK
                                ;       :       :  CALL READ SECTOR
                                ;       :       :  CALL ERROR CK
                                ;       :       :  CALL SET TRACK=76, SECTOR-10
                                ;       :       :  COMP ENDDO FLAG
                                ;       :       DOUNTIL ENDDO FLAG=0
                                ;       ENDIF
                                ; ENDTST
                                ;--------------------------------------------------------------------
```

```
                                                TSETUP
 4280 023414
      023414  012737  023602  002466  BGNT7:    MOV     #T7TBL,TSTID    ;SETUP TEST ID TBL-TEST# 7
      023422  032737  000002  002324  IAT7:     BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
      023430  001462                            BEQ     XT7             ;BIT SET, THEN
      023432  004737  020700                    CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
 4281 023436  004737  017350                    CALL    DENCHK          ;CALL DENSITY CHECK
 4282 023442  005037  002374                    CLR     TRACK           ;SET TRACK=0
 4283 023446  012737  000012  002376            MOV     #10.,SECTOR     ;SET SECTOR=10.
 4284 023454  005037  002504                    CLR     TTEMP1          ;CLEAR ENDDO FLAG
 4285 023460  000240                    BBT7:   NOP                     ;
 4286 023462  004737  020472                    CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
 4287 023466  042737  004000  002476            BIC     #NEGTST,FLAGST  ;CLEAR NEG TEST FLAG
 4288 023474  004737  010744                    CALL    WRITE           ;CALL WRITE SECTOR
 4289 023500  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4290 023504  004737  011062                    CALL    READ            ;CALL READ SECTOR
 4291 023510  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4292 023514  004737  020430                    CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
 4293 023520  052737  004000  002476            BIS     #NEGTST,FLAGST  ;SET NEG TEST FLAG
 4294 023526  012737  000030  002464            MOV     #DENERR,NGTSER  ;SETUP EXPECTED NEG TEST ERR=DEN ERR
 4295 023534  004737  010744                    CALL    WRITE           ;CALL WRITE SECTOR
 4296 023540  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4297 023544  004737  011062                    CALL    READ            ;CALL READ SECTOR
 4298 023550  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4299 023554  005137  002504                    COM     TTEMP1          ;COMPLIMENT ENDDO FLAG
 4300 023560  004737  020430                    CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
 4301 023564  004737  021174                    CALL    STTK76          ;CALL SET TRACK=76.
 4302 023570  005737  002504            UBT7:   TST     TTEMP1          ;DOUNTIL ENDDO FLAG
 4303 023574  001331                            BNE     BBT7            ;EQUALS 0
 4304 023576                            XT7:    EXIT    TST
 4305 023602                                    REGTBL  CSESAL
              015036                                                    REGS1=CSESAL
 4306 023602                                    TTBL
      023602  023354                                    T7TBL: .WORD    T7MSG
      023604  177777                                           .WORD    -1
      023606                                            T7RTB:
      023606  015036                                           .WORD    REGS1
      023610  177777                                           .WORD    -1
 4307 023612                                    ENDTST
```

```
                                .SBTTL  TEST 8 -   WRITE SECTOR DELETED DATA - FNC TST
023614  000423                        BR      BGNT8           ;BR TO BGN TST
023616    040   040   127   T8MSG: .ASCIZ   /  WRITE SECTOR DELETED DATA - FNC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE DEVICE WILL WRITE A DELETED DATA MARK ON THE
                                ; DISKETTE WITHOUT ERROR.
                                ;--------------------------------------------------------------------
                                ; BGNTST
                                ;       IF FUNCTION TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       SET TRACK=76, SECTOR=10
                                ;       :       CALL DENSITY CHECK
                                ;       :       SET DELETED DATA FLAG
                                ;       :       SET DENSITY CONTROL WORD=DISK DENSITY
                                ;       :       CALL WRITE SECTOR
                                ;       :       CALL ERROR CK
                                ;       :       CALL READ SECTOR SECTOR
                                ;       :       CALL ERROR CK
                                ;       :       CLEAR DELETED DATA FLAG
                                ;       :       CALL WRITE SECTOR
                                ;       :       CALL ERROR CK
                                ;       ENDIF
                                ; ENDTST
                                ;--------------------------------------------------------------------
                                        TSETUP
023664  012737  023772  002466  BGNT8:  MOV     #T8TBL,TSTID    ;SETUP TEST ID TBL-TEST# 8
023672  032737  000002  002324  IAT8:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
023700  001432                        BEQ     XT8             ;BIT SET, THEN
023702  004737  020700                CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
023706  004737  021174                CALL    STTK76          ;CALL SET TRACK=76.
023712  004737  017350                CALL    DENCHK          ;CALL DENSITY CHECK
023716  004737  020472                CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
023722  012737  000010  002402        MOV     #DLDCMD,DELDAT  ;SETUP DELETED DATA COMMAND MODE
023730  004737  010744                CALL    WRITE           ;CALL WRITE SECTOR
023734  004737  017724                CALL    ERRCHK          ;CALL ERROR CHECK
023740  004737  011062                CALL    READ            ;CALL READ SECTOR
023744  004737  017724                CALL    ERRCHK          ;CALL ERROR CHECK
023750  005037  002402                CLR     DELDAT          ;CLEAR DELETED DATA COMMAND MODE
023754  004737  010744                CALL    WRITE           ;CALL WRITE SECTOR
023760  004737  017724                CALL    ERRCHK          ;CALL ERROR CHECK
023764  000240                        NOP                     ;
023766                        XT8:    EXIT    TST
023772                                REGTBL  CSESAL
        015036                                                  REGS1=CSESAL
023772                                TTBL
                                                T8TBL: .WORD    T8MSG
023772  023616                                                  .WORD   -1
023774  177777                                        T8RTB:
023776
023776  015036                                                  .WORD   REGS1
024000  177777                                                  .WORD   -1
024002                                ENDTST
```

```
                                .SBTTL  TEST 9 -   SET DENSITY - FNC TST
024004  000414                  BR      BGNT9           ;BR TO BGN TST
024006    040     040     123   T9MSG: .ASCIZ   /  SET DENSITY - FNC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THE DEVICE WILL CHANGE DENSITIES WITHOUT INCURRING AN
                                ; ERROR
                                ;--------------------------------------------------------------------
                                ; BGNTST
                                ;       IF FUNCTION TEST
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       CALL DENSITY CHECK
                                ;       :       SET DENSITY CONTROL WORD=DISK DENSITY
                                ;       :       CALL SET DENSITY
                                ;       :       CALL ERROR CK
                                ;       :       CALL SET TRACK=76, SECTOR=10
                                ;       :       CALL READ SECTOR
                                ;       :       CALL ERROR CK
                                ;       :       SET TRACK=0
                                ;       :       CALL READ SECTOR
                                ;       :       CALL ERROR CK
                                ;       :       CALL COMPLIMENT DENSITY CONTROL
                                ;       :       CALL SET DENSITY
                                ;       :       CALL ERROR CK
                                ;       :       CALL READ SECTOR
                                ;       :       CALL ERROR CK
                                ;       :       CALL SET TRACK=76., SECTOR=10.
                                ;       :       CALL READ SECTOR
                                ;       :       CALL ERROR CK
                                ;       :       SET DENSITY CONTROL WORD=DISK DENSITY
                                ;       :       CALL SET DENSITY
                                ;       :       CALL ERROR CK
                                ;       ENDIF
                                ; ENDTST
                                ;--------------------------------------------------------------------
```

```
                                                TSETUP
 4387 024036
      024036  012737  024210  002466  BGNT9:    MOV     #T9TBL,TSTID    ;SETUP TEST ID TBL-TEST# 9
      024044  032737  000002  002324  IAT9:     BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
      024052  001454                            BEQ     XT9             ;BIT SET, THEN
      024054  004737  020700                    CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
 4388 024060  004737  017350                    CALL    DENCHK          ;CALL DENSITY CHECK
 4389 024064  004737  020472                    CALL    SDENC           ;CALL SET DENSITY CONTROl =DENSITY STATUS
 4390 024070  004737  011172                    CALL    SETDN           ;CALL SET DENSITY
 4391 024074  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4392 024100  004737  021174                    CALL    STTK76          ;CALL SET TRACK=76.
 4393 024104  004737  011062                    CALL    READ            ;CALL READ SECTOR
 4394 024110  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4395 024114  005037  002374                    CLR     TRACK           ;SET TRACK=0
 4396 024120  004737  011062                    CALL    READ            ;CALL READ SECTOR
 4397 024124  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4398 024130  004737  020430                    CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
 4399 024134  004737  011172                    CALL    SETDN           ;CALL SET DENSITY
 4400 024140  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4401 024144  004737  011062                    CALL    READ            ;CALL READ SECTOR
 4402 024150  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4403 024154  004737  021174                    CALL    STTK76          ;CALL SET TRACK=76.
 4404 024160  004737  011062                    CALL    READ            ;CALL READ SECTOR
 4405 024164  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4406 024170  004737  020472                    CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
 4407 024174  004737  011172                    CALL    SETDN           ;CALL SET DENSITY
 4408 024200  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 4409 024204                          XT9:      EXIT    TST
 4410 024210                                    REGTBL  CSESAL
      015036                                                            REGS1=CSESAL
 4411 024210                                    TTBL
      024210  024006                                    T9TBL: .WORD    T9MSG
      024212  177777                                           .WORD    -1
      024214                                            T9RTB:
      024214  015036                                           .WORD    REGS1
      024216  177777                                           .WORD    -1
 4412 024220                                    ENDTST
```

```
4415                                    .SBTTL  TEST 10 -  POSITIONING - FNC TST
     024222  000414                             BR      BGNT10          ;BR TO BGN TST
     024224     040     120     117  T10MSG: .ASCIZ  / POSITIONING - FNC TST/
                                             .EVEN
4416
4417                                    ;++
4418                                    ; TEST TO VERIFY THE DEVICE WILL CHANGE SECTORS AND TRACKS WITHOUT
4419                                    ; INCURRING AN ERROR.
4420                                    ;-------------------------------------------------------------------
4421                                    ; BGNTST
4422                                    ;       IF FUNCTION TEST
4423                                    ;       : THEN-SETUP TEST IDENT
4424                                    ;       :       SET TRACK PATTERN=RANDOM
4425                                    ;       :       CALL DENSITY CHECK
4426                                    ;       :       SET DENSITY CONTROL WORD=DRV DENSITY
4427                                    ;       :       BGNDO
4428                                    ;       :       :  CALL GET A TRACK
4429                                    ;       :       :  CALL GET A SECTOR
4430                                    ;       :       :  CALL READ SECTOR
4431                                    ;       :       :  CALL ERROR CK
4432                                    ;       :       DOUNTIL TRACKS DONE FLAG SET
4433                                    ;       :       NOP
4434                                    ;       ENDIF
4435                                    ; ENDTST
4436                                    ;-------------------------------------------------------------------
4437                                    ;--
4438 024254                                         TSETUP
     024254  012737  024352  002466  BGNT10: MOV     #T10TBL,TSTID   ;SETUP TEST ID TBL-TEST# 10
     024262  032737  000002  002324  IAT10:  BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
     024270  001426                          BEQ     XT10            ;BIT SET, THEN
     024272  004737  020700                  CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
4439 024276  012737  000400  002510          MOV     #ITK!RTK,TKSCFG ;SET TRK/SEC FLAGS-->TRACK=INIT & RANDOM
4440 024304  004737  017350                  CALL    DENCHK          ;CALL DENSITY CHECK
4441 024310  004737  020472                  CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
4442 024314  004737  012662          BBT10:  CALL    GETTRK          ;CALL GET TRACK
4443 024320  004737  013104                  CALL    GETSEC          ;CALL GET SECTOR
4444 024324  004737  011062                  CALL    READ            ;CALL READ SECTOR
4445 024330  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
4446 024334  032737  001000  002476  UBT10:  BIT     #TRKDON,FLAGST  ;DOUNTIL FLAGS->TRACK DONE FLAG
4447 024342  001764                          BEQ     BBT10           ;SET
4448 024344  000240                          NOP                     ;
4449 024346                          XT10:   EXIT    TST
4450 024352                                  REGTBL  CSESAL
     015036                                                  REGS1=CSESAL
4451 024352                                  TTBL
     024352  024224                                  T10TBL: .WORD   T10MSG
     024354  177777                                          .WORD   -1
     024356                                          T10RTB:
     024356  015036                                          .WORD   REGS1
     024360  177777                                          .WORD   -1
4452 024362                                  ENDTST
```

```
                                .SBTTL  TEST 11 -  CSR BITS - LGC TST
                                BR      BGNT11          ;BR TO BGN TST
024364  000412
024366     040     103     123  T11MSG: .ASCIZ  / CSR BITS - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE READ/WRITE BITS OF THE CONTROL AND STATUS REG-
                                ; ISTER CAN BE WRITTEN INTO AND READ AND OTHERWISE BEHAVE AS EXPECTED.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST TEST IDENT
                                ;       :       CALL RX LEGAL STATE CHECK
                                ;       :       WRITE RXCSR-ALL 1'S (EXCEPT BITS #14 & #1)
                                ;       :       SETUP EXPECTED REGISTER RESULTS
                                ;       :       IF RXCSR DOES NOT=037566
                                ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
                                ;       :       :       SETUP ERRNBR=CSR ERROR
                                ;       :       :       CALL ERROR
                                ;       :       ENDIF
                                ;       :       WRITE RXCSR-ALL 0'S
                                ;       :       IF RXCSR DOES NOT=004040
                                ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
                                ;       :       :       SETUP ERRNBR=CSR ERROR
                                ;       :       :       CALL ERROR
                                ;       :       ENDIF
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  INTERFACE
                                ;-------------------------------------------------------------------
                                ;--
```

```
                                                TSETUP
4489 024412
     024412  012737  024602  002466  BGNT11: MOV     #T11TBL,TSTID   ;SETUP TEST ID TBL-TEST# 11
     024420  032737  000001  002324  IAT11:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
     024426  001463                          BEQ     XT11            ;BIT SET, THEN
     024430  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
4490 024434                                  BRESET                  ;BUS RESET
4491 024436  004737  011610                  CALL    WAIT            ;WAIT FOR DONE
4492 024442  004737  017140                  CALL    DVSTCK          ;CALL DEVICE STATE CHECK
4493 024446  012777  137776  155674          MOV     #137776,@RXCS   ;WRITE RXCSR=ALL 1'S (EXCEPT BIT#14 & #1)
4494 024454  032737  000400  002500  IDT11:  BIT     #LSIFLG,FLAGSP  ;IF LSI FLG - FLAGSP
4495 024462  001404                          BEQ     LDT11           ;SET, THEN
4496 024464  012737  005560  002436          MOV     #5560,REGEXP    ;SETUP EXPECTED REG RESULTS = 5560
4497 024472  000403                          BR      IBT11           ;BR TO IF 'B'
4498 024474  012737  037566  002436  LDT11:  MOV     #037566,REGEXP  ;SETUP EXPECTED REGISTER RESULTS=037566
4499 024502  023777  002436  155640  IBT11:  CMP     REGEXP,@RXCS    ;IF RXCSR NOT=EXPECTED REGISTER
4500 024510  001410                          BEQ     EBT11           ;THEN
4501 024512  017737  155632  002440          MOV     @RXCS,REGACT    ;SETUP ACTUAL REGISTER
4502 024520  012737  000033  002520          MOV     #CSRERR,ERRNBR  ;SET ERRNBR=CSRERR
4503 024526  004737  003060                  CALL    ERROR           ;CALL ERROR
4504 024532  012737  004040  002436  EBT11:  MOV     #4040,REGEXP    ;SETUP EXPECTED REGISTER RESULTS=4040
4505 024540  012777  000000  155602          MOV     #0,@RXCS        ;WRITE RXCSR=ALL 0'S
4506 024546  023777  002436  155574  ICT11:  CMP     REGEXP,@RXCS    ;IF RXCSR NOT=EXPECTED REGISTER
4507 024554  001410                          BEQ     XT11            ;THEN
4508 024556  017737  155566  002440          MOV     @RXCS,REGACT    ;SETUP ACTUAL REGISTER
4509 024564  012737  000033  002520          MOV     #CSRERR,ERRNBR  ;SET ERRNBR=CSR ERR
4510 024572  004737  003060                  CALL    ERROR           ;CALL ERROR
4511 024576                          XT11:   EXIT    TST
4512 024602                                  REGTBL
4513 024602                                  TTP'    0,RGPRT
     024602  024366                                  T11TBL: .WORD   T11MSG
     024604  000000                                          .WORD   0
     024606  000004                                          .WORD   RGPRT
     024610  177777                                          .WORD   -1
     024612                                       T11RTB:
     024612  177777                                          .WORD   -1
4514 024614                                  FRUTBL  INTONL
     024614                                       T11FTB:
     024614  006644                                          .WORD   INTONL
     024616  177777                                          .WORD   -1
4515 024620                                  ENDTST
```

```
                                .SBTTL  TEST 12 -  DBR BITS - LGC TST
024622  000412                        BR      BGNT12          ;BR TO BGN TST
024624     040     104     102  T12MSG: .ASCIZ  / DBR BITS - LGC TST/
                                .EVEN

                        ;++
                        ; TEST TO VERIFY THAT THE READ/WRITE BITS OF THE DATA BUFFER REGISTER
                        ; CAN BE WRITTEN INTO AND READ AS EXPECTED.
                        ;-------------------------------------------------------------------
                        ; BGNTST
                        ;       IF LOGIC TEST
                        ;       :  THEN-SETUP TEST IDENT
                        ;       :       WRITE RXDBR-ALL 1'S
                        ;       :       SETUP EXPECTED REGISTER RESULTS
                        ;       :       IF RXDBR NOT=173767
                        ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
                        ;       :       :       SETUP ERR NBR=DBR ERR
                        ;       :       :       CALL ERROR
                        ;       :       ENDIF
                        ;       :       WRITE RXDBR-ALL 0'S
                        ;       :       SETUP EXPECTED REGISTER RESULTS
                        ;       :       IF RXDBR NOT=000000
                        ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
                        ;       :       :       SET ERRNBR=DBR ERR
                        ;       :       :       CALL ERROR
                        ;       :       ENDIF
                        ;       :       NOP
                        ;       ENDIF
                        ; ENDTST
                        ;-------------------------------------------------------------------
                        ; BOARD CALLOUT:
                        ;       1.  INTERFACE
                        ;-------------------------------------------------------------------
                        ;--
```

```
                                        TSETUP
 4551 024650
      024650  012737  025012  002466  BGNT12: MOV     #T12TBL,TSTID   ;SETUP TEST ID TBL-TEST# 12
      024656  032737  000001  002324  IAT12:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
      024664  001450                          BEQ     XT12            ;BIT SET, THEN
      024666  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
 4552 024672                                  BRESET                  ;BUS RESET
 4553 024674  004737  011610                  CALL    WAIT            ;WAIT FOR DONE
 4554 024700  012777  177777  155444          MOV     #-1,@RXDB       ;WRITE RXDBR-ALL 1'S
 4555 024706  012737  173767  002436          MOV     #173767,REGEXP  ;SETUP EXPECTED REGISTER RESULTS=173767
 4556 024714  023777  002436  155430  IBT12:  CMP     REGEXP,@RXDB    ;IF RXDBR NOT=EXPECTED REGISTER
 4557 024722  001410                          BEQ     EBT12           ;THEN
 4558 024724  017737  155422  002440          MOV     @RXDB,REGACT    ;SETUP ACTUAL REGISTER RESULTS
 4559 024732  012737  000034  002520          MOV     #DBRERR,ERRNBR  ;SET ERRNBR=DBR ERR
 4560 024740  004737  003060                  CALL    ERROR           ;CALL ERROR
 4561 024744  005037  002436          EBT12:  CLR     REGEXP          ;SETUP EXPECTED REGISTER RESULTS=0'S
 4562 024750  012777  000000  155374          MOV     #0,@RXDB        ;WRITE RXDBR=ALL 0'S
 4563 024756  023777  002436  155366  ICT12:  CMP     REGEXP,@RXDB    ;IF RXDBR NOT=EXPECTED REGISTER
 4564 024764  001410                          BEQ     XT12            ;THEN
 4565 024766  017737  155360  002440          MOV     @RXDB,REGACT    ;SETUP ACTUAL REGISTER RESULTS
 4566 024774  012737  000034  002520          MOV     #DBRERR,ERRNBR  ;SET ERRNBR=DBR ERR
 4567 025002  004737  003060                  CALL    ERROR           ;CALL ERROR
 4568 025006                          XT12:   EXIT    TST
 4569 025012                                  TTBL    0,RGPRT
      025012  024624                                          T12TBL: .WORD   T12MSG
      025014  000000                                                  .WORD   0
      025016  000004                                                  .WORD   RGPRT
      025020  177777                                                  .WORD   -1
      025022                                                  T12RTB:
      025022  177777                                                  .WORD   -1
 4570 025024                                  FRUTBL  INTONL
      025024                                                  T12FTB:
      025024  006644                                                  .WORD   INTONL
      025026  177777                                                  .WORD   -1
 4571 025030                                  ENDTST
```

```
                                .SBTTL  TEST 13 -  CSR-DBR COMMON BYTE - LGC TST
025032  000420                        BR      BGNT13          ;BR TO BGN TST
025034      040     103     123 T13MSG: .ASCIZ  / CSR-DBR COMMON BYTE - LGC TST/
                                        .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE LOWER BYTE OF THE RXCS MAPS INTO THE RXDB AND
                                ; THEREFORE CHECK WRITE ONLY BITS OF THE RXCS.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       WRITE RXCSR LOW BYTE-ALL 1'S (EXCEPT BIT #1)
                                ;       :       SETUP EXPECTED REGISTER RESULTS
                                ;       :       IF RXDBR LOW BYTE NOT=376
                                ;       :       : THEN-SETUP ACTUAL REGISTER RESULTS
                                ;       :       :       SETUP ERR NBR=CSR ERR
                                ;       :       :       CALL ERROR
                                ;       :       ENDIF
                                ;       :       WRITE RXCSR LOW BYTE-ALL 0'S
                                ;       :       SETUP EXPECTED REGISTER RESULTS
                                ;       :       IF RXDBR LOW BYTE NOT=000
                                ;       :       : THEN-SETUP ACTUAL REGISTER RESULTS
                                ;       :       :       SETUP ERR NBR=CSR ERR
                                ;       :       :       CALL ERROR
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  INTERFACE
                                ;-------------------------------------------------------------------
                                ;--
```

