

RX02

FCTN/LGC
CNRXFA0

AH-T478A-MC
FICHE 1 OF 1

MAY 1983
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A microfiche card containing a grid of 15 columns and 15 rows of frames. Each frame contains a small, high-contrast image of a document page, likely a technical drawing or schematic. The images are arranged in a regular grid pattern across the card.

IDENTIFICATION

PRODUCT CODE: AC-T477A-MC
PRODUCT NAME: CNRXFA0 RX02 FCTN/LGC
PRODUCT DATE: DEC, 1982
MAINTAINER: DIAGNOSTICS SERVICES/ISS
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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-11/21 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

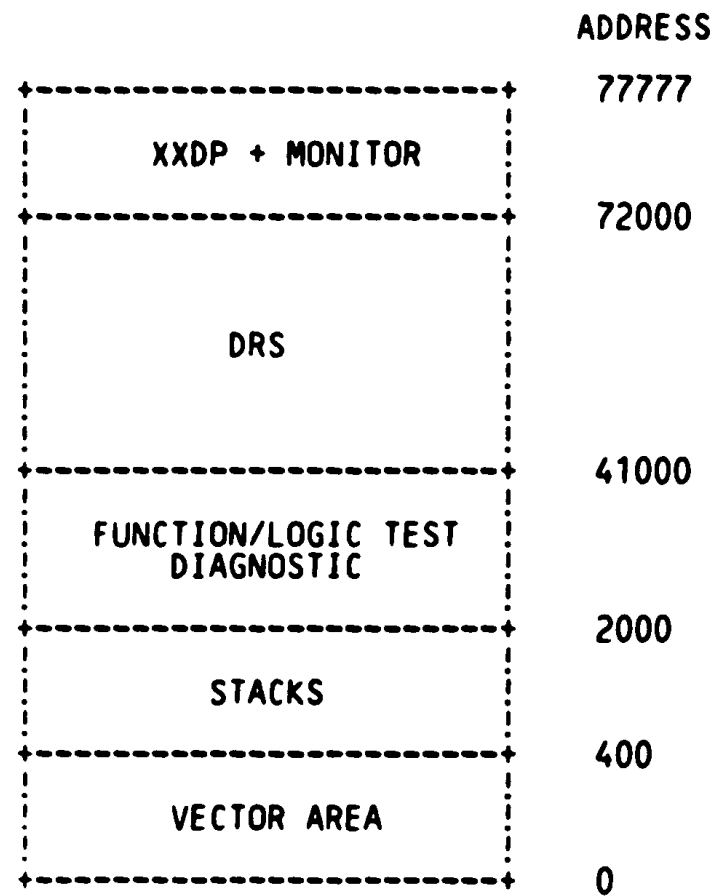
1.4 DIAGNOSTIC HIERARCY PREREQUISITES

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.

MEMORY LAYOUT ON 16K MACHINE - XXDP ENVIRONMENT



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

CTIONS

THIS IS A REV A 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.

NS

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 OF 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:

```
CZRFAO HRD ERR 00004 ON UNIT 01 TST 010 SUB C00 PC:003476
POSITIONING - FNC TST
CSR- ERROR
    REG ACTUAL=005520
    REG EXPECT=037565
```