```
4607 025074                                    TSETUP
     025074  012737  025242  002466  BGNT13:   MOV     #T13TBL,TSTID   ;SETUP TEST ID TBL-TEST# 13
     025102  032737  000001  002324  IAT13:    BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
     025110  001452                            BEQ     XT13            ;BIT SET, THEN
     025112  004737  020736                    CALL    LTSTUP          ;CALL LOGIC TEST SETUP
4608 025116                                    BRESET                  ;BUS RESET
4609 025120  004737  011610                    CALL    WAIT            ;WAIT FOR DONE
4610 025124  012777  000376  155216            MOV     #376,@RXCS      ;WRITE RXCSR LOW BYTE-ALL IF (EXCEPT BIT #1)
4611 025132  012737  000366  002436            MOV     #366,REGEXP     ;SETUP EXPECTED REGISTER RESULTS=366
4612 025140  123777  002436  155204  IBT13:    CMPB    REGEXP,@RXDB    ;IF RXDBR LOW BYTE NOT=376
4613 025146  001413                            BEQ     EBT13           ;THEN
4614 025150  117737  155176  002440            MOVB    @RXDB,REGACT    ;SETUP ACTUAL REGISTER RESULTS
4615 025156  042737  177400  002440            BIC     #177400,REGACT  ;CLEAR TOP BYTE
4616 025164  012737  000033  002520            MOV     #CSRERR,ERRNBR  ;SET ERRNBR=CSR ERR
4617 025172  004737  003060                    CALL    ERROR           ;CALL ERROR
4618 025176  005037  002436            EBT13:  CLR     REGEXP          ;SETUP EXPECTED REGISTER RESULTS=0'S
4619 025202  112777  000000  155140            MOVB    #0,@RXCS        ;WRITE RXDBR=ALL 0'S
4620 025210  123777  002436  155134  ICT13:    CMPB    REGEXP,@RXDB    ;IF RXDBR NOT=EXPECTED RESULTS
4621 025216  001407                            BEQ     XT13
4622 025220  005037  002440                    CLR     REGACT          ;SETUP ACTUAL REGISTER RESULTS
4623 025224  012737  000033  002520            MOV     #CSRERR,ERRNBR  ;SETUP ERRNBR=CSR ERR
4624 025232  004737  003060                    CALL    ERROR           ;CALL ERROR
4625
4626 025236                            XT13:   EXIT    TST
4627
4628 025242                                    TTBL    0,RGPRT
     025242  025034                                    T13TBL: .WORD   T13MSG
     025244  000000                                            .WORD   0
     025246  000004                                            .WORD   RGPRT
     025250  177777                                            .WORD   -1
     025252                                             T13RTB:
     025252  177777                                            .WORD   -1
4629 025254                                    FRUTBL  INTONL
     025254                                             T13FTB:
     025254  006644                                            .WORD   INTONL
     025256  177777                                            .WORD   -1
4630 025260                                    ENDTST
```

```
                                .SBTTL  TEST 14 -  BUS INITIALIZE - LGC TST
025262  000415                  BR      BGNT14          ;BR TO BGN TST
025264     040     102     125  T14MSG: .ASCIZ  / BUS INITIALIZE - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE INTERFACE BOARD WILL COMPLETE A BUS INITIALIZE.
                                ;-------------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       ISSUE BUS INITIALIZE
                                ;       :       IF RXCSR ERROR BIT SET
                                ;       :       :  THEN-IF RXESR AC LOW BIT SET
                                ;       :       :       :  THEN-SETUP ERROR
                                ;       :       :       :       CALL ERROR
                                ;       :       :       ENDIF
                                ;       :       ENDIF
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  INTERFACE
                                ;       2.  CONTROLLER
                                ;-------------------------------------------------------------------------
                                ;--
```

```
   4660
   4661 025316                                          TSETUP
        025316  012737  025462  002466  BGNT14: MOV     #T14TBL,TSTID   ;SETUP TEST ID TBL-TEST# 14
        025324  032737  000001  002324  IAT14:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
        025332  001451                          BEQ     XT14            ;BIT SET, THEN
        025334  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
   4662 025340                                          BRESET
   4663 025342  032777  100000  155000  IBT14:  BIT     #ERRBIT,@RXCS   ;IF RXCSR ERROR BIT
   4664 025350  001442                          BEQ     XT14            ;SET, THEN
   4665 025352  032777  000004  154772  ICT14:  BIT     #INITDN,@RXDB   ;IF RXESR=INIT DONE
   4666 025360  001406                          BEQ     IDT14           ;SET, THEN
   4667 025362  012737  000061  002520          MOV     #NOITDB,ERRNBR  ;SET ERR NBR=NO INIT DONE-BUS
   4668 025370  004737  003060                  CALL    ERROR           ;CALL ERROR
   4669 025374  000430                          BR      XT14            ;BR TO EXIT
   4670 025376  032777  000030  154746  IDT14:  BIT     #DENERR,@RXDB   ;IF RXESR=DENSITY ERR
   4671 025404  001406                          BEQ     IET14           ;SET, THEN
   4672 025406  012737  000020  002520          MOV     #DENDSK,ERRNBR  ;SET ERR NBR=DISK DEN ERR
   4673 025414  004737  003060                  CALL    ERROR           ;CALL ERROR
   4674 025420  000416                          BR      XT14            ;BR TO EXIT
   4675 025422  032777  000010  154722  IET14:  BIT     #ACLOW,@RXDB    ;IF RXESR NOT=INITIALIZE DONE BIT
   4676 025430  001006                          BNE     LET14           ;SET, THEN
   4677 025432  012737  000050  002520          MOV     #ACLOWF,ERRNBR  ;SET ERR NBR=NO INIT DONE-BIT
   4678 025440  004737  003060                  CALL    ERROR           ;CALL ERROR
   4679 025444  000404                          BR      XT14            ;BR TO EXIT
   4680 025446  004737  011340          LET14:  CALL    RDERCD          ;CALL READ ERROR CODE
   4681 025452  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
   4682 025456                          XT14:   EXIT    TST
   4683 025462                                  REGTBL
   4684 025462                                  TTBL    REGCK,0
        025462  025264                                  T14TBL: .WORD   T14MSG
        025464  000001                                          .WORD   REGCK
        025466  000000                                          .WORD   0
        025470  177777                                          .WORD   -1
        025472                                           T14RTB:
        025472  177777                                          .WORD   -1
   4685 025474                                  FRUTBL  INFCTL
        025474                                           T14FTB:
        025474  006640                                          .WORD   INFCTL
        025476  177777                                          .WORD   -1
   4686 025500                                  ENDTST
```

```
                                .SBTTL  TEST 15 -  PROGRAMMED INITIALIZE - LGC TST
025502  000421                        BR      BGNT15          ;BR TO BGN TST
025504    040   120   122     T15MSG: .ASCIZ  / PROGRAMMED INITIALIZE - LGC TST/
                                      .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE INTERFACE BOARD WILL COMPLETE A PROGRAMMED
                                ; INITIALIZE.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       CALL PROGRAMMED INITIALIZE
                                ;       :       CALL DEVICE STATE CK
                                ;       :       CALL ERROR CHECK
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  INTERFACE
                                ;       2.  CONTROLLER
                                ;-------------------------------------------------------------------
                                ;--

                                        TSETUP
025546  012737  025610  002466  BGNT15: MOV     #T15TBL,TSTID   ;SETUP TEST ID TBL-TEST# 15
025554  032737  000001  002324  IAT15:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
025562  001410                        BEQ     XT15            ;BIT SET, THEN
025564  004737  020736                CALL    LTSTUP          ;CALL LOGIC TEST SETUP
025570  004737  010440                CALL    INTIAL          ;CALL PROG INITIALIZE
025574  004737  017140                CALL    DVSTCK          ;CALL DEVICE STATE CK
025600  004737  017724                CALL    ERRCHK          ;CALL ERROR CHECK
025604                          XT15:   EXIT    TST

025610                                  REGTBL  CSESIT
        015056                                          REGS1=CSESIT
025610                                  TTBL    REGCK,0
025610  025504                                  T15TBL: .WORD   T15MSG
025612  000001                                          .WORD   REGCK
025614  000000                                          .WORD   0
025616  177777                                          .WORD   -1
025620                                          T15RTB:
025620  015056                                          .WORD   REGS1
025622  177777                                          .WORD   -1
025624                                  FRUTBL  INFCTL
025624                                          T15FTB:
025624  006640                                          .WORD   INFCTL
025626  177777                                          .WORD   -1
025630                                  ENDTST
```

```
                                .SBTTL  TEST 16 -  POWER FAIL - LGC TST
025632  000413                        BR      BGNT16          ;BR TO BGN TST
025634     040     120     117  T16MSG: .ASCIZ  / POWER FAIL - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE ACLOW CIRCUITS OPERATE AS EXPECTED.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST                                           [A]
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       IF MANUAL INTERVENTION ALLOWED                  [B]
                                ;       :       : THEN-ASK OPERATOR TO POWER DOWN RX02 ONLY
                                ;       :       :       IF OPERATION COMPLETE                   [C]
                                ;       :       :       : THEN-CALL PROGRAMMED INITIALIZE
                                ;       :       :       :       SETUP EXPECTED ERROR=AC LOW
                                ;       :       :       :       SET NEG TEST FLAG=TEST FLAGS
                                ;       :       :       :       CALL ERROR CHECK
                                ;       :       :       :       ASK OPERATOR TO POWER UP RX02
                                ;       :       :       :       IF OPERATION COMPLETE           [D]
                                ;       :       :       :       : THEN-CLEAR OUT EXPECTED ERROR
                                ;       :       :       :       :       CLEAR NEG TEST FLAG=TEST FLAGS
                                ;       :       :       :       :       CALL INITIAL
                                ;       :       :       :       :       CALL ERROR CHECK
                                ;       :       :       :       ENDIF
                                ;       :       :       ENDIF
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  INTERFACE
                                ;-------------------------------------------------------------------
                                ;--
```

```
4756 025662                                    TSETUP
     025662  012737  026102  002466  BGNT16: MOV     #T16TBL,TSTID   ;SETUP TEST ID TBL-TEST# 16
     025670  032737  000001  002324  1AT16:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
     025676  001477                          BEQ     XT16            ;BIT SET, THEN
     025700  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
4757 025704  005037  002504                  CLR     TTEMP1          ;SET TEMP1=0
4758 025710                          1BT16:  MANUAL                  ;IF MANUAL INTERVENTION
4759 025712                                  BNCOMPLETE XT16         ;ALLOWED, THEN
4760 025714                                  PRINTF  #PWRMS,UNIT     ;PRINT MSG
4761 025740                                  GMANIL  PWDNRY,TTEMP1,1,YES
4762 025754  032737  000001  002504  1CT16:  BIT     #1,TTEMP1       ;IF RX02 IS
4763 025762  001445                          BEQ     XT16            ;POWERED DOWN, THEN
4764 025764  004737  010440                  CALL    INTIAL          ;CALL INITIALIZE
4765 025770  012737  000050  002464          MOV     #ACLOWF,NGTSER  ;SETUP EXPECTED ERROR=AC LOW
4766 025776  052737  004000  002476          BIS     #NEGTST,FLAGST  ;SET NEG TEST FLAG=TEST FLAGS
4767 026004  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
4768 026010                                  PRINTF  #PWRMS,UNIT     ;PRINT MSG
4769 026034                                  GMANIL  PWUPRY,TTEMP1,1,YES
4770 026050  032737  000002  002504  1DT16:  BIT     #2,TTEMP1       ;IF RX02 IS
4771 026056  001407                          BEQ     XT16            ;POWERED UP, THEN
4772 026060  042737  004000  002476          BIC     #NEGTST,FLAGST  ;CLEAR NEG TEST FLAG=TEST FLAGS
4773 026066  004737  010440                  CALL    INTIAL          ;CALL INITIALIZE
4774 026072  004737  017724                  CALL    ERRCHK          ;
4775 026076                          XT16:   EXIT    TST
4776 026102                                  REGTBL  CSESIT
     015056                                                       REGS1=CSESIT
4777 026102                                  TTBL    REGCK,0
     026102  025634                                      T16TBL: .WORD   T16MSG
     026104  000001                                              .WORD   REGCK
     026106  000000                                              .WORD   0
     026110  177777                                              .WORD   -1
     026112                                               T16RTB:
     026112  015056                                              .WORD   REGS1
     026114  177777                                              .WORD   -1
4778 026116                                  FRUTBL  INTONL
     026116                                               T16FTB:
     026116  006644                                              .WORD   INTONL
     026120  177777                                              .WORD   -1
4779
4780 026122      045     116     045  PWRMS:  .ASCIZ  /%N%A IS FLOPPY SYSTEM CONTAINING UNIT #%02/
4781 026175      040     040     120  PWDNRY: .ASCIZ  /  POWERED DOWN/
4782 026214      040     040     120  PWUPRY: .ASCIZ  /  POWERED UP/
4783                                         .EVEN
4784
4785 026232                                  ENDTST
```

```
                                .SBTTL  TEST 17 -  CONTROLLER-INTERFACE - LGC TST
026234  000420                        BR      BGNT17          ;BR TO BGN TST
026236     040     103     117  T17MSG: .ASCIZ  / CONTROLLER-INTERFACE - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE INTERFACE BOARD STATE SEQUENCER IS FUNCTIONAL.
                                ; ALSO TO VFRIFY THE CONTROLLER-INTERFACE HANDSHAKE BY TRYING FUNCTIONS
                                ; WITH MINIMUM READ/WRITE BOARD INVOLVEMENT.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       SET PROTOCAL CHECK (TEST SETUP SETS VIS TEST TABLE)
                                ;       :       CALL READ ERROR CODE
                                ;       :       CALL ERROR CHECK
                                ;       :       CALL FILL BUFFER
                                ;       :       CALL ERROR CHECK
                                ;       :       CALL EMPTY BUFFER
                                ;       :       CALL ERROR CHECK
                                ;       :       CALL READ MAINT STATUS
                                ;       :       CALL ERROR CHECK
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;       2.  INTERFACE
                                ;-------------------------------------------------------------------
                                ;--
```

```
     026276                                    TSETUP                          ;
     026276  012737  026404  002466  BGNT17:  MOV      #T17TBL,TSTID          ;SETUP TEST ID TBL-TEST# 17
     026304  032737  000001  002324  IAT17:   BIT      #LOGICT,TSTMOD         ;IF TEST MODE=LOGIC TEST
     026312  001432                            BEQ      XT17                   ;BIT SET, THEN
     026314  004737  020736                    CALL     LTSTUP                 ;CALL LOGIC TEST SETUP
     026320  052737  000200  002500            BIS      #RECTST,FLAGSP         ;SET READ ERROR CODE TEST=FLAGSP
     026326  004737  011340                    CALL     RDERCD                 ;CALL READ ERROR CODE
     026332  004737  017724                    CALL     ERRCHK                 ;CALL ERROR CHECK
     026336  042737  000200  002500            BIC      #RECTST,FLAGSP         ;CLEAR READ ERROR CODE TEST=FLAGSP
     026344  004737  010510                    CALL     FILBUF                 ;CALL FILL BUFFER
     026350  004737  017724                    CALL     ERRCHK                 ;CALL ERROR HECK
     026354  004737  010626                    CALL     EMPBUF                 ;CALL EMPTY BUFFER
     026360  004737  017724                    CALL     ERRCHK                 ;CALL ERROR CHECK
     026364  005237  002470                    INC      TCMDCT                 ;INCREMENT TST COMMAND CTR     ****************
     026370  004737  011266                    CALL     RDSTAT                 ;CALL READ MAINTENANCE STATUS
     026374  004737  017724                    CALL     ERRCHK                 ;CALL ERROR CHECK
     026400                            XT17:   EXIT     TST

     026404                                    REGTBL   CSESND,CSESRS
             015076                                                           REGS1=CSESND
             015066                                                           REGS2=CSESRS
     026404                                    TTBL     REGCK,PROPRT
     026404  026236                                              T17TBL:  .WORD    T17MSG
     026406  000001                                                       .WORD    REGCK
     026410  000010                                                       .WORD    PROPRT
     026412  177777                                                       .WORD    -1
     026414                                                      T17RTB:
     026414  015076                                                       .WORD    REGS1
     026416  015066                                                       .WORD    REGS2
     026420  177777                                                       .WORD    -1
     026422                                    FRUTBL   CTLINF
     026422                                                      T17FTB:
     026422  006646                                                       .WORD    CTLINF
     026424  177777                                                       .WORD    -1
     026426                                    ENDTST
```

```
                                .SBTTL  TEST 18 -  NPR - LGC TST
026430  000410                  BR      BGNT18          ;BR TO BGN TST
026432     040     116     120  T18MSG: .ASCIZ  / NPR - LGC TST/
                                .EVEN

                        ;++
                        ; TEST TO VERIFY THAT THE NPR LOGIC WILL STORE A WORD IN MEMORY.
                        ;-------------------------------------------------------------------
                        ; BGNTST
                        ;       IF LOGIC TEST
                        ;       :  THEN-SETUP TEST IDENT
                        ;       :       SET ERROR CODE STORAGE=1'S
                        ;       :       CALL READ ERROR CODE
                        ;       :       IF ERROR CODE STORAGE=1'S
                        ;       :       :  THEN-CALL ERROR
                        ;       :       ENDIF
                        ;       :       SET WORD COUNT=128.
                        ;       :       SET DATA PATTERN=0'S
                        ;       :       CALL SET DATA PATTERN
                        ;       :       DATA BUFFER AREA=1'S (BEGIN, END & END+1)
                        ;       :       SET DENSITY CONTROL=DOUBLE DENSITY
                        ;       :       CALL FILL BUFFER
                        ;       :       CALL LOGIC TEST ERROR CK
                        ;       :       CALL EMPTY BUFFER
                        ;       :       CALL ERROR CK
                        ;       :       IF BEGIN DATA BUFFER AREA NOT=0'S
                        ;       :       :  THEN-SETUP NPR ERROR
                        ;       :       :       CALL ERROR
                        ;       :       ENDIF
                        ;       :       IF END DATA BUFFER AREA NOT=0'S
                        ;       :       :  THEN-CALL NPR ERROR
                        ;       :       :       CALL ERROR
                        ;       :       ENDIF
                        ;       :       IF END+1 DATA BUFFER NOT=1'S
                        ;       :       :  THEN-CALL NPR ERROR
                        ;       :       :       CALL ERROR
                        ;       :       ENDIF
                        ;       ENDIF
                        ; ENDTST
                        ;-------------------------------------------------------------------
                        ;--
```

```
4878 026452                                  TSETUP                      ;
     026452  012737  026752  002466  BGNT18: MOV    #T18TBL,TSTID        ;SETUP TEST ID TBL-TEST# 18
     026460  032737  000001  002324  IAT18:  BIT    #LOGICT,TSTMOD       ;IF TEST MODE=LOGIC TEST
     026466  001527                          BEQ    XT18                 ;BIT SET, THEN
     026470  004737  020736                  CALL   LTSTUP               ;CALL LOGIC TEST SETUP
4879 026474  012737  177777  002442          MOV    #-1,XERUUT           ;SET READ ERROR CODE STORAGE=1'S
4880 026502  004737  011340                  CALL   RDERCD               ;CALL READ ERROR CODE
4881 026506  022737  177777  002442  IBT18:  CMP    #-1,XERUUT           ;IF READ ERROR CODE STORAGE=1'S
4882 026514  001005                          BNE    EBT18                ;THEN
4883 026516  012737  000053  002520          MOV    #NPRERR,ERRNBR       ;SET ERR NUMBER=NPR ERROR
4884 026524  004737  003060                  CALL   ERROR                ;CALL ERROR
4885 026530  042737  000200  002476  EBT18:  BIC    #RECFLG,FLAGS1       ;CLEAR RED ERR COD FLG = FLAGS TST
4886 026536  012737  000200  002370          MOV    #128.,WDCNT          ;SET DEVICE WORD COUNT=128
4887 026544  012737  000001  012660          MOV    #1,PAT               ;SET DATA PAT=ALL ZEROS
4888 026552  004737  012306                  CALL   STDATP               ;CALL SET DATA PATTERN
4889 026556  012702  177777                  MOV    #-1,R2               ;SET R2=ALL 1'S
4890 026562  013737  002370  002504          MOV    WDCNT,TTEMP1         ;SET TEMP1=WORD COUNT
4891 026570  006337  002504                  ASL    TTEMP1               ;DOUBLE IT FOR ADDRESSING WORDS IN MEM
4892 026574  162737  000004  002504          SUB    #4,TTEMP1            ;ADJUST TO END OF BUFFER
4893 026602  013701  002504                  MOV    TTEMP1,R1            ;SET R1=TEMP1
4894 026606  010237  036622                  MOV    R2,DATBUF            ;SET DATA BUFFER BEGIN=1'S
4895 026612  110261  036622                  MOVB   R2,DATBUF(R1)        ;SET DATA BUFFER END=1'S
4896 026616  005201                          INC    R1                   ;BUMP INDEX
4897 026620  110261  036622                  MOVB   R2,DATBUF(R1)        ;SET DATA BUFFER END +1=1'S
4898 026624  012737  000400  002412          MOV    #DENBIT,DENSTY       ;SET DENSITY CONTROL=DOUBLE DENSITY
4899 026632  004737  010510                  CALL   FILBUF               ;CALL FILL BUFFER
4900 026636  004737  017724                  CALL   ERRCHK               ;CALL ERROR CHECK
4901 026642  004737  010626                  CALL   EMPBUF               ;CALL EMPTY BUFFER
4902 026646  004737  017724                  CALL   ERRCHK               ;CALL ERROR CHECK
4903 026652  005737  036622          ICT18:  TST    DATBUF               ;IF DATA BUFFER BEGIN
4904 026656  001406                          BEQ    ECT18                ;NOT=0, THEN
4905 026660  012737  000053  002520          MOV    #NPRERR,ERRNBR       ;SETUP ERRNBR=NPR ERR
4906 026666  004737  003060                  CALL   ERROR                ;CALL ERROR
4907 026672  000425                          BR     XT18                 ;BR TO EXIT
4908 026674  013701  002504          ECT18:  MOV    TTEMP1,R1            ;SET R1=TEMP1
4909 026700  105761  036622          IDT18:  TSTB   DATBUF(R1)           ;IF DATA BUFFER END
4910 026704  001406                          BEQ    EDT18                ;NOT=0, THEN
4911 026706  012737  000053  002520          MOV    #NPRERR,ERRNBR       ;SETUP ERRNBR=NPR ERR
4912 026714  004737  003060                  CAL    ERROR                ;CALL ERROR
4913 026720  000412                          BR     XT18                 ;BR TO EXIT
4914 026722  005201                  EDT18:  INC    R1                   ;BUMP INDEX
4915 026724  126127  036622  177777          CMPB   DATBUF(R1),#-1       ;IF DATA BUFFER END +1
4916 026732  001405                          BEQ    XT18                 ;NOT=1'S, THEN
4917 026734  012737  000053  002520          MOV    #NPRERR,ERRNBR       ;SETUP ERRNBR=NPR ERR
4918 026742  004737  003060                  CALL   ERROR                ;CALL ERROR
4919 026746                          XT18:   EXIT   TST
4920 026752                                  REGTBL CSESND
             015076                                                      REGS1=CSESND
4921 026752                                  TTBL   REGCK,0
     026752  026432                                            T18TBL:  .WORD   T18MSG
     026754  000001                                                     .WORD   REGCK
     026756  000000                                                     .WORD   0
     026760  177777                                                     .WORD   -1
     026762                                                    T18RTB:
     026762  015076                                                     .WORD   REGS1
     026764  177777                                                     .WORD   -1
4922 026766                                  FRUTBL  INFCTL
```

```
        026766                                          T18FTB:
        026766  006640                                          .WORD   INFCTL
        026770  177777                                          .WORD   -1
   4923 026772                          ENDTST
```

```
                                .SBTTL -  MOD U.SFT.NAT - ADDRESS NPR ADDRESS TEST
                                ;-------------------------------------------------------------
                                ; BGNSUB       NAT
                                ;       NOP
                                ;       IF CTR < 2
                                ;       : THEN-IF CTR=0
                                ;       :       : THEN-CLEAR ADR
                                ;       :       : ELSE-ADR=ADR+2
                                ;       :       ENDIF
                                ;       :       INCREMENT COUNTER
                                ;       : ELSE-INCREMENT COUNTER
                                ;       :       DOUBLE ADR (ADR=2XADR)
                                ;       :       IF ADR > 4000C
                                ;       :       : THEN-SET DONE IN FLAGS
                                ;       :       :       CLEAR CTR
                                ;       :       :       CLEAR ADR
                                ;       :       :       SET DO LOOP DONE FLAG
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDSUB
                                ;-------------------------------------------------------------

026774  000240                  NAT:    NOP                     ;
026776  022737  000002  027100  1ANAT:  CMP     #2,NATCTR       ;IF CTR
027004  103014                  BHIS    LANAT                   ;LESS THAN 2, THEN
027006  005737  027100          1BNAT:  TST     NATCTR          ;IF CTR
027012  001003                  BNE     LBNAT                   ;EQUALS 0, THEN
027014  005037  027102          CLR     NATADR                  ;CLEAR ADRS
027020  000403                  BR      EBNAT                   ;BR TO END 'B'
027022  012737  000002  027102  LBNAT:  MOV     #2,NATADR       ;ELSE, SET ADR=2
027030  005237  027100          EBNAT:  INC     NATCTR          ;INCREMENT COUNTER
027034  000420                  BR      EANAT                   ;BR TO END 'A'
027036  005237  027100          LANAT:  INC     NATCTR          ;INCREMENT COUNTER
027042  006337  027102          ASL     NATADR                  ;DOUBLE ADDRESS
027046  022737  040000  027102  ICNAT:  CMP     #40000,NATADR   ;IF ADDRESS
027054  101407                  BLOS    ECNAT                   ;GREATER THAN 40000, THEN
027056  005037  027100          CLR     NATCTR                  ;CLEAR COUNTER
027062  005037  027102          CLR     NATADR                  ;CLEAR ADDRESS
027066  052737  000010  002476  BIS     #DLPDN,FLAGST           ;SET DO LOOP DONE FLAG
027074  000240                  ECNAT:  NOP                     ;
027076  000207                  EANAT:  RETURN                  ;RETURN
                                ;-------------------------------------------------------------
027100  000000                  NATCTR: 0                       ;COUNTER
027102  000000                  NATADR: 0                       ;ADDRESS
                                ;-------------------------------------------------------------
```

```
                                .SBTTL  TEST 19 -  NPR NON-EXISTENT MEM - LGC TST
027104  000420                        BR      BGNT19          ;BR TO BGN TST
027106     040     116     120  T19MSG: .ASCIZ  / NPR NON-EXISTENT MEM - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE NPR NON-EXISTEND MEMORY LOGIC WILL TIME OUT
                                ; WHEN GIVEN AN ILLEGAL ADDRESS.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       IF NOT FONZ WITH 124K
                                ;       :       : THEN-SETUP BUS TRAPS
                                ;       :       :       SETUP NON EXISTENT ADDRESS
                                ;       :       :       CALL READ ERROR CODE
                                ;       :       :       IF RXCSR ERROR BIT OR RXESR NON-EXISTENT MEMORY BIT NOT SET
                                ;       :       :       : THEN-CALL LOGIC TEST ERROR
                                ;       :       :       ENDIF
                                ;       :       :       CLEAR ERROR SET BY TRAP
                                ;       :       :       CLEAR BUS TRAP VECTOR
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  INTERFACE
                                ;-------------------------------------------------------------------
                                ;--
```

```
 5001 027146                                   TSETUP                        ;
      027146  012737  027316  002466  BGNT19: MOV     #T19TBL,TSTID         ;SETUP TEST ID TBL-TEST# 19
      027154  032737  000001  002324  IAT19:  BIT     #LOGICT,TSTMOD        ;IF TEST MODE=LOGIC TEST
      027162  001447                          BEQ     XT19                  ;BIT SET, THEN
      027164  004737  020736                  CALL    LTSTUP                ;CALL LOGIC TEST SETUP
 5002 027170  032737  010000  002500  IBT19:  BIT     #FONZFG,FLAGSP        ;IF FONZ 124K FLAG
 5003 027176  001041                          BNE     XT19                  ;NOT SET, THEN
 5004 027200  005037  002452                  CLR     ABORT                 ;CLEAR ABORT FLAG
 5005 027204                                  SETVEC  #BTRP4,#TRAP,#PRI07
 5006 027232  013737  002344  002364          MOV     NXMADR,RECADR         ;SETUP NON EXISTENT MEMORY ADR
 5007 027240  004737  011340                  CALL    RDERCD                ;CALL READ ERROR CODE
 5008 027244  012737  000052  002464          MOV     #NXMERR,NGTSER        ;SETUP EXPECTED NEG TEST ERR=NXM ERR
 5009 027252  042737  000200  002476          BIC     #RECFLG,FLAGST        ;CLEAR READ ERR CODE FLAG (SU ERR CODE NOT EVALUATED)
 5010 027260  004737  017724                  CALL    ERRCHK                ;CALL ERROR CHECK
 5011 027264  005037  002452                  CLR     ABORT                 ;FLAG
 5012 027270                                  CLRVEC  #BTRP4
 5013 027276  004737  010440                  CALL    INTIAL                ;CALL PROG INITIALIZE
 5014 027302                          XT19:   EXIT    TST
 5015 027306                                  REGTBL
 5016 027306                                  REGTB   1,4040,400,NXMBIT,173777        ;CHECK ERR BIT & NXM ERR SET
      027306  004040                                  T19RT1: .WORD   4040                    ;RXCSR SHOULD BE
      027310  000400                                          .WORD   400                     ;RXCSR DONT CARE
      027312  004000                                          .WORD   NXMBIT                  ;RXESR SHOULD BE
      027314  173777                                          .WORD   173777                  ;RXESR DONT CARE
 5017 027316                                  TTBL    REGCK!NEGTST,0
      027316  027106                                          T19TBL: .WORD   T19MSG
      027320  004001                                                  .WORD   REGCK!NEGTST
      027322  000000                                                  .WORD   0
      027324  177777                                                  .WORD   -1
      027326                                                  T19RTB:
      027326  027306                                                  .WORD   T19RT1
      027330  177777                                                  .WORD   -1
 5018 027332                                  FRUTBL  INTONL
      027332                                                  T19FTB:
      027332  006644                                                  .WORD   INTONL
      027334  177777                                                  .WORD   -1
 5019 027336                                  ENDTST
```

```
5022                                    .SBTTL  TEST 20 -  INTERRUPT - LGC TST
     027340  000413                             BR      BGNT20          ;BR TO BGN TST
     027342     040     111     116     T20MSG: .ASCIZ  / INTERRUPT - LGC TST/
                                                .EVEN
5023
5024                                    ;++
5025                                    ; TEST TO VERIFY THAT THE INTERRUPTS CAN BE SET AND THAT THE DEVICE
5026                                    ; RESPONDS AS EXPECTED.
5027                                    ;-------------------------------------------------------------------------
5028                                    ; BGNTST
5029                                    ;       IF LOGIC TEST
5030                                    ;       : THEN-SETUP TEST IDENT
5031                                    ;       :       SET PROCESSOR PRIORITY-> -> NO INTERRUPTS
5032                                    ;       :       CAUSE RX INTERRUPT (WHEN PRIORITY LOWERED)
5033                                    ;       :       CALL WATCH DOG TO LOWER PRIORITY & WAIT FOR INTERRUPT
5034                                    ;       :       CALL ERROR
5035                                    ;       :       CLEAR RX INTERRUPT BIT
5036                                    ;       :       NOP
5037                                    ;       ENDIF
5038                                    ; ENDTST
5039                                    ;-------------------------------------------------------------------------
5040                                    ; BOARD CALLOUT:
5041                                    ;       1.  INTERFACE
5042                                    ;-------------------------------------------------------------------------
5043                                    ;--
5044 027370                                     TSETUP                          ;
     027370  012737  027462  002466  BGNT20: MOV     #T20TBL,TSTID   ;SETUP TEST ID TBL-TEST# 20
     027376  032737  000001  002324  IAT20:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
     027404  001424                          BEQ     XT20            ;BIT SET, THEN
     027406  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
5045 027412  005037  012024                  CLR     DX              ;SET WATCH DOG MULTIPLIER=0
5046 027416                                  SETPRI  #PRI07          ;SET PROCESSOR PRI=NO INTERRUPTS
5047 027424  052777  000100  152716          BIS     #100,@RXCS      ;CAUSE RX TO INTERRUPT-WHEN PRI LOWERED
5048 027432  004737  011662                  CALL    WATCH           ;CALL WATCH DOG-LOWER PRI & WAIT FOR INTERRUPT
5049 027436  004737  003060                  CALL    ERROR           ;CALL ERROR
5050 027442  042777  000100  152700          BIC     #100,@RXCS      ;CLEAR RX INTERRUPT BIT
5051 027450  012737  000010  012024          MOV     #10,DX          ;RESET WATCH DOG MULTIPLIER
5052 027456                          XT20:   EXIT    TST
5053 027462                                  REGTBL
5054 027462                                  TTBL    0,0
     027462  027342                                  T20TBL: .WORD   T20MSG
     027464  000000                                          .WORD   0
     027466  000000                                          .WORD   0
     027470  177777                                          .WORD   -1
     027472                                          T20RTB:
     027472  177777                                          .WORD   -1
5055 027474                                  FRUTBL  INTONL
     027474                                          T20FTB:
     027474  006644                                          .WORD   INTONL
     027476  177777                                          .WORD   -1
5056 027500                                  ENDTST
```

```
                                .SBTTL  TEST 21 -  PRIORITY LVL - LGC TST
027502  000414                        BR      BGNT21          ;BR TO BGN TST
027504     040     120     122  T21MSG: .ASCIZ  / PRIORITY LVL - LGC TST/
                                        .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE DEVICE PRIORITY IS SET TO THE CORRECT LEVEL.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       LOWER WATCH DOG TIMEOUT MULTIPLIER
                                ;       :       SETUP PROCESSOR PRIORITY=7 (PRESET VALUE)
                                ;       :       BGNDO
                                ;       :       : SET PROCESSOR PRIORITY (PRESET VALUE)
                                ;       :       : SET DEVICE INTERRUPT BIT TO ENABLE INTERRUPT
                                ;       :       : IF INTERRUPT OR ERROR OCCURRED
                                ;       :       : : THEN-SET DO LOOP DONE BIT -> FLAGS
                                ;       :       : : ELSE-LOWER SETUP PROCESSOR PRIORITY
                                ;       :       : :       CLEAR DEVICE INTERRUPT BIT
                                ;       :       : ENDIF
                                ;       :       DOUNTIL DO LOOP DONE BIT SET, PROCESSOR PRI=0 OR NO DONE BIT ESR
                                ;       :       IF SETUP PROCESSOR PRI NOT=DEVICE PRIORITY
                                ;       :       : THEN-CALL LOGIC TEST ERROR
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  INTERFACE
                                ;-------------------------------------------------------------------
                                ;--
```

```
5090 027534                                    TSETUP                          ;
     027534  012737  030106  002466  BGNT21:   MOV     #T21TBL,TSTID         ;SETUP TEST ID TBL-TEST# 21
     027542  032737  000001  002324  IAT21:    BIT     #LOGICT,TSTMOD        ;IF TEST MODE=LOGIC TEST
     027550  001511                            BEQ     XT21                  ;BIT SET, THEN
     027552  004737  020736                    CALL    LTSTUP                ;CALL LOGIC TEST SETUP
5091 027556  004737  010440                    CALL INTIAL                   ;CALL PROG INITIALIZE
5092 027562  012737  000001  012024            MOV     #1,DX                 ;SET WATCH DOG MULTIPLIER=1
5093 027570                                    SETPRI  #PRI07                ;SET PROCESSOR PRI=07 (NO INTERRUPTS)
5094 027576  005005                            CLR     R5                    ;SET PRIORITY TABLE INDEX
5095 027600  005037  002520          BBT21:    CLR     ERRNBR                ;CLEAR ERROR NUMBER INDICATOR
5096 027604  116537  021741  002416            MOVB    PRITAB+7(R5),PRIORT ;SET PROCESSOR PRIORITY TO NEW LEVEL
5097 027612  013737  002416  002504            MOV     PRIORT,TTEMP1         ;SETUP TEMP1 = PROCESSOR PRI
5098 027620  062737  000040  002504            ADD     #40,TTEMP1            ;NOW SETUP FOR COMPARE, I.E. ONE PRI LVL HIGHER
5099 027626  052777  000100  152514            BIS     #100,@RXCS            ;SET RX INTERRUPT BIT,AS PROCESSOR PRI LOWERED, INTERRUPTS
5100 027634  004737  011662                    CALL    WATCH                 ;CALL WATCH DOG TO WAIT FOR INTERRUPT
5101 027640  022737  000015  002520  ICT21:    CMP     #DNNINT,ERRNBR        ;IF INTERRUPT OR ERROR
5102 027646  001404                            BEQ     ECT21                 ;OCCURRED, THEN
5103 027650  052737  000010  002476            BIS     #DLPDN,FLAGST         ;SET DO LOOP DONE FLAG
5104 027656  000404                            BR      UBT21                 ;BR TO DOUNTIL 'B'
5105 027660  005305                  ECT21:    DEC     R5                    ;SET INDEX TO  NEXT LOWER PROCESSOR PRI
5106 027662  042777  000100  152460  EDT21:    BIC     #100,@RXCS            ;CLEAR DEVICE INTERRUPT BIT
5107 027670  020527  177770          UBT21:    CMP     R5,#-8.               ;DO UNTIL PROCESSOR PRI TABLE ALL DONE
5108 027674  001404                            BEQ     IET21                 ;OR
5109 027676  032737  000010  002476            BIT     #DLPDN,FLAGST         ;DOUNTIL FLAGST DO LOOP DONE FLAG
5110 027704  001735                            BEQ     BBT21                 ;SET
5111 027706  005737  002520          IET21:    TST     ERRNBR                ;IF INTERRUPT OCCURRED
5112 027712  001026                            BNE     LET21                 ;THEN
5113 027714  032737  000400  002500  IFT21:    BIT     #LSIFLG,FLAGSP        ;IF FLAGSP=LSI FLAG
5114 027722  001024                            BNE     XT21                  ;NOT SET, THEN
5115 027724  023737  002504  002356  IGT21:    CMP     TTEMP1,RXPRI          ;IF SETUP PROCESSOR PRIORITY & RX PRIORITY
5116 027732  001420                            BEQ     XT21                  ;DONT MATCH
5117 027734  012737  000054  002520            MOV     #PRILEV,ERRNBR        ;SETUP ERR NBR=PRI LEV ERR
5118 027742  004737  003060                    CALL    ERROR                 ;CALL ERROR
5119 027746  013703  002416                    MOV     PRIORT,R3             ;SETUP INTERRUPT PRI LEV FOR PRT
5120 027752  013702  002356                    MOV     RXPRI,R2              ;SETUP RX PRI LEV FOR PRINT
5121 027756  012701  030006                    MOV     #PRIMSG,R1            ;SETUP PRI LEV MSG
5122 027762  004737  002756                    CALL    PRTX2S                ;PRINT MSG
5123 027766  000402                            BR      XT21                  ;BR TO TEXT EXIT
5124 027770  004737  003060          LET21:    CALL    ERROR                 ;CALL ERROR
5125 027774  012737  000010  012024  XT21:     MOV     #10,DX                ;RESET WATCHDOG MULTIPLIER
5126 030002                                    EXIT    TST
5127 030006     045     116     045  PRIMSG:   .ASCIZ  /%N%S6%A RX SET AT PRI LEV-%03%N%S6%A INTERRUPTED AT PRI LEV=%03/
5128                                           .EVEN
5129 030106                                    REGTBL
5130 030106                                    TTBL    0,0
     030106  027504                                            T21TBL: .WORD   T21MSG
     030110  000000                                                    .WORD   0
     030112  000000                                                    .WORD   0
     030114  177777                                                    .WORD   -1
     030116                                                 T21RTB:
     030116  177777                                                    .WORD   -1
5131 030120                                    FRUTBL  INTONL
     030120                                                 T21FTB:
     030120  006644                                                    .WORD   INTONL
     030122  177777                                                    .WORD   -1
5132 030124                                    ENDTST
```

```
                                .SBTTL  TEST 22 -  INITIALIZE CONTROL - LGC TST
030126  000417                          BR      BGNT22          ;BR TO BGN TST
030130     040     111     116  T22MSG: .ASCIZ  / INITIALIZE CONTROL - LGC TST/
                                        .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE INITIALIZE.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       ISSUE DEVICE PROGRAMMED INITIALIZE
                                ;       :       CALL ERRCHK
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;       2.  INTERFACE
                                ;-------------------------------------------------------------------
                                ;--
030166                                  TSETUP                  ;
030166  012737  030224  002466  BGNT22: MOV     #T22TBL,TSTID   ;SETUP TEST ID TBL-TEST# 22
030174  032737  000001  002324  IAT22:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
030202  001406                          BEQ     XT22            ;BIT SET, THEN
030204  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
030210  004737  010440                  CALL    INTIAL          ;CALL INITIALIZE
030214  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
030220                          XT22:   EXIT    TST
030224                                  REGTB'  CEINIT
        015046                                                  REGS1=CEINIT
030224                                  TTBL    REGCK,RGPRT
                                                T22TBL: .WORD   T22MSG
030224  030130                                          .WORD   REGCK
030226  000001                                          .WORD   RGPRT
030230  000004                                          .WORD   -1
030232  177777                                  T22RTB:
030234                                          .WORD   REGS1
030234  015046                                  .WORD   -1
030236  177777                                  FRUTBL  CTLINF
030240                                          T22FTB:
030240  006646                                  .WORD   CTLINF
030242  177777                                  .WORD   -1
030244                                  ENDTST
```

```
                                .SBTTL  TEST 23 -  DATA BUF INTEGRITY - LGC TST
030246  000417                        BR      BGNT23          ;BR TO BGN TST
030250    040    104    101  T23MSG: .ASCIZ  / DATA BUF INTEGRITY - LGC TST/
                                      .EVEN

                                ;++
                                ; TEST TO VERIFY ALL BITS OF DATA BUFFER, VARIOUS PATTERNS WILL BE USED.
                                ;-----------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       SETUP RANDOM DATA PATTERN
                                ;       :       NOP
                                ;       :       BGNDO
                                ;       :       :  CALL DATA PATTERN SETUP
                                ;       :       :  CALL FILL BUFFER
                                ;       :       :  IF NO ERROR (ESCAPE TEST)
                                ;       :       :  :  THEN-CALL EMPTY BUFFER
                                ;       :       :  :       IF NO ERROR (ESCAPE TEST)
                                ;       :       :  :       :  THEN-SET EMPTY BUFFER FLAG
                                ;       :       :  :       :       CALL DATA CHECK
                                ;       :       :  :       :       ADVANCE PATTERN COUNT
                                ;       :       :  :       :       GET NEW PATTERN #
                                ;       :       :  :       :       IF FOUR PATTERNS DONE
                                ;       :       :  :       :       :  THEN-SET DO LOOP DONE
                                ;       :       :  :       :       ENDIF
                                ;       :       :  :       ENDIF
                                ;       :       :  ENDIF
                                ;       :       DOUNTIL DO LOOP DONE FLAG SET
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;-----------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;       2.  INTERFACE
                                ;-----------------------------------------------------------------------
                                ;--
```

```
   5200 030306                                          TSETUP                          ;
        030306  012737  030430  002466  BGNT23: MOV     #T23TBL,TSTID   ;SETUP TEST ID TBL-TEST# 23
        030314  032737  000001  002324  IAT23:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
        030322  001440                          BEQ     XT23            ;BIT SET, THEN
        030324  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
   5201 030330  012737  000001  012660          MOV     #1,PAT          ;SET DATA PATTERN = 0'S
   5202 030336  004737  012306          BBT23:  CALL    STDATP          ;CALL SET DATA PATTERN
   5203 030342  004737  010510                  CALL    FILBUF          ;CALL FILL BUFFER
   5204 030346                                  ESCAPE  TST             ;IF NO ERROR, THEN
   5205 030352  004737  010626                  CALL    EMPBUF          ;CALL EMPTY BUFFER
   5206 030356                                  ESCAPE  TST             ;IF NO ERROR, THEN
   5207 030362  004737  013246                  CALL    DATACK          ;CALL DATA CHECK
   5208 030366  005237  012660                  INC     PAT             ;ADVANCE TO NEXT DATA PATTERN
   5209 030372  022737  000010  012660  ICT23:  CMP     #8.,PAT         ;IF ALL DATA PATTERNS
   5210 030400  001003                          BNE     UBT23           ;DONE, THEN
   5211 030402  052737  000010  002476          BIS     #DLPDN,FLAGST   ;SET FLAGST=DO_LOOP_DONE_FLAG
   5212 030410  032737  000010  002476  UBT23:  BIT     #DLPDN,FLAGST   ;DOUNTIL FLAGST-DO_LOOP_DONE_FLAG
   5213 030416  001747                          BEQ     BBT23           ;IS SET
   5214 030420  005037  012660                  CLR     PAT             ;RESET DATA PATTERN
   5215 030424                          XT23:   EXIT    TST
   5216 030430                                  REGTBL
   5217 030430                                  TTBL    EMBUFF,0
        030430  030250                                          T23TBL: .WORD   T23MSG
        030432  000020                                                  .WORD   EMBUFF
        030434  000000                                                  .WORD   0
        030436  177777                                                  .WORD   -1
        030440                                                  T23RTB:
        030440  177777                                                  .WORD   -1
   5218 030442                                  FRUTBL  CTLINF
        030442                                                  T23FTB:
        030442  006646                                                  .WORD   CTLINF
        030444  177777                                                  .WORD   -1
   5219 030446                                  ENDTST
```

```
                                .SBTTL  TEST 24 -  WRD CNT INTEGRITY - LGC TST
030450  000417                        BR      BGNT24          ;BR TO BGN TST
030452     040     127     122  T24MSG: .ASCIZ  / WRD CNT INTEGRITY - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY ALL BITS OF WORD COUNT REGISTER AND CHECK THAT EXCEEDING
                                ; THE WORD COUNT FOR DISKETTE DENSITY WILL BE DETECTED.
                                ;-----------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       SET DENSITY CONTROL=DOUBLE
                                ;       :       SET BUFFER LENGTH=128.
                                ;       :       BGNDO
                                ;       :       CALL FILL BUFFER
                                ;       :       :  IF NO ERROR (ESCAPE TEST)
                                ;       :       :  :  THEN-CALL READ ERROR CODE
                                ;       :       :  :       IF NO ERROR (ESCAPE TEST)
                                ;       :       :  :       :  THEN-IF WORD COUNTS NOT EQUAL
                                ;       :       :  :       :       :  THEN-SETUP WORD COUNT ERROR
                                ;       :       :  :       :       :       CALL ERROR
                                ;       :       :  :       :       :  ELSE-UPDATE WORD COUNT
                                ;       :       :  :       :       :       IF WORD COUNT=0
                                ;       :       :  :       :       :       :  THEN-SET DO LOOP DONE FLAG
                                ;       :       :  :       :       :       ENDIF
                                ;       :       :  :       :       ENDIF
                                ;       :       :  :       ENDIF
                                ;       :       :  ENDIF
                                ;       :       DOUNTIL DO LOOP DONE FLAG SET
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;-----------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;-----------------------------------------------------------------------
                                ;--
```

```
5259 030510                                   TSETUP                     ;
     030510  012737  030670  002466  BGNT24:  MOV     #T24TBL,TSTID      ;SETUP TEST ID TBL-TEST# 24
     030516  032737  000001  002324  IAT24:   BIT     #LOGICT,TSTMOD     ;IF TEST MODE=LOGIC TEST
     030524  001457                           BEQ     XT24               ;BIT SET, THEN
     030526  004737  020736                   CALL    LTSTUP             ;CALL LOGIC TEST SETUP
5260 030532  012737  000400  002412           MOV     #DENBIT,DENSTY     ;SET DENSITY CONTROL=DOUBLE
5261 030540  012737  000200  002370           MOV     #128.,WDCNT        ;SET WORD COUNT=128.
5262 030546  004737  010510          BBT24:   CALL    FILBUF             ;CALL FILL BUFFER
5263 030552                                   ESCAPE  TST                ;IF NO ERROR THEN
5264 030556  004737  011340                   CALL    RDERCD             ;CALL READ ERROR CODE
5265 030562                                   ESCAPE  TST                ;IF NO ERROR THEN
5266 030566  105737  002443          ICT24:   TSTB    WC                 ;IF WORD COUNT
5267 030572  001420                           BEQ     LCT24              ;NOT EQUAL 0, THEN
5268 030574  012737  000023  002520           MOV     #WCERR,ERRNBR      ;SETUP ERR NBR=WORD COUNT ERROR
5269 030602  005037  002440                   CLR     REGACT             ;CLEAR REG ACTUAL
5270 030606  113737  002443  002440           MOVB    WC,REGACT          ;SETUP WORD COUNT ACTUAL
5271 030614  005037  002436                   CLR     REGEXP             ;SETUP WORD COUNT EXPECTED
5272 030620  004737  003060                   CALL    ERROR              ;CALL ERROR
5273 030624  052737  000010  002476           BIS     #DLPDN,FLAGST      ;SET FLAGST=DO LOOP DONE FLAG
5274 030632  000410                           BR      UBT24              ;BR TO DOUNTIL 'B'
5275 030634  005337  002370          LCT24:   DEC     WDCNT              ;DECREMENT WORD COUNT
5276 030640  005737  002370          IDT24:   TST     WDCNT              ;IF WORD COUNT
5277 030644  001003                           BNE     UBT24              ;EQUALS ZERO, THEN
5278 030646  052737  000010  002476           BIS     #DLPDN,FLAGST      ;SET FLAGST=DO_LOOP_DONE_FLAG
5279 030654  032737  000010  002476  UBT24:   BIT     #DLPDN,FLAGST      ;DOUNTIL FLAGST=DO_LOOP_DONE_FLAG
5280 030662  001731                           BEQ     BBT24              ;SET
5281 030664                          XT24:    EXIT    TST
5282 030670                                   REGTBL
5283 030670                                   TTBL    0,RGPRT
     030670  030452                                             T24TBL:  .WORD   T24MSG
     030672  000000                                                      .WORD   0
     030674  000004                                                      .WORD   RGPRT
     030676  177777                                                      .WORD   -1
     030700                                                     T24RTB:
     030700  177777                                                      .WORD   -1
5284 030702                                   FRUTBL  CTLINF
     030702                                                     T24FTB:
     030702  006646                                                      .WORD   CTLINF
     030704  177777                                                      .WORD   -1
5285 030706                                   ENDTST
```

```
5288                                    .SBTTL  TEST 25 -  CONTROLLER-READ*WRITE ELECT - LGC TST
     030710  000424                             BR      BGNT25          ;BR TO BGN TST
     030712     040     103     117  T25MSG: .ASCIZ  / CONTROLLER-READ*WRITE ELECT - LGC TST/
                                             .EVEN
5289
5290                                    ;++
5291                                    ; TEST TO VERIFY MINIMAL CONTROLLER BOARD-READ/WRITE ELECTRONICS BOARD
5292                                    ; INTERFACE VIA INITIALIZE OF A SELECTED DRIVE.
5293                                    ;-------------------------------------------------------------------------
5294                                    ; BGNTST
5295                                    ;       IF LOGIC TEST
5296                                    ;       :  THEN-SETUP TEST IDENT
5297                                    ;       :       NOP
5298                                    ;       :       ISSUE PROGRAMMED INITIALIZE
5299                                    ;       :       CALL ERROR CK
5300                                    ;       :       CALL READ ERROR CODE
5301                                    ;       :       IF NO ERROR (ESCAPE TEST)
5302                                    ;       :       :  THEN-CALL ERROR CK
5303                                    ;       :       ENDIF
5304                                    ;       :       NOP
5305                                    ;       ENDIF
5306                                    ; ENDTST
5307                                    ;-------------------------------------------------------------------------
5308                                    ; BOARD CALLOUT:
5309                                    ;       1.  CONTROLLER
5310                                    ;       2.  R/W ELECTRONICS
5311                                    ;-------------------------------------------------------------------------
5312                                    ;--
```

```
5315 030762                                    TSETUP                          ;
     030762  012737  031054  002466  BGNT25:  MOV     #T25TBL,TSTID            ;SETUP TEST ID TBL-TEST# 25
     030770  032737  000001  002324  IAT25:   BIT     #LOGICT,TSTMOD           ;IF TEST MODE=LOGIC TEST
     030776  001424                          BEQ     XT25                     ;BIT SET, THEN
     031000  004737  020736                  CALL    LTSTUP                   ;CALL LOGIC TEST SETUP
5316 031004  004737  010440                  CALL    INTIAL                   ;CALL INITIALIZE
5317 031010  004737  017724                  CALL    ERRCHK                   ;CALL ERROR CHECK
5318 031014  005237  002470                  INC     TCMDCT                   ;INCREMENT TST CMD CTR   *****
5319 031020  052737  000200  002500          BIS     #RECTST,FLAGSP           ;SET READ ERROR CODE TEST=FLAGSP
5320 031026  004737  011340                  CALL    RDERCD                   ;CALL READ ERROR CODE
5321 031032                                  ESCAPE  TST                      ;IF NO ERROR
5322 031036  004737  017724                  CALL    ERRCHK                   ;CALL ERROR CHECK
5323 031042  042737  000200  002500          BIC     #RECTST,FLAGSP           ;CLEAR READ ERROR CODE TEST=FLAGSP
5324 031050                          XT25:   EXIT    TST
5325 031054                                  REGTBL  CEINIT,CSESND
             015046                                                           REGS1=CEINIT
             015076                                                           REGS2=CSESND
5326 031054                                  TTBL    REGCK,0
     031054  030712                                          T25TBL: .WORD   T25MSG
     031056  000001                                                  .WORD   REGCK
     031060  000000                                                  .WORD   0
     031062  177777                                                  .WORD   -1
     031064                                               T25RTB:
     031064  015046                                                  .WORD   REGS1
     031066  015076                                                  .WORD   REGS2
     031070  177777                                                  .WORD   -1
5327 031072                                  FRUTBL  CTLRWE
     031072                                               T25FTB:
     031072  006651                                                  .WORD   CTLRWE
     031074  177777                                                  .WORD   -1
5328 031076                                  ENDTST
```

```
5331                                    .SBTTL  TEST 26 -  READ SECTOR-PRT:1 - LGC TST
     031100  000417                             BR      BGNT26          ;BR TO BGN TST
     031102     040     122     105  T26MSG:    .ASCIZ  / READ SECTOR-PRT:1 - LGC TST/
                                             .EVEN
5332
5333                                    ;++
5334                                    ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A READ SECTOR IN
5335                                    ; BOTH DENSITIES AND RETURN A VALID ERROR CODE.
5336                                    ;-------------------------------------------------------------------
5337                                    ; BGNTST
5338                                    ;       IF LOGIC TEST
5339                                    ;       :  THEN-SETUP TEST IDENT
5340                                    ;       :       CALL DEVICE DENSITY CK
5341                                    ;       :       SET DENSITY CONTROL=DISK DEN
5342                                    ;       :       CALL READ SECTOR
5343                                    ;       :       CALL READ ERROR CODE
5344                                    ;       :       IF NO COMMAND ERRORS
5345                                    ;       :       :  THEN-CALL ERROR CK
5346                                    ;       :       :       CALL COMPLIMENT DENSITY
5347                                    ;       :       :       CALL READ SECTOR
5348                                    ;       :       :       CALL READ ERROR CODE
5349                                    ;       :       :       IF NO COMMAND ERRORS
5350                                    ;       :       :       :  THEN-CALL ERROR CK
5351                                    ;       :       :       ENDIF
5352                                    ;       :       NOP
5353                                    ;       :       ENDIF
5354                                    ;       ENDIF
5355                                    ; ENDTST
5356                                    ;-------------------------------------------------------------------
5357                                    ; BOARD CALLOUT:
5358                                    ;       1.  CONTROLLER
5359                                    ;       2.  R/W ELECTRONICS
5360                                    ;-------------------------------------------------------------------
5361                                    ;--
```

```
 5364 031140                                 TSETUP                          ;
      031140  012737  031256  002466 BGNT26: MOV     #T26TBL,TSTID    ;SETUP TEST ID TBL-TEST# 26
      031146  032737  000001  002324 IAT26:  BIT     #LOGICT,TSTMOD   ;IF TEST MODE=LOGIC TEST
      031154  001436                         BEQ     XT26             ;BIT SET, THEN
      031156  004737  020736                 CALL    LTSTUP           ;CALL LOGIC TEST SETUP
 5365 031162  004737  017350                 CALL    DENCHK           ;CALL DENSITY CHECK
 5366 031166  004737  020472                 CALL    SDENC            ;CALL SET DENSITY CONTROL=DENSITY STATUS
 5367 031172  004737  011062                 CALL    READ             ;CALL READ SECTOR
 5368 031176  004737  011340                 CALL    RDERCD           ;CALL READ ERROR CODE
 5369 031202                                 ESCAPE  TST              ;IF NO COMMAND ERRORS, THEN
 5370 031206  004737  017724                 CALL    ERRCHK           ;CALL ERROR CHECK
 5371 031212  004737  020430                 CALL    CDENC            ;CALL COMPLIMENT DENSITY CONTROL
 5372 031216  052737  004000  002476         BIS     #NEGTST,FLAGST   ;SET FLAGST=NEG TEST FLAG
 5373 031224  012737  000030  002464         MOV     #DENERR,NGTSER   ;SETUP NEGTEST SET ERROR=DEN ERROR
 5374 031232  004737  011062                 CALL    READ             ;CALL READ SECTOR
 5375 031236  004737  011340                 CALL    RDERCD           ;CALL READ ERROR CODE
 5376 031242                                 ESCAPE  TST              ;IF NO COMMAND ERRORS, THEN
 5377 031246  004737  017724                 CALL    ERRCHK           ;CALL ERROR CHECK
 5378 031252                         XT26:   EXIT    TST
 5379 031256                                 REGTBL  CSESAL
              015036                                                  REGS1=CSESAL
 5380 031256                                 TTBL    REGCK,0
      031256  031102                                           T26TBL: .WORD   T26MSG
      031260  000001                                                   .WORD   REGCK
      031262  000000                                                   .WORD   0
      031264  177777                                                   .WORD   -1
      031266                                                   T26RTB:
      031266  015036                                                   .WORD   REGS1
      031270  177777                                                   .WORD   -1
 5381 031272                                 FRUTBL  CTLRWE
      031272                                                   T26FTB:
      031272  006651                                                   .WORD   CTLRWE
      031274  177777                                                   .WORD   -1
 5382 031276                                 ENDTST
```

```
5385                                    .SBTTL  TEST 27 -  POSITIONING - LGC TST
     031300  000414                             BR      BGNT27          ;BR TO BGN TST
     031302     040     120     117  T27MSG: .ASCIZ  / POSITIONING - LGC TST/
                                             .EVEN
5386
5387                                    ;++
5388                                    ; TEST TO VERIFY THAT THE DRIVE WILL READ THE HEADERS ON ALL TRACKS OF
5389                                    ; THE DEIVE AS EXPECTED.
5390                                    ;-------------------------------------------------------------------------
5391                                    ; BGNTST
5392                                    ;       IF LOGIC TEST
5393                                    ;       :  THEN-SETUP TEST IDENT
5394                                    ;       :       SET TRACK INIT FLAG
5395                                    ;       :       SET SECTOR=10
5396                                    ;       :       BGNDO
5397                                    ;       :       :  CALL GET TRACK
5398                                    ;       :       :  CALL READ ERROR CODE
5399                                    ;       :       :  CALL READ SECTOR
5400                                    ;       :       :  IF NO COMMAND ERRORS (ESCAPE TST)
5401                                    ;       :       :  :  THEN-CALL ERROR CHECK
5402                                    ;       :       :  :       CALL TRACKS ERROR CK
5403                                    ;       :       :  :       CLEAR TRACK INIT FLAG
5404                                    ;       :       :  :       NOP
5405                                    ;       :       :  ENDIF
5406                                    ;       :       DOUNTIL TRACKS DONE, ABORT FLAG SET, OR TRACK ERRORS=10
5407                                    ;       :       NOP
5408                                    ;       ENDIF
5409                                    ; ENDTST
5410                                    ;-------------------------------------------------------------------------
5411                                    ; BOARD CALLOUT:
5412                                    ;       1.  CONTROLLER
5413                                    ;       2.  R/W ELECTRONICS
5414                                    ;-------------------------------------------------------------------------
5415                                    ;--
```

```
   5418 031332                                 TSETUP                     ;
        031332  012737  031446  00246(  BGNT27: MOV     #T27TBL,TSTID     ;SETUP TEST ID TBL-TEST# 27
        031340  03.737  000001  002324  IAT27:  BIT     #LOGICT,TSTMOD    ;IF TEST MODE=LOGIC TEST
        031346  001435                          BEQ     XT27              ;BIT SET, THEN
        031350  004737  020736                  CALL    LTSTUP            ;CALL LOGIC TEST SETUP
   5419 031354  012737  000400  002510          MOV     #ITK!RTK,TKSCFG   ;SET TRK/SEC FLAG-->TRACK=INIT & RANDOM
   5420 031362  004737  017350                  CALL    DENCHK            ;CALL DENSITY CHECK
   5421 031366  004737  020472                  CALL    SDENC             ;CALL SET DENSITY CONTROL=DENSITY STATUS
   5422 031372  012737  000010  002376          MOV     #10,SECTOR        ;SET SECTOR=10
   5423 031400  004737  012662          BBT27:  CALL    GETTRK            ;CALL GET TRACK
   5424 031404  004737  011062                  CALL    READ              ;CALL READ SECTOR
   5425 031410  004737  011340                  CALL    RDERCD            ;CALL READ ERROR CODE
   5426 031414                                  ESCAPE  TST               ;IF NO COMMAND ERRORS, THEN
   5427 031420  004737  017516                  CALL    TKERCK            ;CALL TRACK ERROR CHECK
   5428 031424  042737  000400  002510          BIC     #ITK,TKSCFG       ;CLEAR INT TRK FLAG
   5429 031432  032737  001000  002476  UBT27:  BIT     #TRKDON,FLAGST    ;DO UNTIL FLAGST-TRACK DONE FLAG
   5430 031440  001757                          BEQ     BBT27             ;SET,
   5431 031442                          XT27:   EXIT    TST
   5432 031446                                  REGTBL  CSESAL
                015036                                                    REGS1=CSESAL
   5433 031446                                  TTBL    REGCK,0
        031446  031302                                          T27TBL:   .WORD   T27MSG
        031450  000001                                                    .WORD   REGCK
        031452  000000                                                    .WORD   0
        031454  177777                                                    .WORD   -1
        031456                                                  T27RTB:
        031456  015036                                                    .WORD   REGS1
        031460  177777                                                    .WORD   -1
   5434 031462                                  FRUTBL  CTLRWE
        031462                                                  T27FTB:
        031462  006651                                                    .WORD   CTLRWE
        031464  177777                                                    .WORD   -1
   5435 031466                                  ENDTST
```

```
                                .SBTTL  TEST 28 -  WRITE SECTOR-PRT:1 - LGC TST
031470  000417                        BR      BGNT28          ;BR TO BGN TST
031472      040     127     122 T28MSG: .ASCIZ  / WRITE SECTOR-PRT:1 - LGC TST/
                                .EVEN

                        ;++
                        ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A WRITE SECTOR IN
                        ; BOTH DENSITIES AND RETURN A VALID ERROR CODE.
                        ;-------------------------------------------------------------------
                        ; BGNTST
                        ;       IF LOGIC TEST
                        ;       : THEN-SETUP TEST IDENT
                        ;       :       CALL DEVICE DENSITY CHECK
                        ;       :       SET DENSITY CONTROL=DISK DEN
                        ;       :       CALL WRITE SECTOR
                        ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
                        ;       :       : THEN-CALL ERROR CHECK
                        ;       :       :       CALL COMPLIMENT DENSITY CONTROL
                        ;       :       :       CALL WRITE SECTOR
                        ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
                        ;       :       :       : THEN-CALL ERROR CHECK
                        ;       :       :       ENDIF
                        ;       :       NOP
                        ;       :       ENDIF
                        ;       :       NOP
                        ;       ENDIF
                        ; ENDTST
                        ;-------------------------------------------------------------------
                        ; BOARD CALLOUT:
                        ;       1.  CONTROLLER
                        ;       2.  R/W ELECTRONICS
                        ;-------------------------------------------------------------------
                        ;--
```

```
5470 031530                                    TSETUP                          ;
     031530  012737  031642  002466  BGNT28:   MOV     #T28TBL,TSTID           ;SETUP TEST ID TBL-TEST# 28
     031536  032737  000001  002324  IAT28:    BIT     #LOGICT,TSTMOD          ;IF TEST MODE=LOGIC TEST
     031544  001434                            BEQ     XT28                    ;BIT SET, THEN
     031546  004737  020736                    CALL    LTSTUP                  ;CALL LOGIC TEST SETUP
5471 031552  004737  017350                    CALL    DENCHK                  ;CALL DENSITY CHECK
5472 031556  004737  020472                    CALL    SDENC                   ;CALL SET DENSITY CONTROL=DENSITY STATUS
5473 031562  004737  010744                    CALL    WRITE                   ;CALL WRITE SECTOR
5474 031566                                    ESCAPE  TST                     ;IF NO COMMAND ERROR, THEN
5475 031572  004737  017724                    CALL    ERRCHK                  ;CALL ERROR CHECK
5476 031576  004737  020430                    CALL    CDENC                   ;CALL COMPLIMENT DENSITY CONTROL
5477 031602  052737  004000  002476            BIS     #NEGTST,FLAGST          ;SET FLAGST-NEG TEST FLAG
5478 031610  012737  000030  002464            MOV     #DENERR,NGTSER          ;SETUP NEG TEST ERR ERR=DENSITY ERR
5479 031616  004737  010744                    CALL    WRITE                   ;CALL WRITE
5480 031622  004737  011340                    CALL    RDERCD                  ;CALL READ ERROR CODE
5481 031626                                    ESCAPE  TST                     ;IF NO COMMAND ERROR
5482 031632  004737  017724                    CALL    ERRCHK                  ;CALL ERROR CHECK
5483 031636                            XT28:   EXIT    TST
5484 031642                                    REGTBL  CSESAL
             015036                                                 REGS1=CSESAL
5485 031642                                    TTBL    REGCK,0
     031642  031472                                            T28TBL: .WORD   T28MSG
     031644  000001                                                    .WORD   REGCK
     031646  000000                                                    .WORD   0
     031650  177777                                                    .WORD   -1
     031652                                                     T28RTB:
     031652  015036                                                    .WORD   REGS1
     031654  177777                                                    .WORD   -1
5486 031656                                    FRUTBL  CTLRWE
     031656                                                     T28FTB:
     031656  006651                                                    .WORD   CTLRWE
     031660  177777                                                    .WORD   -1
5487 031662                                    ENDTST
```

```
                                .SBTTL  TEST 29 -  DELETED DATA WRITE PRT:1 - LGC TST
031664  000422                  BR      BGNT29          ;BR TO BGN TST
031666      040     104     105 T29MSG: .ASCIZ  / DELETED DATA WRITE PRT:1 - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISKETTE
                                ; HEADER AND RETRIEVE THIS DATA ON A KNOWN GOOD DISKETTE.
                                ;-----------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       CALL DEVICE DENSITY CK
                                ;       :       SET DENSITY CONTROL=DENSITY STATUS
                                ;       :       SET DELETED DATA FLAG (BIT#3-CMD)
                                ;       :       CALL WRITE SECTOR
                                ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
                                ;       :       :  THEN-CALL READ SECTOR
                                ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
                                ;       :       :       :  THEN-IF RXESR-DELETED DATA BIT NOT SET
                                ;       :       :       :       :  THEN-SET ERROR NUMBER=DELETED DATA ERR
                                ;       :       :       :       :       CALL ERROR
                                ;       :       :       :       ENDIF
                                ;       :       :       ENDIF
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDTST
                                ;-----------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;       2.  R/W ELECTRONICS
                                ;-----------------------------------------------------------------------
                                ;--
```

```
5522 031732                                    TSETUP                            ;
     031732  012737  032056  002466  BGNT29:  MOV     #T29TBL,TSTID     ;SETUP TEST ID TBL-TEST# 29
     031740  032737  000001  002324  IAT29:   BIT     #LOGICT,TSTMOD    ;IF TEST MODE=LOGIC TEST
     031746  001441                           BEQ     XT29              ;BIT SET, THEN
     031750  004737  020736                   CALL    LTSTUP            ;CALL LOGIC TEST SETUP
5523 031754  004737  017350                   CALL    DENCHK            ;CALL DEVICE DENSITY CHECK
5524 031760  004737  020472                   CALL    SDENC             ;CALL SET DENSITY CONTROL=DENSITY STATUS
5525 031764  012737  000010  002402           MOV     #DLDCMD,DELDAT    ;SET DELETED DATA FLAG
5526 031772  004737  010744                   CALL    WRITE             ;CALL WRITE SECTOR
5527 031776                          IBT29:   ESCAPE  TST               ;IF NO COMMAND ERROR, THEN
5528 032002  004737  017724                   CALL    ERRCHK            ;CALL ERROR CHECK
5529 032006  004737  011062                   CALL    READ              ;CALL READ SECTOR
5530 032012                          ICT29:   ESCAPE  TST               ;IF NO COMMAND ERROR, THEN
5531 032016  032777  000100  150326  IDT29:   BIT     #DLDBIT,@RXDB     ;IF RXESR-DELETED DATA BIT
5532 032024  001006                           BNE     LCT29             ;NOT SET, THEN
5533 032026  012737  000032  002520           MOV     #DLDTER,ERRNBR    ;SETUP ERROR NUMBER=DELETED DATA ERPOR
5534 032034  004737  003060                   CALL    ERROR             ;CALL ERROR
5535 032040  000404                           BR      XT29              ;EXIT TST
5536 032042  005037  002402           LCT29:  CLR     DELDAT            ;CLEAR DEL DATA MODE
5537 032046  004737  010744                   CALL    WRITE             ;CALL WRITE SECTOR - CLR DATA FIELD
5538 032052                          XT29:    EXIT    TST
5539 032056                                   REGTBL  CSESAL
             015036                                                     REGS1=CSESAL
5540 032056                                   TTBL    REGCK,0
     032056  031666                                            T29TBL:  .WORD   T29MSG
     032060  000001                                                     .WORD   REGCK
     032062  000000                                                     .WORD   0
     032064  177777                                                     .WORD   -1
     032066                                                    T29RTB:
     032066  015036                                                     .WORD   REGS1
     032070  177777                                                     .WORD   -1
5541 032072                                   FRUTBL  CTLRWE
     032072                                                    T29FTB:
     032072  006651                                                     .WORD   CTLRWE
     032074  177777                                                     .WORD   -1
5542 032076                                   ENDTST
```

```
                                .SBTTL  TEST 30 -  SET DENSITY - LGC TST
032100  000414                  BR      BGNT30          ;BR TO BGN TST
032102     040     123     105  T30MSG: .ASCIZ  / SET DENSITY - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE SET DENSITY IN BOTH
                                ; DENSITIES.  THE VALID WORD WILL ALSO BE CHECKED.  ALSO TO VERIFY THAT
                                ; THE DRIVE WILL READ IN THE NEW DENSITY WITHOUT ERROR.
                                ;-----------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       CALL DEVICE DENSITY CHECK
                                ;       :       SAVE DEVICE DENSITY
                                ;       :       SET DENSITY CONTROL=SINGLE DEN
                                ;       :       CALL SET DENSITY
                                ;       :       IF NO COMMAND ERROR (ESCAPE TST)
                                ;       :       :  THEN-CALL ERROR CHECK
                                ;       :       :       SET VALIDITY WORD=ASCII "K"
                                ;       :       :       CALL SET DENSITY
                                ;       :       :       CALL READ ERROR CODE
                                ;       :       :       IF NO COMMAND ERROR (ESCAPE TST)
                                ;       :       :       :  THEN-SET FLAGST NEG TEST FLAG
                                ;       :       :       :       SETUP EXPECTED ERR=S.D. KEY WD ERR
                                ;       :       :       :       CALL ERROR CHECK
                                ;       :       :       :       SET DENSITY CONTROL=DOUBLE DENSITY
                                ;       :       :       :       SET VALIDITY WORD=ASCII 'I'
                                ;       :       :       :       CALL SET DENSITY
                                ;       :       :       :       IF NO COMMAND ERROR (ESCAPE TST)
                                ;       :       :       :       :  THEN-CALL ERROR CHECK
                                ;       :       :       :       :       CALL DEVICE DENSITY CHECK
                                ;       :       :       :       :       IF DEVICE DENSITY NOT=SET DENSITY
                                ;       :       :       :       :       :  THEN-SET ERR MSG=DENSITY NOT SET
                                ;       :       :       :       :       :       CALL ERROR CHECK
                                ;       :       :       :       :       ENDIF
                                ;       :       :       :       :       IF SAVED DEVICE DENSITY=DOUBLE DENSITY
                                ;       :       :       :       :       :  THEN-SET DENSITY CONTROL=SINGLE DEN
                                ;       :       :       :       :       ENDIF
                                ;       :       :       :       ENDIF
                                ;       :       :       ENDIF
                                ;       :       ENDIF
                                ;       ENDIF
                                ; ENDTST
                                ;-----------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;       2.  R/W ELECTRONICS
                                ;-----------------------------------------------------------------------
                                ;--
```

```
5594 032132                                   TSETUP                      ;
     032132  012737  032356  002466  BGNT30: MOV    #T30TBL,TSTID        ;SETUP TEST ID TBL-TEST# 30
     032140  032737  000001  002324  IAT30:  BIT    #LOGICT,TSTMOD       ;IF TEST MODE=LOGIC TEST
     032146  001501                          BEQ    XT30                 ;BIT SET, THEN
     032150  004737  020736                  CALL   LTSTUP               ;CALL LOGIC TEST SETUP
5595 032154  004737  017350                  CALL   DENCHK               ;CALL DENSITY CHECK
5596 032160  013737  002414  002506          MOV    DENSTA,TSAVE1        ;SAVE DEVICE DENSITY
5597 032166  005037  002412                  CLR    DENSTY               ;SET DENSITY CONTROL=SINGLE DENSITY
5598 032172  004737  011172                  CALL   SETDN                ;CALL SET DENSITY
5599 032176                                  ESCAPE TST                  ;IF NO COMMAND ERROR, THEN
5600 032202  004737  017724                  CALL   ERRCHK               ;CALL ERROR CHECK
5601 032206  012737  000113  002372          MOV    #'K,VARIFY           ;SET VALIDITY WORD=ASCII "K"
5602 032214  004737  011172                  CALL   SETDN                ;CALL SET DENSITY
5603 032220  004737  011340                  CALL   RDERCD               ;CALL READ ERROR CODE
5604 032224                                  ESCAPE TST                  ;IF NO COMMAND ERROR
5605 032230  052737  004000  002476          BIS    #NEGTST,FLAGST       ;SET FLAGST-NEG TEST FLAG
5606 032236  012737  000036  002464          MOV    #SDKYWD,NGTSER       ;SETUP EXPECTED ERROR=SET DEN KEYWORD ERROR
5607 032244  004737  017724                  CALL   ERRCHK               ;CALL ERROR CHECK
5608 032250  012737  000400  002412          MOV    #DENBIT,DENSTY       ;SET DENSITY CONTROL=DOUBLE DENSITY
5609 032256  012737  000111  002372          MOV    #'I,VARIFY           ;SET VALIDITY WORD=ASCII "I"
5610 032264  042737  004000  002476          BIC    #NEGTST,FLAGST       ;CLEAR FLAGST-NEG TEST FLAG
5611 032272  004737  011172                  CALL   SETDN                ;CALL SET DENSITY
5612 032276                                  ESCAPE TST                  ;IF NO COMMAND ERROR, THEN
5613 032302  004737  017724                  CALL   ERRCHK               ;CALL ERROR CHECK
5614 032306  004737  017350                  CALL   DENCHK               ;CALL DENSITY CHECK
5615 032312  023737  002414  002412          CMP    DENSTA,DENSTY        ;IF DENSITY DID
5616 032320  001405                          BEQ    IBT30                ;NOT SET, THEN
5617 032322  012737  000035  002520          MOV    #STDNER,ERRNBR       ;SET ERROR NBR=DENSITY DIDN'T SET ERROR
5618 032330  004737  003060                  CALL   ERROR                ;CALL ERROR
5619 032334  005737  002506          IBT30:  TST    TSAVE1               ;IF SAVED DENSITY
5620 032340  001404                          BEQ    XT30                 ;EQUALS DOUBLE DEN, THEN
5621 032342  005037  002412                  CLR    DENSTY               ;SET DENSITY CONTROL=SINGLE DEN
5622 032346  004737  011172                  CALL   SETDN                ;CALL SET DENSITY
5623 032352                          XT30:   EXIT   TST
5624 032356                                  REGTBL CSESAL
             015036                                                      REGS1=CSESAL
5625 032356                                  TTBL   REGCK,0
     032356  032102                                          T30TBL:     .WORD   T30MSG
     032360  000001                                                      .WORD   REGCK
     032362  000000                                                      .WORD   0
     032364  177777                                                      .WORD   -1
     032366                                                  T30RTB:
     032366  015036                                                      .WORD   REGS1
     032370  177777                                                      .WORD   -1
5626 032372                                  FRUTBL CTLRWE
     032372                                                  T30FTB:
     032372  006651                                                      .WORD   CTLRWE
     032374  177777                                                      .WORD   -1
5627 032376                                  ENDTST
```

```
                                .SBTTL  TEST 31 -  SECTOR ADR - LGC TST
032400  000413                          BR      BGNT31          ;BR TO BGN TST
032402     040     123     105  T31MSG: .ASCIZ  / SECTOR ADR - LGC TST/
                                        .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE CONTROLLER WILL HANDLE ALL LEGAL AND ILLEGAL
                                ; SECTOR ADDRESSES PROPERLY.
                                ;-------------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       SET TRACK ADR=0
                                ;       :       SET SECTOR LEGAL FALG
                                ;       :       SET SECTOR INIT
                                ;       :       BGNDO
                                ;       :       :  CALL GET SECTOR ADR
                                ;       :       :  CALL READ SECTOR
                                ;       :       :  CALL READ ERROR CODE
                                ;       :       :  IF FINI FLAG NOT SET
                                ;       :       :  :  THEN-
                                ;       :       :  :     IF SECTOR ADR NOT=TARGET SECTOR ADR
                                ;       :       :  :     :  THEN-SETUP TO PRINT ERROR
                                ;       :       :  :     :       CALL ERROR
                                ;       :       :  :     :  ELSE-CALL ERROR CK
                                ;       :       :  :     ENDIF
                                ;       :       :  ENDIF
                                ;       :       DOUNTIL SECTORS DONE FLAG SET OR ABORT FLAG SET
                                ;       :       CLEAR SECTORS DONE FLAG
                                ;       :       SET DONE TIME OUT MULTIPLIER=100
                                ;       :       SET NEG TEST FLAG
                                ;       :       BGNDO
                                ;       :       :  CALL READ SECTOR
                                ;       :       :  CALL READ ERROR CODE
                                ;       :       :  IF FINI FLAG NOT SET
                                ;       :       :  :  THEN-IF SECTOR ADR NOT=TARGET SECTOR ADR
                                ;       :       :  :     :  THEN-SET ERR=SECTOR ADR ERROR
                                ;       :       :  :     :       CALL ERROR
                                ;       :       :  :     :  ELSE-CALL ERROR CHECK
                                ;       :       :  :     ENDIF
                                ;       :       :  ENDIF
                                ;       :       DOUNTIL SECTORS DONE FLAG SET OR FINI FLAG SET
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;-------------------------------------------------------------------------
                                ;--
```

```
 5679 032430                            TSETUP                      ;
      032430  012737  032730  002466  BGNT31: MOV     #T31TBL,TSTID   ;SETUP TEST ID TBL-TEST# 31
      032436  032737  000001  002324  IAT31:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
      032444  001527                          BEQ     XT31            ;BIT SET, THEN
      032446  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
 5680 032452  004737  010440                  CALL    INTIAL          ;CALL INITAILIZE
 5681 032456  004737  017350                  CALL    DENCHK          ;CALL DENSITY CHECK
 5682 032462  004737  020472                  CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
 5683 032466  012737  001002  002510          MOV     #ISC!SSC,TKSCFG ;SETUP SECTOR FLAGS=INITIALIZE & SEQUENCE
 5684 032474  004737  013104          BBT31:  CALL    GETSEC          ;CALL GET SECTOR
 5685 032500  004737  011062                  CALL    READ            ;CALL READ SECTOR
 5686 032504  004737  011340                  CALL    RDERCD          ;CALL READ ERROR CODE
 5687 032510  005737  002454          ICT31:  TST     FIN             ;IF FINI FLAG
 5688 032514  001024                          BNE     UBT31           ;NOT SET, THEN
 5689 032516  123737  002376  002447  IDT31:  CMPB    SECTOR,TSEC     ;IF SECTOR ADR & DEVICE TARGET SECTOR
 5690 032524  001416                          BEQ     LDT31           ;NOT =, THEN
 5691 032526  012737  000042  002520          MOV     #SECAER,ERRNBR  ;SETUP ERR NBR=SECTOR ADDRESS ERROR
 5692 032534  052737  000002  002500          BIS     #SCPRT,FLAGSP   ;SET FLAGSP=-PRINT SECTOR ADDRESS FLAG
 5693 032542  004737  003060                  CALL    ERROR           ;CALL ERROR
 5694 032546  042737  000002  002500          BIC     #SCPRT,FLAGSP   ;CLEAR FLAGSP-PRINT SECTOR ADDRESS FLAG
 5695 032554  004737  010440                  CALL    INTIAL          ;CALL INITAILIZE
 5696 032560  000402                          BR      UBT31           ;BR TO DOUNTIL 'B'
 5697 032562  004737  017724          LDT31:  CALL    ERRCHK          ;CALL ERROR CHECK
 5698 032566  005737  002452          UBT31:  TST     ABORT           ;DOUNTIL ABORT FLAG
 5699 032572  001004                          BNE     EBT31           ;SET OR
 5700 032574  032737  002000  002476          BIT     #SECDON,FLAGST  ;FLAGST-SECTOR DONE FLAG
 5701 032602  001734                          BEQ     BBT31           ;SET
 5702 032604  042737  002000  002476  EBT31:  BIC     #SECDON,FLAGST  ;CLEAR FLAGST-SECTOR DONE FLAG
 5703 032612  052737  004000  002476          BIS     #NEGTST,FLAGST  ;SET FLAGST-NEG TEST FLAG
 5704 032620  012737  000003  002464          MOV     #RDERR,NGTSER   ;SETUP EXPECTED ERROR=READ ERROR (SECTOR NOT FOUND EC=70)
 5705 032626  012737  000100  002474          MOV     #100,DNWTMT     ;SET DONE WAIT MULTIPLIER SO NO TIME OUT
 5706 032634  012737  000000  002376          MOV     #0,SECTOR       ;SET SECTOR ADR=0
 5707 032642  004737  011062          BET31:  CALL    READ            ;CALL READ SECTOR
 5708 032646  004737  011340                  CALL    RDERCD          ;CALL READ ERROR CODE
 5709 032652  005737  002454          IFT31:  TST     FIN             ;IF FINI FLAG
 5710 032656  001017                          BNE     EFT31           ;NOT SET, THEN
 5711 032660  123737  002376  002447  IGT31:  CMPB    SECTOR,TSEC     ;IF SECTOR ADR AND TARGET SECTOR
 5712 032666  001411                          BEQ     LGT31           ;NOT EQUAL, THEN
 5713 032670  052737  000002  002500          BIS     #SCPRT,FLAGSP   ;SET FLAGSP=-PRINT SECTOR ADDRESS FLAG
 5714 032676  012737  000042  002520          MOV     #SECAER,ERRNBR  ;SETUP ERR NBR=SECTOR ADDRESS ERROR
 5715 032704  004737  003060                  CALL    ERROR           ;CALL ERROR
 5716 032710  000402                          BR      EFT31           ;CALL TO END 'G'
 5717 032712  004737  017724          LGT31:  CALL    ERRCHK          ;CALL ERROR CHECK
 5718 032716  012737  000004  002474  EFT31:  MOV     #4,DNWTMT       ;RESET DONE WAIT MUTIPLIER TO NORMAL
 5719 032724                          XT31:   EXIT    TST
 5720 032730                                  REGTBL  CSESAL
              015036                                                  REGS1=CSESAL
 5721 032730                                  TTBL    REGCK,0
      032730  032402                                         T31TBL:  .WORD   T31MSG
      032732  000001                                                  .WORD   REGCK
      032734  000000                                                  .WORD   0
      032736  177777                                                  .WORD   -1
      032740                                                 T31RTB:
      032740  015036                                                  .WORD   REGS1
      032742  177777                                                  .WORD   -1
 5722 032744                                  FRUTBL  CTLRWE
      032744                                                 T31FTB:
```

```
        032744  006651                                  .WORD   CTLRWE
        032746  177777                                  .WORD   -1
   5723 032750                          ENDTST
```

```
                                .SBTTL  TEST 32 -  TRACK ADR - LGC TST
032752  000413                        BR      BGNT32          ;BR TO BGN TST
032754     040     124     122  T32MSG: .ASCIZ  / TRACK ADR - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY THAT THE CONTROLLER WILL HANDLE ALL LEGAL AND ILLEGAL
                                ; TRACK ADDRESSES PROPERLY.
                                ;--------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       : THEN-SETUP TEST IDENT
                                ;       :       SET TRACK INIT & SEQUENCE FLAGS
                                ;       :       BGNDO
                                ;       :       : BGNDO
                                ;       :       : : CALL GET TRACK ADR
                                ;       :       : : CLEAR TRACK INIT FLAG
                                ;       :       : : CALL READ SECTOR
                                ;       :       : : CALL READ ERROR CODE
                                ;       :       : : IF FINI FLAG NOT SET
                                ;       :       : : : THEN-
                                ;       :       : : :   IF TRACK ADR NOT=TARGET TRACK ADR
                                ;       :       : : :   : THEN-CALL LOGIC TEST ERROR
                                ;       :       : : :   ENDIF
                                ;       :       : : :   IF ILLEGAL FLAG NOT SET
                                ;       :       : : :   : THEN-IF TRACK ADR NOT=UNIT TRACK ADR
                                ;       :       : : :   :       : THEN-SETUP TRACK ADR ERR & CALL ERROR
                                ;       :       : : :   :       : ELSE-IF ERROR CODE=40
                                ;       :       : : :   :       :       : THEN-CALL LOGIC TEST ERROR
                                ;       :       : : :   :       :       ENDIF
                                ;       :       : : :   :       ENDIF
                                ;       :       : : :   : ELSE-IF TRACK ADR=UNIT TRACK ADR
                                ;       :       : : :   :       : THEN-SETUP TRACK ADR ERR & CALL ERROR
                                ;       :       : : :   :       : ELSE-IF ERROR CODE NOT=40
                                ;       :       : : :   :       :       : THEN-CALL LOGIC TEST ERROR
                                ;       :       : : :   :       :       ENDIF
                                ;       :       : : :   :       ENDIF
                                ;       :       : : :   ENDIF
                                ;       :       : :  ENDIF
                                ;       :       :  DOUNTIL TRACKS DONE FLAG SET OR ABORT FLAG SET
                                ;       :       :  SET TRACK INIT FLAG
                                ;       :       :  IF TRACKS LEGAL FLAG SET
                                ;       :       :  : THEN-SET TRACKS ILLEGAL FLAG
                                ;       :       :  : ELSE-SET TRACKS LEGAL FLAG
                                ;       :       :  ENDIF
                                ;       :       DOUNTIL TRACKS LEGAL FLAG SET
                                ;       ENDIF
                                ; ENDTST
                                ;--------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;--------------------------------------------------------------------
                                ;--
```

```
     033002                                     TSETUP                       ;
     033002  012737  033336  002466  BGNT32:   MOV     #T32TBL,TSTID        ;SETUP TEST ID TBL-TEST# 32
     033010  032737  000001  002324  IAT32:    BIT     #LOGICT,TSTMOD       ;IF TEST MODE=LOGIC TEST
     033016  001545                            BEQ     XT32                 ;BIT SET, THEN
     033020  004737  020736                    CALL    LTSTUP               ;CALL LOGIC TEST SETUP
     033024  004737  017350                    CALL    DENCHK               ;CALL DENSITY CHECK
     033030  004737  020472                    CALL    SDENC                ;CALL SET DENSITY CONTROL=DENSITY STATUS
     033034  012737  000401  002510            MOV     #ITK!STK,TKSCFG      ;SET INITIALIZE & SEQUENCE TRACKS FLAG (TRACK/SECTOR FLAGS)
     033042  000240                  BBT32:    NOP                          ;
     033044  004737  012662          BCT32:    CALL    GETTRK               ;CALL GET TRACK ADR
     033050  042737  000401  002510            BIC     #ITK!STK,TKSCFG      ;CLEAR INITIALIZE TRACKS FLAG
     033056  004737  011062                    CALL    READ                 ;CALL READ SECTOR
     033062  004737  011340                    CALL    RDERCD               ;CALL READ ERROR CODE
     033066  005737  002454          IDT32:    TST     FIN                  ;IF FINI FLAG
     033072  001062                            BNE     UCT32                ;NOT SET, THEN
     033074  123737  002374  002446  IET32:    CMPB    TRACK,TTRK           ;IF TRACK ADR & TARGET TRACK
     033102  001405                            BEQ     EET32                ;NOT EQUAL, THEN
     033104  012737  000041  002520            MOV     #TRKAER,ERRNBR       ;SETUP ERR NBR=TRACK ADDRESS ERROR
     033112  004737  003060                    CALL    ERROR                ;CALL ERROR
     033116  013705  002420          EET32:    MOV     DRVOFF,R5            ;SET R5=DRIVE BYTE OFFSET
     033122  032737  010000  002476  IFT32:    BIT     #ILLGAL,FLAGST       ;IF ILLEGAL FLAG
     033130  001024                            BNE     IIT32                ;NOT SET, THEN
     033132  123765  002374  002444  IGT32:    CMPB    TRACK,CTKO(R5)       ;IF TRACK ADR & CURRENT TRACK UF SELECTED DRV (R5)
     033140  001406                            BEQ     IHT32                ;NOT EQUAL, THEN
     033142  012737  000041  002520            MOV     #TRKAER,ERRNBR       ;SETUP ERR NBR=TRACK ADDRESS ERROR
     033150  004737  003060                    CALL    ERROR                ;CALL ERROR
     033154  000431                            BR      UCT32                ;BR TO DOUNTIL 'C'
     033156  122737  000040  002442  IHT32:    CMPB    #40,XERUUT           ;IF ERR CODE
     033164  001025                            BNE     UCT32                ;SET=40, THEN
     033166  012737  000021  002520            MOV     #RECERR,ERRNBR       ;SETUP ERRNBR=READ ERR CODE-ERR WRG
     033174  004737  003060                    CALL    ERROR                ;CALL ERROR
     033200  000417                            BR      UCT32                ;BR TO DOUNTIL 'C'
     033202  123765  002374  002444  IIT32:    CMPB    TRACK,CTKO(R5)       ;IF TRACK ADR & CURRENT TRACK OF SELECTED DRV (R5)
     033210  001004                            BNE     IJT32                ;EQUAL, THEN
     033212  012737  000041  002520            MOV     #TRKAER,ERRNBR       ;SETUP ERR NBR=TRACK ADR ERROR
     033220  000407                            BR      UCT32                ;BR TO DOUNTIL 'C'
     033222  122737  000040  002442  IJT32:    CMPB    #40,XERUUT           ;IF ERR CODE NOT
     033230  001403                            BEQ     UCT32                ;SET=40
     033232  012737  000021  002520            MOV     #RECERR,ERRNBR       ;SETUP ERR NBR=READ ERR CODE-ERR WRG
     033240  005737  002454          UCT32:    TST     FIN                  ;DOUNTIL FINI FLAG
     033244  001004                            BNE     ECT32                ;SET OR
     033246  032737  001000  002476            BIT     #TRKDON,FLAGST       ;TRACKS DONE FLAG
     033254  001673                            BEQ     BCT32                ;SET
     033256  042737  001000  002476  ECT32:    BIC     #TRKDON,FLAGST       ;CLEAR TRACKS DONE FLAG
     033264  005037  002510                    CLR     TKSCFG               ;CLR TRACK FLAGS
     033270  052737  000004  002510            BIS     #ILTK,TKSCFG         ;SETUP ILLEGAL TRACKS FLAG
     033276  032737  010000  002476  IKT32:    BIT     #ILLGAL,FLAGST       ;IF ILLEGAL FLAG
     033304  001004                            BNE     LKT32                ;NOT SET, THEN
     033306  052737  010000  002476            BIS     #ILLGAL,FLAGST       ;SET ILLEGAL FLAG
     033314  000403                            BR      UBT32                ;BR TO DOUNTIL 'C'
     033316  042737  010000  002476  LKT32:    BIC     #ILLGAL,FLAGST       ;CLEAR ILLEGAL FLAG
     033324  032737  010000  002476  UBT32:    BIT     #ILLGAL,FLAGST       ;DOUNTIL ILLEGAL FLAG CLEAR
     033332                          XT32:     EXIT    TST
     033336                                    REGTBL
     033336                                    TTBL    0,0
     033336  032754                                            T32TBL: .WORD   T32MSG
     033340  000000                                                    .WORD   0
```

```
        033342  000000                                          .WORD   0
        033344  177777                                          .WORD   -1
        033346                                          T32RTB:
        033346  177777                                          .WORD   -1
   5829 033350                                  FRUTBL  CTLONL
        033350                                          T32FTB:
        033350  006654                                          .WORD   CTLONL
        033352  177777                                          .WORD   -1
   5830 033354                                  ENDTST
```

```
                                .SBTTL  TEST 33 -  READ SECTOR-PRT:2 - LGC TST
033356  000417                        BR      BGNT33          ;BR TO BGN TST
033360     040     122     105  T33MSG: .ASCIZ  / READ SECTOR-PRT:2 - LGC TST/
                                .EVEN

                               ;++
                               ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A READ SECTOR IN
                               ; BOTH DENSITIES & RETURN A VALID ERROR CODE. SIMILAR TO
                               ; READ SECTOR PRT:1, BUT WITH DISKETTE IN OPPOSITE DENSITY.
                               ;-------------------------------------------------------------------
                               ; BGNTST
                               ;       IF LOGIC TEST
                               ;       :  THEN-SETUP TEST IDENT
                               ;       :       CALL DEVICE DENSITY CK
                               ;       :       SET DENSITY CONTROL=DISK DEN
                               ;       :       CALL READ SECTOR
                               ;       :       CALL READ ERROR CODE
                               ;       :       IF NO COMMAND ERRORS
                               ;       :       :  THEN-CALL ERROR CK
                               ;       :       :       CALL COMPLIMENT DENSITY
                               ;       :       :       CALL READ SECTOR
                               ;       :       :       CALL READ ERROR CODE
                               ;       :       :       IF NO COMMAND ERRORS
                               ;       :       :       :  THEN-CALL ERROR CK
                               ;       :       :       ENDIF
                               ;       :       NOP
                               ;       ENDIF
                               ; ENDTST
                               ;-------------------------------------------------------------------
                               ; BOARD CALLOUT:
                               ;       1.  CONTROLLER
                               ;       2.  R/W ELECTRONICS
                               ;-------------------------------------------------------------------
                               ;--
```

```
                                                TSETUP
5867 033416
     033416  012737  033534  002466  BGNT33: MOV     #T33TBL,TSTID   ;SETUP TEST ID TBL-TEST# 33
     033424  032737  000001  002324  IAT33:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
     033432  001436                          BEQ     XT33            ;BIT SET, THEN
     033434  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
5868 033440  004737  017350                  CALL    DENCHK          ;CALL DENSITY CHECK
5869 033444  004737  020472                  CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
5870 033450  004737  011062                  CALL    READ            ;CALL READ SECTOR
5871 033454  004737  011340                  CALL    RDERCD          ;CALL READ ERROR CODE
5872 033460                                  ESCAPE  TST             ;IF NO COMMAND ERRORS, THEN
5873 033464  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
5874 033470  004737  020430                  CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
5875 033474  052737  004000  002476          BIS     #NEGTST,FLAGST  ;SET FLAGST=NEG TEST FLAG
5876 033502  012737  000030  002464          MOV     #DENERR,NGTSER  ;SETUP NEGTEST SET ERROR=DEN ERROR
5877 033510  004737  011062                  CALL    READ            ;CALL READ SECTOR
5878 033514  004737  011340                  CALL    RDERCD          ;CALL READ ERROR CODE
5879 033520                                  ESCAPE  TST             ;IF NO COMMAND ERRORS, THEN
5880 033524  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
5881 033530                          XT33:   EXIT    TST
5882 033534                                  REGTBL  CSESAL
     033534  015036                                                  REGS1=CSESAL
5883 033534                                  TTBL    REGCK,0
     033534  033360                                  T33TBL: .WORD   T33MSG
     033536  000001                                          .WORD   REGCK
     033540  000000                                          .WORD   0
     033542  177777                                          .WORD   -1
     033544                                          T33RTB:
     033544  015036                                          .WORD   REGS1
     033546  177777                                          .WORD   -1
5884 033550                          FRUTBL  CTLRWE
     033550                                          T33FTB:
     033550  006651                                          .WORD   CTLRWE
     033552  177777                                          .WORD   -1
5885
5886 033554                          ENDTST
```

```
5889                                    .SBTTL  TEST 34 -  WRITE SECTOR-PRT:2 - LGC TST
     033556  000417                             BR      BGNT34          ;BR TO BGN TST
     033560     040     127     122  T34MSG: .ASCIZ  / WRITE SECTOR-PRT:2 - LGC TST/
                                             .EVEN
5890
5891                                    ;++
5892                                    ; TEST TOVERIFY THAT THE CONTROLLER WILL COMPLETE A WRITE SECTOR IN
5893                                    ; BOTH DENSITIES & RETURN A VALID ERROR CODE, SIMILAR TO WRITE
5894                                    ; SECTOR PRT:1, BUT WITH DISKETTE IN OPPOSITE DENSITY.
5895                                    ;-----------------------------------------------------------------
5896                                    ; BGNTST
5897                                    ;       IF LOGIC TEST
5898                                    ;       : THEN-SETUP TEST IDENT
5899                                    ;       :       CALL DEVICE DENSITY CHECK
5900                                    ;       :       SET DENSITY CONTROL=DISK DEN
5901                                    ;       :       CALL WRITE SECTOR
5902                                    ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
5903                                    ;       :       : THEN-CALL ERROR CHECK
5904                                    ;       :       :       CALL COMPLIMENT DENSITY CONTROL
5905                                    ;       :       :       CALL WRITE SECTOR
5906                                    ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
5907                                    ;       :       :       : THEN-CALL ERROR CHECK
5908                                    ;       :       :       ENDIF
5909                                    ;       :       NOP
5910                                    ;       :       ENDIF
5911                                    ;       :       NOP
5912                                    ;       ENDIF
5913                                    ; ENDTST
5914                                    ;-----------------------------------------------------------------
5915                                    ; BOARD CALLOUT:
5916                                    ;       1.  CONTROLLER
5917                                    ;       2.  R/W ELECTRONICS
5918                                    ;-----------------------------------------------------------------
5919                                    ;--
5920
```

```
 5923 033616                                          TSETUP
      033616  012737  033730  002466  BGNT34: MOV     #T34TBL,TSTID   ;SETUP TEST ID TBL-TEST# 34
      033624  032737  000001  002324  IAT34:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
      033632  001434                          BEQ     XT34            ;BIT SET, THEN
      033634  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
 5924
 5925 033640  004737  017350                  CALL    DENCHK          ;CALL DENSITY CHECK
 5926 033644  004737  020472                  CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
 5927 033650  004737  010744                  CALL    WRITE           ;CALL WRITE SECTOR
 5928 033654                                  ESCAPE  TST             ;IF NO COMMAND ERROR, THEN
 5929 033660  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
 5930 033664  004737  020430                  CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
 5931 033670  052737  004000  002476          BIS     #NEGTST,FLAGST  ;SET FLAGST-NEG TEST FLAG
 5932 033676  012737  000030  002464          MOV     #DENERR,NGTSER  ;SETUP NEG TEST ERR ERR=DENSITY ERR
 5933 033704  004737  010744                  CALL    WRITE           ;CALL WRITE
 5934 033710  004737  011340                  CALL    RDERCD          ;CALL READ ERROR CODE
 5935 033714                                  ESCAPE  TST             ;IF NO COMMAND ERROR
 5936 033720  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
 5937 033724                          XT34:   EXIT    TST
 5938 033730                                  REGTBL  CSESAL
      015036                                                          REGS1=CSESAL
 5939 033730                                  TTBL    REGCK,0
      033730  033560                                          T34TBL: .WORD   T34MSG
      033732  000001                                                  .WORD   REGCK
      033734  000000                                                  .WORD   0
      033736  177777                                                  .WORD   -1
      033740                                                  T34RTB:
      033740  015036                                                  .WORD   RECS1
      033742  177777                                                  .WORD   -1
 5940 033744                                  FRUTBL  CTLRWE
      033744                                                  T34FTB:
      033744  006651                                                  .WORD   CTLRWE
      033746  177777                                                  .WORD   -1
 5941
 5942 033750                                  ENDTST
```

```
5945                                    .SBTTL  TEST 35 -  DELETED DATA WRITE PRT:2 - LGC TST
     033752  000422                             BR      BGNT35          ;BR TO BGN TST
     033754     040     104     105  T35MSG: .ASCIZ  / DELETED DATA WRITE PRT:2 - LGC TST/
                                             .EVEN
5946
5947                                    ;++
5948                                    ; TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISKETTE
5949                                    ; HEADER AND RETRIEVE THIS DATA ON A KNOWN GOOD DISKETTE.  THIS IS DONE
5950                                    ; IN OPPOSITE DENSITY OF TEST 1.
5951                                    ;-------------------------------------------------------------------------
5952                                    ; BGNTST
5953                                    ;       IF LOGIC TEST
5954                                    ;       : THEN-SETUP TEST IDENT
5955                                    ;       :       CALL DEVICE DENSITY CK
5956                                    ;       :       SET DENSITY CONTROL=DENSITY STATUS
5957                                    ;       :       SET DELETED DATA FLAG (BIT#3-CMD)
5958                                    ;       :       CALL WRITE SECTOR
5959                                    ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
5960                                    ;       :       : THEN-CALL READ SECTOR
5961                                    ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
5962                                    ;       :       :       : THEN-IF RXESR-DELETED DATA BIT NOT SET
5963                                    ;       :       :       :       : THEN-SET ERROR NUMBER-DELETED DATA ERR
5964                                    ;       :       :       :       :       CALL ERROR
5965                                    ;       :       :       :       ENDIF
5966                                    ;       :       :       ENDIF
5967                                    ;       :       ENDIF
5968                                    ;       ENDIF
5969                                    ; ENDTST
5970                                    ;-------------------------------------------------------------------------
5971                                    ; BOARD CALLOUT:
5972                                    ;       1.  CONTROLLER
5973                                    ;       2.  R/W ELECTRONICS
5974                                    ;-------------------------------------------------------------------------
5975                                    ;--
5976
```

```
 5979 034020                                    TSETUP
      034020  012737  034150  002466  BGNT35:  MOV     #T35TBL,TSTID     ;SETUP TEST ID TBL-TEST# 35
      034026  032737  000001  002324  IAT35:   BIT     #LOGICT,TSTMOD    ;IF TEST MODE=LOGIC TEST
      034034  001443                           BEQ     XT35              ;BIT SET, THEN
      034036  004737  020736                   CALL    LTSTUP            ;CALL LOGIC TEST SETUP
 5980 034042  004737  017350                   CALL    DENCHK            ;CALL DEVICE DENSITY CHECK
 5981 034046  004737  020472                   CALL    SDENC             ;CALL SET DENSITY CONTROL=DENSITY STATUS
 5982 034052  012737  000010  002402           MOV     #DLDCMD,DELDAT    ;SET DELETED DATA FLAG
 5983 034060  004737  010744                   CALL    WRITE             ;CALL WRITE SECTOR
 5984 034064  004737  011340                   CALL    RDERCD            ;CALL READ ERROR CODE
 5985 034070                          IBT35:   ESCAPE  TST               ;IF NO COMMAND ERROR, THEN
 5986 034074  004737  017724                   CALL    ERRCHK            ;CALL ERROR CHECK
 5987 034100  004737  011062                   CALL    READ              ;CALL READ SECTOR
 5988 034104                          ICT35:   ESCAPE  TST               ;IF NO COMMAND ERROR, THEN
 5989 034110  032777  000100  146234  IDT35:   BIT     #DLDBIT,@RXDB     ;IF RXESR-DELETED DATA BIT
 5990 034116  001006                           BNE     LDT35             ;NOT SET, THEN
 5991 034120  012737  000032  002520           MOV     #DLDTER,ERRNBR    ;SETUP ERROR NUMBER=DELETED DATA ERROR
 5992 034126  004737  003060                   CALL    ERROR             ;CALL ERROR
 5993 034132  000404                           BR      XT35              ;BR TO EXIT TST
 5994 034134  005037  002402          LDT35:   CLR     DELDAT            ;CLEAR DELETED DATA MODE
 5995 034140  004737  010744                   CALL    WRITE             ;CALL WRITE SECTOR - CLR DEL DAT FIELD
 5996 034144                          XT35:    EXIT    TST
 5997 034150                                   REGTBL  CSESAL
              015036                                                     REGS1=CSESAL
 5998 034150                                   TTBL    REGCK,0
      034150  033754                                            T35TBL:  .WORD   T35MSG
      034152  000001                                                     .WORD   REGCK
      034154  000000                                                     .WORD   0
      034156  177777                                                     .WORD   -1
      034160                                                    T35RTB:
      034160  015036                                                     .WORD   REGS1
      034162  177777                                                     .WORD   -1
 5999 034164                                   FRUTBL  CTLRWE
      034164                                                    T35FTB:
      034164  006651                                                     .WORD   CTLRWE
      034166  177777                                                     .WORD   -1
 6000
 6001 034170                                   ENDTST
```

```
                                .SBTTL  TEST 36 -  DISKETTE & DENSITY DATA CHECK - LGC TST
034172  000425                        BR      BGNT36          ;BR TO BGN TST
034174     040     104     111  T36MSG: .ASCIZ  / DISKETTE & DENSITY DATA CHECK - LGC TST/
                                .EVEN

                                ;++
                                ; TEST TO VERIFY WITH A KNOWN GOOD DISKETTE THAT THE DEVICE WILL READ
                                ; AND WRITE TO THE DISKETTE WITHOUT DATA ERRORS.  BOTH DENSITIES WILL
                                ; BE DONE.
                                ;-------------------------------------------------------------------
                                ; BGNTST
                                ;       IF LOGIC TEST
                                ;       :  THEN-SETUP TEST IDENT
                                ;       :       CALL DENSITY CHECK
                                ;       :       CALL SETUP DENSITY CONTROL=DENSITY STATUS
                                ;       :       CLEAR DO FLAG
                                ;       :       BGNDO
                                ;       :       :  SET DATA PATTERN=RANDOM
                                ;       :       :  CALL DATA PATTERN GENERATOR
                                ;       :       :  SET TRACK & SECTOR INITIALIZE FLAG
                                ;       :       :  SET TRACK & SECTOR=SEQUENCE MODE
                                ;       :       :  BGNDO
                                ;       :       :  :  CALL GET TRACK & GET SECTOR
                                ;       :       :  :  CALL FILL BUFFER
                                ;       :       :  :  CALL WRITE SECTOR
                                ;       :       :  :  SETUP TO CLEAR RX INTERNAL BUFFER
                                ;       :       :  :  CALL FILL BUFFER-CLEAR INTERNAL BUFFER
                                ;       :       :  :  SETUP DATA BUFFER
                                ;       :       :  :  CALL READ SECTOR
                                ;       :       :  :  CALL EMPTY BUFFER
                                ;       :       :  :  CALL DATA CHECK
                                ;       :       :  :  IF ERROR
                                ;       :       :  :  :  THEN-CALL DATA ANYLSIS ERROR
                                ;       :       :  :  ENDIF
                                ;       :       :  DOUNTIL TRACK & SECTOR DONE OR DATA ERRORS=10
                                ;       :       :  CALL CHANGE DENSITY
                                ;       :       :  SET DENSITY CONTROL=DENSITY STATUS
                                ;       :       :  INCREMENT DO FLAG
                                ;       :       DOUNTIL DO FLAG=2 OR ABORT FLAG SET
                                ;       :       NOP
                                ;       ENDIF
                                ; ENDTST
                                ;-------------------------------------------------------------------
                                ; BOARD CALLOUT:
                                ;       1.  CONTROLLER
                                ;       2.  R/W ELECTRONICS
                                ;-------------------------------------------------------------------
                                ;--
```

```
                                                    TSETUP
034246  012737  034504  002466  BGNT36: MOV     #T36TBL,TSTID   ;SETUP TEST ID TBL-TEST# 36
034254  032737  000001  002324  IAT36:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
034262  001506                          BEQ     XT36            ;BIT SET, THEN
034264  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
034270  005037  002504                  CLR     TTEMP1          ;CLEAR COUNTER (TEST TEMP #1)
034274  004737  017350                  CALL    DENCHK          ;CALL DENSITY CHECK
034300  004737  020472                  CALL    SDENC           ;CALL SETUP DENSITY CONTROL=DENSITY STATUS
034304  005037  012660          BBT36:  CLR     PAT             ;SETUP DATA PATTERN=RANDOM
034310  004737  012306                  CALL    STDATP          ;CALL SET DATA PATTERN
034314  052737  001400  002510          BIS     #ITK!ISC,TKSCFG ;SET TRACK & SECTOR INITIALIZE FLAGS
034322  052737  000003  002510          BIS     #STK!SSC,TKSCFG ;SET TRACK & SECTOR SEQUENCE MODE FLAGS
034330  004737  012662          BCT36:  CALL    GETTRK          ;CALL GET TRACK
034334  004737  013104                  CALL    GETSEC          ;CALL GET SECTOR
034340  004737  010510                  CALL    FILBUF          ;CALL FULL BUFFER
034344  004737  010744                  CALL    WRITE           ;CALL WRITE SECTOR
034350  004737  013642                  CALL    CLRDAT          ;CALL CLEAR DATA BUFFER
034354  012737  036622  002362          MOV     #DATBUF,FILADR  ;SETUP TO CLEAR RX INTERNAL BUFFER
034362  004737  010510                  CALL    FILBUF          ;CLEAR THE BUFFER
034366  012737  036222  002362          MOV     #DATPAT,FILADR  ;SETUP DATA BUFFER ADDRESS
034374  004737  011062                  CALL    READ            ;CALL READ SECTOR
034400  004737  010626                  CALL    EMPBUF          ;CALL EMPTY BUFFER
034404  004737  013246                  CALL    DATACK          ;CALL DATA CHECK
034410  022737  000012  013520  UCT36:  CMP     #10.,DAERCT     ;DOUNTIL DATA ERROR COUNT
034416  001410                          BEQ     ECT36           ;EQUALS 10, OR
034420  032737  001000  002476          BIT     #TRKDON,FLAGST  ;TRACKS DONE FLAG
034426  001740                          BEQ     BCT36           ;SET, AND
034430  032737  002000  002476          BIT     #SECDON,FLAGST  ;SECTORS DONE FLAG
034436  001734                          BEQ     BCT36           ;SET
034440  004737  020430          ECT36:  CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
034444  004737  011172                  CALL    SETDN           ;CALL SET DENSITY
034450  005237  002504                  INC     TTEMP1          ;INCREMENT COUNTER
034454  012737  000100  002370          MOV     #64.,WDCNT      ;SET WORD COUNT
034462  005737  002454          UBT36:  TST     FIN             ;DOUNTIL FIN FLAG
034466  001004                          BNE     XT36            ;SET OR
034470  022737  000002  002504          CMP     #2,TTEMP1       ;COUNT
034476  001302                          BNE     BBT36           ;EAUALS 2
034500                          XT36:   EXIT    TST

034504                          REGTBL  CSESAL
        015036                                                  REGS1=CSESAL
034504                          TTBL    REGCK,0
034504  034174                                          T36TBL: .WORD   T36MSG
034506  000001                                                  .WORD   REGCK
034510  000000                                                  .WORD   0
034512  177777                                                  .WORD   -1
034514                                                  T36RTB:
034514  015036                                                  .WORD   REGS1
034516  177777                                                  .WORD   -1
034520                          FRUTBL  CTLRWE
034520                                                  T36FTB:
034520  006651                                                  .WORD   CTLRWE
034522  177777                                                  .WORD   -1

034524                                  ENDTST
```

```
   6099 034526                                  ENDMOD
   6100
```

```
                                .NLIST  BEX,ME
                                .TITLE PARAMETER CODING

                                .SBTTL  HARDWARE PARAMETER CODING SECTION

034526                                  BGNMOD

                                ;++
                                ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--

034526                                  BGNHRD

034530                                  GPRMA   MSG1,0,0,0,177777,YES
034540                                  GPRMA   MSG2,2,0,0,177777,YES
034550                                  GPRMD   MSG3,4,0,177777,0.,1.,YES
034562                                  GPRMD   MSG4,6,0,177777,0.,1.,YES
034574                                  GPRMD   MSG4A,10,0,177777,0,7,YES

034606                                  ENDHRD
                                ;-----------------------------------------------------------------
034606  122     130     040     MSG1:   .ASCIZ  /RX BUS ADR/
034621  126     105     103     MSG2:   .ASCIZ  /VECTOR ADR/
034634  104     122     111     MSG3:   .ASCIZ  /DRIVE #   /
034647  105     130     120     MSG4:   .ASCIZ  /EXP WRD-CR/
034662  102     122     055     MSG4A:  .ASCIZ  /BR-LEVEL  /
                                .EVEN
                                ;-----------------------------------------------------------------
```

```
                                .SBTTL  SOFTWARE PARAMETER CODING SECTION

                                ;++
                                ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--

034676                                  BGNSFT

034700                                  GPRML   MSG6,2,1,YES
034706                                  XFERF   1$
034710                                  GPRML   MSG7,2,2,YES
034716                          1$:     GPRML   MSG8,4,LOGICT,YES
034724                                  GPRML   MSG9,4,FUNCTT,YES
034732                                  GPRMD   MSG10,0,0,177777,1,177777,YES
034744                                  GPRMA   MSG14,24,0,0,177777,YES
034754                                  GPRMD   MSG15,26,0,030000,0,3,YES
034766                                  GPRML   MSG17,2,100,YES
034774                                  XFERF   6$
034776                                  GPRML   MSG20,12,20,YES
035004                          6$:     GPRML   MSG5,12,SIDFLG,YES
035012                                  ENDSFT
                                ;-------------------------------------------------------------------------
000015                                  CR==15                  ;CARRIAGE RETURN
000012                                  LF==12                  ;LINE FEED
035012  105  130  120  MSG5:    .ASCIZ  /EXPANSION WORD TYPE <CR> /
035044  124  105  123  MSG6:    .ASCIZ  /TEST HELP /
035057  104  111  101  MSG7:    .ASCII  /DIAGNOSTIC MODES ARE  <CR><LF>
035106  040  040  040           .ASCII  /      LOGIC TEST, FUNCTION TEST, OR BOTH/<CR><LF>
035160  040  040  040           .ASCII  /   -FUNCTION TESTS (1-10)/<CR><LF>
035213  040  040  040           .ASCII  /      ACT AS QUICK VERIFY & REPORT FAILING FUNCTIONS/<CR><LF>
035301  040  040  040           .ASCII  /   -LOGIC TESTS (11-36)/<CR><LF>
035332  040  040  040           .ASCII  /      ANALYZE FAILURE & GIVE ERROR INFO/<CR><LF>
035403  040  040  040           .ASCII  /      REPORT FIELD REPLACEABLE UNITS "FRU'S"/<CR><LF>
035461  040  040  040           .ASCII  /       ->DEVICE FATAL THRESHOLD LEVEL (DVTL) IS SET = 1/<CR><LF>
035552  040  040  040           .ASCII  /         "DVTL" = NO. OF HARD ERRS THAT CAUSE DEVICE FATAL ERR/<CR><LF>
035651  124  131  120           .ASCIZ  /TYPE "CR" TO CONTINUE/
035677  114  117  107  MSG8:    .ASCIZ  /LOGIC TEST MODE   /
035722  106  125  116  MSG9:    .ASCIZ  /FUNCTION TEST MODE/
035745  110  101  122  MSG10:   .ASCIZ  /HARD ERR -> DEVICE FATAL THRESHOLD LVL/
036014  116  117  116  MSG14:   .ASCIZ  /NON-EXISTANT MEM ADR (NXM TST)/
036053  105  130  124  MSG15:   .ASCIZ  /EXTENDED ADR BITS: 13 & 12 (NPR-NXM TST)/
036124  124  105  123  MSG17:   .ASCIZ  /TEST CONTROL FLAGS /
036150  040  040  040  MSG20:   .ASCIZ  /   PRINT ONLY 10 DATA ERRORS & CONTINUE /
                                ;-------------------------------------------------------------------------

                                .EVEN
```

```
6249
6250                                    .SBTTL  -    RX02 FILL BUFFER AREA
6251
6252                                    ;-------------------------------------------------------------------------
6253 036222  000400                     DATPAT: .REPT   256.            ;DATA PATTERN - RX02 FILL BUFFER
6256                                    ;-------------------------------------------------------------------------
6257
6258                                    .SBTTL  -    RX02 EMPTY BUFFER AREA
6259
6260                                    ;-------------------------------------------------------------------------
6261 036622  000400                     DATBUF: .REPT   256.            ;DATA BUFFER - RX02 EMPTY BUFFER
6264 037222  000000                             .WORD   0
6265 037224  000000                             .WORD   0
6266                                    ;-------------------------------------------------------------------------
6273                                    .SBTTL  -    PATCH AREA
6274                                    ;-------------------------------------------------------------------------
6275 037226  000000                     PATCH:  0                       ;PATCH AREA
6276         037630                     .=.+400
6277                                    ;-------------------------------------------------------------------------
6278 037630                                     LASTAD
     037634                             L$LAST::
6279 037634                                     ENDMOD
6280
6281 037634                                     BGNSETUP        2
6282 037634                                     BGNPTAB
6283 037640  177170                             177170
6284 037642  000264                             264
6285 037644  000000                             0
6286 037646  000000                             0
6287 037650  000005                             5
6288 037652                                     ENDPTAB
6289 037652                                     BGNPTAB
6290 037656  177170                             177170
6291 037660  000264                             264
6292 037662  000001                             1
6293 037664  000000                             0
6294 037666  000005                             5
6295 037670                                     ENDPTAB
6296 037670                                     ENDSETUP
6297         000001                 .END
```

PARAMETER CODING MACRO M1110 13-AUG-79 15:33 PAGE 240-1 SEQ 0173
SYMBOL TABLE

```
ABORT   002452          BGNT35  034020          CMDERR= 000020          C$ESCA= 000010          DISKSP= 000030
ACLOW = 000010          BGNT36  034246          CMDMSG  007164          C$ESEG= 000005          DLDBIT= 000100
ACLOWD= 000037          BGNT4   022766          CMDM0   007237          C$ESUB= 000003          DLDCMD= 000010
ACLOWF= 000050          BGNT5   023102          CMDM1   007255          C$ETST= 000001          DLDERR= 000007
ADR   = 000020 G        BGNT6   023230          CMDM2   007274          C$EXIT= 000032          DLDTER= 000032
ADRTST  022066          BGNT7   023414          CMDM3   007313          C$GETB= 000026          DLPDN = 000010
ADSCMS  007760          BGNT8   023664          CMDM4   007331          C$GETW= 000027          DLY     012026
ADTKMS  010257          BGNT9   024036          CMDM5   007347          C$GMAN= 000043          DMSG1   013561
ALGO2E= 000040          BITCNT  014672          CMDM6   007374          C$GPHR= 000042          DMSG1B  013526
ASSEMB= 000010          BITLIM  014674          CMDM7   007430          C$GPLO= 000030          DMSG2   013615
AWDN    012032          BITOFF  014676          CMDM8   007452          C$GPRI= 000040          DNBIT = 000040
AWTR    012110          BIT0  = 000001 G        CMDPE   007502          C$INIT= 000011          DNFLAG  012030
BACDB   013652          BIT00 = 000001 G        CMERMS  007216          C$INLP= 000020          DNNINT= 000015
BADCK   013276          BIT01 = 000002 G        CMFTMS  007204          C$MANI= 000050          DNNOTR= 000063
BADWRD  014702          BIT02 = 000004 G        CMPWRD  014700          C$MEM = 000031          DNWTMT  002474
BAUWCH  011700          BIT03 = 000010 G        CONTRL= 000002          C$MSG = 000023          DOOROP= 000026
BBT10   024314          BIT04 = 000020 G        CONTSW= 000022          C$OPEN= 000034          DRIVE   002406
BBT21   027600          BIT05 = 000040 G        CR    = 000015 G        C$PNTB= 000014          DRIVE1= 000400
BBT23   030336          BIT06 = 000100 G        CRCERB= 000001          C$PNTF= 000017          DRVDEN= 000040
BBT24   030546          BIT07 = 000200 G        CRCERR= 000004          C$PNTS= 000016          DRVOFF  002420
BBT27   031400          BIT08 = 000400 G        CSERTB  014776          C$PNTX= 000015          DRVPRT  002514
BBT31   032474          BIT09 = 001000 G        CSESAL= 015036          C$Q10 = 000377          DRVRDY= 000200
BBT32   033042          BIT1  = 000002 G        CSESIT= 015056          C$RDBU= 000007          DRVWRG= 000027
BBT36   034304          BIT10 = 002000 G        CSESND= 015076          C$REFG= 000047          DRV1  = 000020
BBT7    023460          BIT11 = 004000 G        CSESRS= 015066          C$RESE= 000033          DUMSG1  022012
BCGSC   013202          BIT12 = 010000 G        CSONLY= 015026          C$REVI= 000003          DVDNCK  011634
BCT32   033044          BIT13 = 020000 G        CSRCHK  013750          C$RFLA= 000021          DVFERR= 004000
BCT36   034330          BIT14 = 040000 G        CSRCMP  014260          C$RPT = 000025          DVRDYE= 000025
BET31   032642          BIT15 = 100000 G        CSRERR= 000033          C$SEFG= 000046          DVRYCK  017310
BGNT1   022364          BIT2  = 000004 G        CSRMSK  014262          C$SPRI= 000041          DVSTCK  017140
BGNT10  024254          BIT3  = 000010 G        CSRSET  014270          C$SVEC= 000037          DVTL    002320
BGNT11  024412          BIT4  = 000020 G        CTK0    002444          C$TPRI= 000013          DX      012024
BGNT12  024650          BIT5  = 000040 G        CTK1    002445          DAERCT  013520          EADDC   017514
BGNT13  025074          BIT6  = 000100 G        CTLINF= 006646          DATABF= 000055          EADRC   017346
BGNT14  025316          BIT7  = 000200 G        CTLONL= 006654          DATACK  013246          EADSC   017220
BGNT15  025546          BIT8  = 000400 G        CTLRWE= 006651          DATASB  013522          EAERR   003256
BGNT16  025662          BIT9  = 001000 G        C$AU  = 000052          DATAWS  013524          EAFRU   005506
BGNT17  026276          BOE   = 000400 G        C$AUTO= 000061          DATA0   012430          EANAT   027076
BGNT18  026452          BRONPT  012372          C$BRK = 000022          DATA1   012446          EAPCE   007106
BGNT19  027146          BTRK    002451          C$BSEG= 000004          DATBUF  036622          EARCR   014240
BGNT2   022514          BTRP4 = 000004          C$BSUB= 000002          DATBYT  012656          EASRC   014400
BGNT20  027370          BTRP6 = 000006          C$CEFG= 000045          DATCK = 000004          EATKE   017712
BGNT21  027534          BYTCNT  013514          C$CLCK= 000062          DATER = 000005          EBCMD = 000002
BGNT22  030166          BYTNUM  013516          C$CLEA= 000012          DATPAT  036222          EBDCK   013470
BGNT23  030306          CABLES= 000010          C$CLOS= 000035          DBRERR= 000034          EBDDC   017434
BGNT24  030510          CDENC   020430          C$CLP1= 000006          DDCFLG= 000002          EBGEN   015152
BGNT25  030762          CDERCK  011544          C$CVEC= 000036          DELDAT  002402          EBGTK   013062
BGNT26  031140          CDMS    010177          C$DCLN= 000044          DENBIT= 000400          EBI1    021720
BGNT27  031332          CEINIT= 015046          C$DODU= 000051          DENCHK  017350          EBNAT   027030
BGNT28  031530          CKBITS  014522          C$DRPT= 000024          DENDSK= 000020          EBRCR   013716
BGNT29  031732          CKERR = 020000          C$DU  = 000053          DENERR= 000030          EBTKP   010062
BGNT3   022650          CLRCR   021122          C$EDIT= 000003          DENMIX= 000031          EBT11   024532
BGNT30  032132          CLRDAT  013642          C$ERDF= 000055          DENSTA  002414          EBT12   024744
BGNT31  032430          CLRDEV  010472          C$ERHR= 000056          DENSTY  002412          EBT13   025176
BGNT32  033002          CLRERR  010300          C$ERRO= 000060          DFPTBL  002276 G        EBT18   026530
BGNT33  033416          CLRRGS  017124          C$ERSF= 000054          DIAGMC= 000000          EBT31   032604
BGNT34  033616          CMD     002400          C$ERSO= 000057          DISKET= 000014          ECERNB  020164
```

SYMBOL TABLE

```
ECERNT  015164          END131  012612          ERRNST= 000016          F$DU   = 000016          IAGEN   015110
ECERR   003230          EPECK   020140          ERROLD  003340          F$END  = 000041          IAGSC   013106
ECNAT   027074          ERIDNT  003502 G        ERROR   003060          F$HARD= 000004          IAGTK   012664
ECSTA   015330          ERMSTB  003534          ERRREG  015444          F$HW   = 000013          IAI1    021622
ECTAB   016044          ERMS0   003706          ERRSAV  003336          F$INIT= 000006          IANAT   026776
ECT18   026674          ERMS10  004015          ERRTYP  002516 G        F$JMP  = 000050          IAPCE   007056
ECT21   027660          ERMS11  004035          ERTKMS  010241          F$MOD  = 000000          IARCR   013672
ECT32   033256          ERMS12  004056          ESERTB  014746          F$MSG  = 000011          IASCP   007676
ECT36   034440          ERMS13  004112          ESRCHK  014112          F$PROT= 000021          IASDC   020500
ECO     016116          ERMS14  004146          ESRCMP  014264          F$PWR  = 000017          IASRC   014340
EC1     016136          ERMS15  004177          ESRMSK  014266          F$RPT  = 000012          IASTA   015334
EC.1    016407          ERMS16  004226          ESRSET  014272          F$SEG  = 000003          IATKE   017520
EC12    016451          ERMS17  004264          EVL    = 000004 G       F$SOFT= 000005          IATKP   010006
EC13    016477          ERMS19  004314          EXMS    010156          F$SRV  = 000010          IAT1    022372
EC14    016550          ERMS2   003717          EXTADR  002366          F$SUB  = 000002          IAT10   024262
EC15    016567          ERMS20  004333          E$END  = 002100         F$SW   = 000014          IAT11   024420
EC16    016640          ERMS21  004356          E$LOAD= 000035          F$TEST= 000001          IAT12   024656
EC17    016670          ERMS22  004402          FBCMD  = 000000         GETREG  012244          IAT13   025102
EC2     016175          ERMS23  004434          FILADR  002362          GETSEC  013104          IAT14   025324
EC20    016716          ERMS24  004467          FILBUF  010510          GETTRK  012662          IAT15   025554
EC22    016753          ERMS25  004503          FILERR= 000012          GTECEN  015106          IAT16   025670
EC23    017013          ERMS26  004532          FIN     002454          GTECOF  017106          IAT17   026304
EC24    017033          ERMS27  004553          FLAGSP  002500          G$CNTO= 000200          IAT18   026460
EC25    017052          ERMS28  004564          FLAGST  002476          G$DELM= 000372          IAT19   027154
EC4     016234          ERMS29  004575          FLGDRS  002502          G$DISP= 000003          IAT2    022522
EC5     016274          ERMS3   003731          FLOAT0  012456          G$EXCP= 000400          IAT20   027376
EC7     016337          ERMS30  004625          FLOAT1  012524          G$HILI= 000002          IAT21   027542
EDECK   020122          ERMS31  004655          FONZFG= 010000          G$LOLI= 000001          IAT22   030174
EDGSC   013236          ERMS32  004670          FRUM0A  005713          G$NO   = 000000          IAT23   030314
EDSRC   014462          ERMS33  004711          FRUM0B  005746          G$OFFS= 000400          IAT24   030516
EDT18   026722          ERMS34  004733          FRUM00  005650          G$OFSI= 000376          IAT25   030770
EDT21   027662          ERMS4   003742          FRUM1   006001          G$PRMA= 000001          IAT26   031146
EEECK   020072          ERMS40  004756          FRUM10  006361          G$PRMD= 000002          IAT27   031340
EEFRU   005604          ERMS41  004777          FRUM11  006426          G$PRML= 000000          IAT28   031536
EESRC   014516          ERMS42  005027          FRUM12  006451          G$RADA= 000140          IAT29   031740
EET32   033116          ERMS43  005054          FRUM13  006504          G$RADB= 000000          IAT3    022656
EFENV   003466          ERMS44  005102          FRUM14  006544          C$RADD= 000040          IAT30   032140
EFERR   003330          ERMS45  005125          FRUM2   006035          G$RADL= 000120          IAT31   032436
EFFRU   005576          ERMS46  005153          FRUM3   006070          G$RADO= 000020          IAT32   033010
EFT31   032716          ERMS47  005202          FRUM4   006120          G$XFER= 000004          IAT33   033424
EF.CON= 000036 G        ERMS48  005230          FRUM5   006140          G$YES  = 000010          IAT34   033624
EF.NEW= 000035 G        ERMS49  005260          FRUM6   006173          HDRPRT= 000100          IAT35   034026
EF.PWR= 000034 G        ERMS5   003752          FRUM7   006221          HDSFDG= 000056          IAT36   034254
EF.RES= 000037 G        ERMS50  005307          FRUM8   006255          HELP   = 000000          IAT4    022774
EF.STA= 000040 G        ERMS51  005337          FRUM9   006324          HETLCT  003472          IAT5    023110
EGFRU   005554          ERMS6   003763          FRUS1  = 000000         HOE    = 100000 G       IAT6    023236
EGSRC   014330          ERMS7   003774          FRUTAD  005610          HRDERR= 040000          IAT7    023422
EIECK   020070          ERNBEV  003344          FRUTBM  005612          IACDC   020432          IAT8    023672
EMBUFF= 000020          ERNTCK  020170          FTERCT  014274          IADDC   017402          IAT9    024044
EMDCK   013444          ERRBIT= 100000          FTSTUP  020700          IADID   020614          IBDCK   013312
EMPADR  002360          ERRBLK  002524 G        FUNCT  = 000000         IADRC   017316          IBDDC   017410
EMPBUF  010626          ERRCHK  017724          FUNCTT= 000002          IADSC   017144          IBDSC   017152
EMPERR= 000013          ERRCMD  002422          FUNTST= 000040          IAECK   017726          IBE    = 010000 G
ENDCK   013434          ERRCTR  003342          F$AU   = 000015         IAENC   020172          IBECK   017742
ENDDCK  013506          ERRFLG= 100000          F$AUTO= 000020          IAENV   003346          IBEMB   01067c
ENDLD   012652          ERRMSG  002522 G        F$BGN  = 000040         IAERR   003154          IBENC   020204
ENDXER  016012          ERRNBR  002520 G        F$CLEA= 000007          IAFRU   005406          IBENV   003364
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IBERR   003140        ID      002336 G        IJT32   033222        LBDDC   017430        L$EXP4  002064 G
IBFLB   010554        IDCOMP  013020          IKERR   003260        LBFRU   005456        L$EXP5  002066 G
IBFRU   005424        IDDDC   017354          IKT32   033276        LBGEN   015134        L$HARD  034530 G
IBGEN   015116        IDDSMS  020642          ILERR   003274        LBGTK   013006        L$HIME  002120 G
IBGSC   013140        IDFCK   020022          ILLERC= 000017        LBI1    021704        L$HPCP  002016 G
IBGTK   012770        IDENC   020226          ILLGAL= 010000        LBNAT   027022        L$HPTP  002022 G
IBI1    021666        IDENT1  015446          ILTK  = 000004        LBTKP   010056        L$HW    002276 G
IBNAT   027006        IDENV   003404          IMDCK   013352        LBUWCH  011740        L$ICP   002104 G
IBPCE   007122        IDERR   003242          IMECK   020074        LCMD    002424        L$INIT  021214 G
IBREC   011414        IDGSC   013224          INDCK   013402        LCSTA   015314        L$LADP  002026 G
IBRED   011124        IDSRC   014446          INECK   017752        LCT24   030634        L$LAST  037634 G
IBSDN   011234        IDSSMS  020657          INFCTL= 006640        LCT29   032042        L$LOAD  002100 G
IBSRC   014416        IDTKE   017556          INIT    021214        LDT11   024474        L$LUN   002074 G
IBSTA   015270        IDT11   024454          INITDN= 000004        LDT31   032562        L$MREV  002050 G
IBTKE   017540        IDT14   025376          INITER  021462        LDT35   034134        L$NAME  002000 G
IBTKP   010042        IDT16   026050          INITTK  013102        LET14   025446        L$PRIO  002042 G
IBT11   024502        IDT18   026700          INTERF= 000000        LET21   027770        L$PROT  002310 G
IBT12   024714        IDT24   030640          INTERT  002404        LEUWCH  012000        L$PRT   002112 G
IBT13   025140        IDT29   032016          INTER1  021530        LF    = 000012 G      L$REPP  002062 G
IBT14   025342        IDT31   032516          INTFCB= 000024        LFFRU   005562        L$REV   002010 G
IBT16   025710        IDT32   033066          INTFSW= 000016        LGFRU   005550        L$RPT   021212 G
IBT18   026506        IDT35   034110          INTIAL  010440        LGT31   032712        L$SOFT  034700 G
IBT19   027170        IDU   = 000040 G        INTNDN= 000014        LKERR   003312        L$SPC   002056 G
IBT29   031776        IEDCK   013322          INTONL= 006644        LKT32   033316        L$SPCP  002020 G
IBT30   032334        IEERR   003164          INTRHD  012276        LMECK   020114        L$SPTP  002024 G
IBT35   034070        IER   = 020000 G        INTTBL  021742        LOAD    012614        L$STA   002030 G
IBUWCH  011704        IESRC   014466          IOECK   017762        LOE   = 040000 G      L$SW    002320 G
IBWRT   011014        IETKE   017566          IPECK   020124        LOGICT= 000001        L$TEST  002114 G
ICDDC   017464        IET14   025422          ISC   = 001000        LOT   = 000010 G      L$TIML  002014 G
ICDSC   017160        IET21   027706          ISR   = 000100 G      LRXCSR  002426        L$UNIT  002012 G
ICECK   020012        IET32   033074          ITK   = 000400        LRXESR  002430        L10000  002310
ICEMB   010712        IEJWCH  011752          IXE   = 004000 G      LSIFLG= 000400        L10002  002350
ICENC   020214        IFDCK   013332          I$AU  = 000041        LTSTUP  020736        L10003  002532
ICERR   003214        IFENV   003420          I$AUTO= 000041        L$ACP   002110 G      L10004  002540
ICFLB   010574        IFERR   003062          I$CLN = 000041        L$APT   002036 G      L10005  002546
ICGTK   012742        IFFRU   005524          I$DU  = 000041        L$AU    022062 G      L10006  003532
ICNAT   027046        IFSRC   014346          I$HRD = 000041        L$AUT   002070 G      L10007  021212
ICPCE   007130        IFTKE   017612          I$INIT= 000041        L$AUTO  022054 G      L10010  021522
ICREC   011434        IFT21   027714          I$MOD = 000041        L$CCP   002106 G      L10011  021774
ICRED   011144        IFT31   032652          I$MSG = 000041        L$CLEA  021764 G      L10012  022010
ICSRC   014432        IFT32   033122          I$PROT= 000040        L$CO    002032 G      L10013  022060
ICSTA   015276        IGENV   003430          I$PTAB= 000041        L$DEPO  002011 G      L10014  022064
ICTKE   017550        IGERR   003200          I$PWR = 000041        L$DESC  002122 G      L10015  022454
ICT11   024546        IGFRU   005532          I$RPT = 000041        L$DESP  002076 G      L10016  022614
ICT12   024756        IGSRC   014304          I$SEG = 000041        L$DEVP  002060 G      L10017  022730
ICT13   025210        IGTKE   017622          I$SETU= 000041        L$DISP  002164 G      L10020  023046
ICT14   025352        IGT21   027724          I$SFT = 000041        L$DLY   002116 G      L10021  023164
ICT16   025754        IGT31   032660          I$SRV = 000041        L$DTP   002040 G      L10022  023350
ICT18   026652        IGT32   033132          I$SUB = 000041        L$DTYP  002034 G      L10023  023612
ICT21   027640        IHENV   003444          I$TST = 000041        L$DU    021776 G      L10024  024002
ICT23   030372        IHTKE   017654          J$JMP = 000167        L$DUT   002072 G      L10025  024220
ICT24   030566        IHT32   033156          LACDC   020454        L$DVTY  002154 G      L10026  024362
ICT29   032012        IIECK   020056          LAI1    021644        L$EF    002052 G      L10027  024620
ICT31   032510        IIERR   003124          LANAT   027036        L$ENVI  002044 G      L10030  025030
ICT35   034104        IITKE   017662          LAPCE   007076        L$ERRT  002516 G      L10031  025260
ICUWCH  011712        IIT32   033202          LASDC   020524        L$ETP   002102 G      L10032  025500
ICWRT   011034        IJERR   003114          LATKP   010130        L$EXP1  002046 G      L10033  025630
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SYMBOL TABLE

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L10034  026232          NOTRBT= 000057          PRTREG  007564          RXPRI   002356          TRKAER= 000041
L10035  026426          NPRERR= 000053          PRTSEC  007674          RX2BIT= 004000          TRKCNT  013100
L10036  026772          NPRJPR= 000020          PRTSTA  015240          SCPRT = 000002          TRKDON= 001000
L10037  027336          NXMADR  002344 G        PRTTRK  010002          SDCMD = 000010          TRKSEQ  002330 G
L10040  027500          NXMBIT= 004000          PRTXOS  002714          SDENC   020472          TRPMS1  022212
L10041  030124          NXMERR= 000052          PRTX1S  002734          SDKYWD= 000036          TSAVE1  002506
L10042  030244          OD      002334 G        PRTX2S  002756          SDRDYE= 000024          TSDGMS  020306
L10043  030446          ODCOMP  013032          PRTX3S  003002          SECAER= 000042          TSDGM1  020364
L10044  030706          ODTNOT= 000001          PRTX4S  003030          SECDON= 002000          TSEC    002447
L10045  031076          ONEFIL= 000000          PTERTY  003474          SECTOR  002376          TSTDBG  020240
L10046  031276          O$APTS= 000000          PTUTMS  020560          SEKERR= 000006          TSTID   002466
L10047  031466          O$AU  = 000001          PWDNRY  026175          SETDCD  011462          TSTMOD  002324 G
L10050  031662          O$BGNR= 000000          PWRMS   026122          SETDN   011172          TSTPAT  002326 G
L10051  032076          O$BGNS= 000001          PWUPRY  026214          SETSCD  011502          TTEMP1  002504
L10052  032376          O$DU  = 000001          RANDAT  012566          SETUP   021362          TTRK    002446
L10053  032750          O$ERRT= 000001          RANGEN  010344          SFPTBL  002320 G        TYPERR  002460
L10054  033354          O$GNSW= 000001          RANUM   010436          SFTSTS  002450          T$ARGC= 000002
L10055  033554          O$POIN= 000001          RAN1    010432          SIDE    002410          T$CODE= 005130
L10056  033750          O$SETU= 000001          RAN2    010434          SIDE1 = 001000          T$ERRN= 000074
L10057  034170          PAT     012660          RDERCD  011340          SIDFLG= 010000          T$EXCP= 000000
L10060  034524          PATCH   037226          RDERR = 000003          SIDPRT  002515          T$FLAG= 000040
L10061  034606          PAT125  012532          RDSTAT  011266          SIDRDY= 000002          T$FREE= 037670
L10062  035012          PAT333  012556          READ    011062          SIDWRG= 000026          T$GMAN= 000000
L10063  037640          PG      012434          READ1   011112          SSC   = 000002          T$HILI= 000003
L10064  037656          PHYDRV= 000006          RECADR  002364          STAFLG= 100000          T$LAST= 000001
L10065  037652          PLOC    021524          RECCMD= 000016          START   021252          T$LOLI= 000000
L10067  037670          PNT   = 001000 G        RECERN  002462          START0  021262          T$LSYM= 010000
MAXSEC  002342 G        POWRSP= 000012          RECERR= 000021          START1  021322          T$LTNO= 000044
MINSEC  002340 G        PRESCK  013044          RECFLG= 000200          STATER  017222          T$NEST= 177777
MOTOR = 000032          PRI   = 002000 G        RECTST= 000200          STCMD = 000012          T$NS0 = 000000
MSG1    034606          PRILEV= 000054          REGACT  002440          STDATP  012306          T$NS1 = 000005
MSG10   035745          PRIMSG  030006          REGCK = 000001          STDNER= 000035          T$PCNT= 000000
MSG14   036014          PRIORT  002416          REGEXP  002436          STK   = 000001          T$PTAB= 010066
MSG15   036053          PRITAB  021732          REGSCK  013664          STTK76  021174          T$PTHV= 000002
MSG17   036124          PRI00 = 000000 G        REGS1 = 015036          SUDVCD  021014          T$PTNU= 000002
MSG2    034621          PRI01 = 000040 G        REGS2 = 000000          SUM     012654          T$SAVL= 177777
MSG20   036150          PRI02 = 000100 G        REGS3 = 000000          SURGCK  014276          T$SEGL= 177777
MSG3    034634          PRI03 = 000140 G        REGS4 = 000000          SUTSFG  020772          T$SIZE= 000016
MSG4    034647          PRI04 = 000200 G        REGS5 = 000000          SVCGBL= 000000          T$SUBN= 000000
MSG4A   034662          PRI05 = 000240 G        REGS6 = 000000          SVCINS= 177777          T$TAGL= 177777
MSG5    035012          PRI06 = 000300 G        RESFLG= 040000          SVCSUB= 177777          T$TAGN= 010070
MSG6    035044          PRI07 = 000340 G        RESTAR  021332          SVCTAG= 177777          T$TEMP= 000000
MSG7    035057          PROPRT= 000010          REVC  = 000000          SVCTST= 177777          T$TEST= 000044
MSG8    035677          PROTCT  002472          RGERNB  020166          SWREG   002332 G        T$TSTM= 177777
MSG9    035722          PRTB0   002526 G        RGERTB  014706          SYFERR= 002000          T$TSTS= 000001
NAT     026774          PRTB0S  002550          RGETPT  014670          SYSERR  002456          T$$AU = 010014
NATADR  027102          PRTB1   002534 G        RGPRT = 000004          S$LSYM= 010000          T$$AUT= 010013
NATCTR  027100          PRTB1S  002570          RSC   = 000000          TCMDCT  002470          T$$CLE= 010011
NCMD    011542          PRTB2   002542 G        RSCMD = 000006          TFDCK   013342          T$$DAT= 010067
NEGTST= 004000          PRTB2S  002612          RTBADR  014704          TGMS    010220          T$$DU = 010012
NEW     021352          PRTB3S  002636          RTK   = 000000          TKERCK  017516          T$$HAR= 010061
NEXT    021370          PRTB4S  002664          RWELEC= 000004          TKPRT = 000001          T$$HW = 010000
NGTSER  002464          PRTCDE  007040          RXCS    002350          TKSCFG  002510          T$$INI= 010010
NODNBT= 000060          PRTDID  020600          RXCSR   002432          TN    = 000044          T$$MSG= 010006
NOITDB= 000061          PRTECD  015744          RXDB    002352          TRACK   002374          T$$PC = 000002
NOITDP= 000062          PRTFRU  005404          RXESR   002434          TRAP    022324          T$$PRO= 010001
NOPWR = 000034          PRTGMS  007620          RXINIT- 040000          TRBIT = 000200          T$$PTA- 010066
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PARAMETER CODING MACRO M1110 13-AUG-79 15:33 PAGE 240-5 SEQ 0177
SYMBOL TABLE

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T$$RPT= 010007          T14FTB  025474          T24RTB  030700          T35FTB  034164          WAIT    011610
T$$SOF= 010062          T14MSG  025264          T24TBL  030670          T35MSG  033754          WATCH   011662
T$$SW = 010002          T14RTB  025472          T25     030710 G        T35RTB  034160          WC      002443
T$$TES= 010060          T14TBL  025462          T25FTB  031072          T35TBL  034150          WCERR = 000023
TOFTB   006660          T15     025502 G        T25MSG  030712          T36     034172 G        WCFRU   005462
TOFT0   006640          T15FTB  025624          T25RTB  031064          T36FTB  034520          WCOVFE= 000051
TOFT1   006736          T15MSG  025504          T25TBL  031054          T36MSG  034174          WCOVRF= 002000
TOFT11  006763          T15RTB  025620          T26     031100 G        T36RTB  034514          WDCNT   002370
TOFT12  006770          T15TBL  025610          T26FTB  031272          T36TBL  034504          WDDCMD= 000014
TOFT13  006776          T16     025632 G        T26MSG  031102          T4      022732 G        WDFRU   005466
TOFT15  007002          T16FTB  026116          T26RTB  031266          T4MSG   022734          WEECK   020040
TOFT16  007006          T16MSG  025634          T26TBL  031256          T4RTB   023042          WEFRU   005516
TOFT17  007012          T16RTB  026112          T27     031300 G        T4TBL   023036          WRITE   010744
TOFT2   006742          T16TBL  026102          T27FTB  031462          T5      023050 G        WRITE1  011002
TOFT20  007016          T17     026234 G        T27MSG  031302          T5MSG   023052          WRTERR= 000002
TOFT22  007022          T17FTB  026422          T27RTB  031456          T5RTB   023160          WSCMD = 000004
TOFT23  007025          T17MSG  026236          T27TBL  031446          T5TBL   023154          XADBIT  002346 G
TOFT24  007030          T17RTB  026414          T28     031470 G        T6      023166 G        XCDENC  020470
TOFT25  007035          T17TBL  026404          T28FTB  031656          T6MSG   023170          XCEC    011606
TOFT4   006746          T18     026430 G        T28MSG  031472          T6RTB   023344          XCRBIT  014666
TOFT40  006644          T18FTB  026766          T28RTB  031652          T6TBL   023340          XCSRCK  014106
TOFT41  006646          T18MSG  026432          T28TBL  031642          T7      023352 G        XDVRCK  011660
TOFT42  006651          T18RTB  026762          T29     031664 G        T7MSG   023354          XEMPBF  010732
TOFT43  006654          T18TBL  026752          T29FTB  032072          T7RTB   023606          XENTCK  020236
TOFT5   006751          T19     027104 G        T29MSG  031666          T7TBL   023602          XERNBE  003470
TOFT7   006755          T19FTB  027332          T29RTB  032066          T8      023614 G        XERRCK  020162
TOMSG   022172          T19MSG  027106          T29TBL  032056          T8MSG   023616          XERROR  003334
TORT1   015026          T19RTB  027326          T3      022616 G        T8RTB   023776          XERUUT  002442
TORT2   015036          T19RT1  027306          T3MSG   022620          T8TBL   023772          XER1    016014
TORT3   015046          T19TBL  027316          T3RTB   022724          T9      024004 G        XER2    015531
TORT4   015056          T2      022456 G        T3TBL   022720          T9MSG   024006          XER3    015627
TORT5   015066          T2MSG   022460          T30     032100 G        T9RTB   024214          XESRCK  014234
TORT6   015076          T2RTB   022610          T30FTB  032372          T9TBL   024210          XFILBF  010614
T1      022332 G        T2TBL   022604          T30MSG  032102          UACDB   013660          XGSC    013244
T1MSG   022334          T20     027340 G        T30RTB  032366          UADCK   013500          XGTECN  015162
T1RTB   022450          T20FTB  027474          T30TBL  032356          UAM   = 000200 G        XGTK    013076
T1TBL   022444          T20MSG  027342          T31     032400 G        UAUWCH  011750          XINIT   021512
T10     024222 G        T20RTB  027472          T31FTB  032744          UBRCR   013710          XINT    010460
T10MSG  024224          T20TBL  027462          T31MSG  032402          UBT10   024334          XPCE    007162
T10RTB  024356          T21     027502 G        T31RTB  032740          UBT21   027670          XPG     012464
T10TBL  024352          T21FTB  030120          T31TBL  032730          UBT23   030410          XPTDID  020640
T11     024364 G        T21MSG  027504          T32     032752 G        UBT24   030654          XPTFRU  005606
T11FTB  024614          T21RTB  030116          T32FTB  033350          UBT27   031432          XPTSTA  015436
T11MSG  024366          T21TBL  030106          T32MSG  032754          UBT31   032566          XRDERC  011454
T11RTB  024612          T22     030126 G        T32RTB  033346          UBT32   033324          XRDSTA  011336
T11TBL  024602          T22FTB  030240          T32TBL  033336          UBT36   034462          XREAD   011164
T12     024622 G        T22MSG  030130          T33     033356 G        UBT7    023570          XREGCK  014256
T12FTB  025024          T22RTB  030234          T33FTB  033550          UCGSC   013214          XSCP    007756
T12MSG  024624          T22TBL  030224          T33MSG  033360          UCT32   033240          XSDC    020540
T12RTB  025022          T23     030246 G        T33RTB  033544          UCT36   034410          XSETDN  011254
T12TBL  025012          T23FTB  030442          T33TBL  033534          UDUWCH  011744          XSRC    014520
T13     025032 G        T23MSG  030250          T34     033556 G        UNIT    021526          XTKECK  017722
T13FTB  025254          T23RTB  030440          T34FTB  033744          UNPKHP  021572          XTKPRT  010154
T13MSG  025034          T23TBL  030430          T34MSG  033560          UNTPRT  002512          XT1     022440
T13RTB  025252          T24     030450 G        T34RTB  033740          UN1     021314          XT10    024346
T13TBL  025242          T24FTB  030702          T34TBL  033730          VARIFY  002372          XT11    024576
T14     025262 G        T24MSG  030452          T35     033752 G        VECT    002354          XT12    025006
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XT13    025236          XT20    027456          XT28    031636          XT35    034144          XUWCH   012014
XT14    025456          XT21    027774          XT29    032052          XT36    034500          XWAIT   011632
XT15    025604          XT22    030220          XT3     022714          XT4     023032          XWRITE  011054
XT16    026076          XT23    030424          XT30    032352          XT5     023150          XXPG    012540
XT17    026400          XT24    030664          XT31    032724          XT6     023334          X$ALWA= 000000
XT18    026746          XT25    031050          XT32    033332          XT7     023576          X$FALS= 000040
XT19    027302          XT26    031252          XT33    033530          XT8     023766          X$OFFS= 000400
XT2     022600          XT27    031442          XT34    033724          XT9     024204          X$TRUE= 000020

. ABS.  037670     000
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  34352 WORDS  ( 135 PAGES)
DYNAMIC MEMORY:  20620 WORDS  ( 79 PAGES)
ELAPSED TIME:  00:15:19
CZRXFA.BIN/DS:GBL/EN:ABS:AMA,CZRXFA/NL:BEX/-SP=LB1:[1,1]SVC/MLB,SY:[203,71]CZRXFA.MAC
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