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:

```
CNRFAO 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 DVO=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

	! <FUNCTION>!															
	!15	!14	!13	!12	!11	!10	!09	!08	!07	!06	!05	!04	!03	!02	!01	!00
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	SID	DRV	DRV	DEL	DSK	DEN	AC	INT	SID	CRC
					OVF	#1	#1	RDY	DAT	DEN	ERR	LOW	DON	RDY		
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 LABEL '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	DV1	HD	DVO	X	X	X	LCD
								SEL	DEN	LD	DEN					DEN

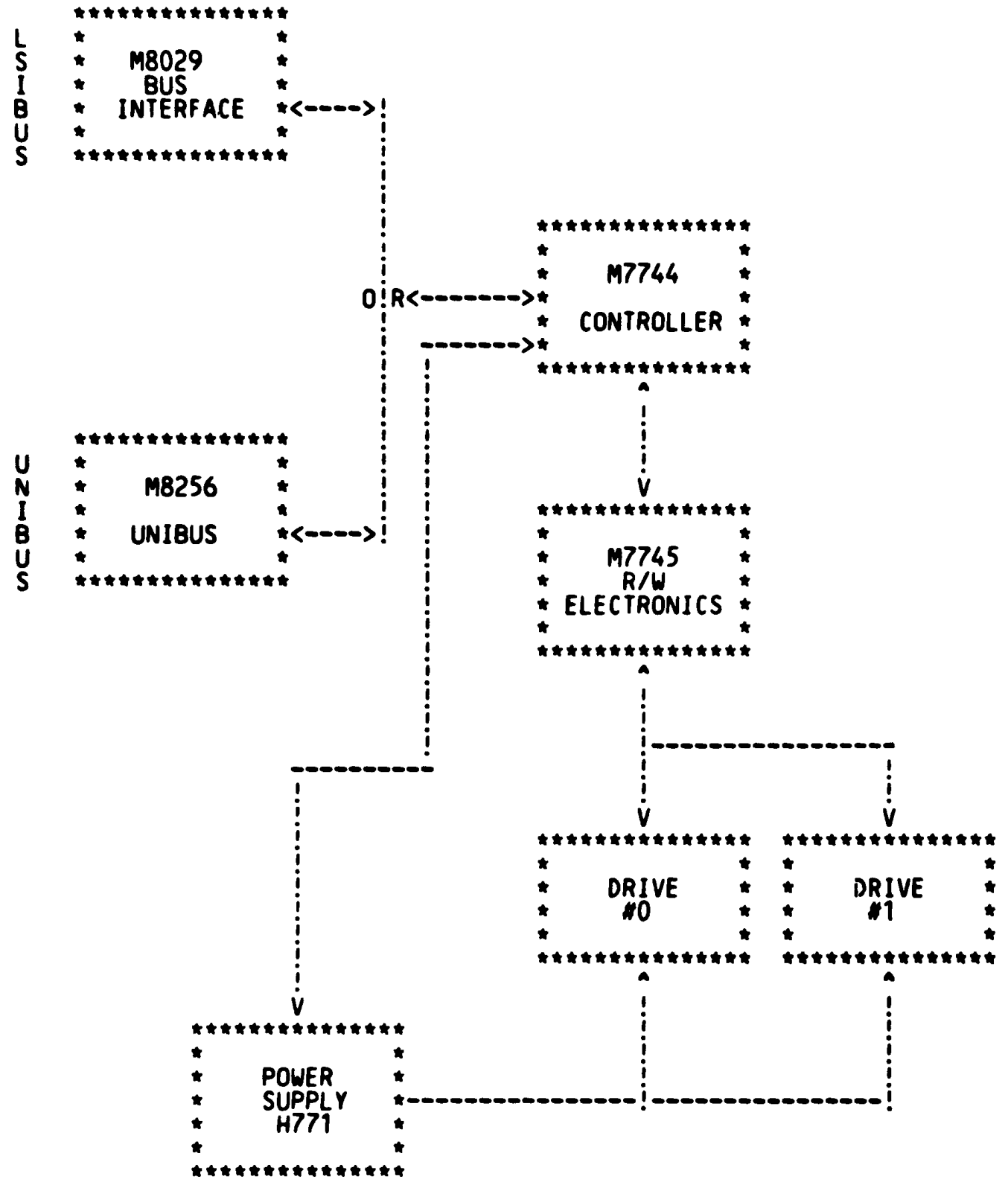
5.2 DEVICE PROTOCOL

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 PROGRAMMED 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.

DESCRIPTION:

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 DELETED 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. WRITE 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

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 PRIORITY = 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 = 6 (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

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 BUFFER
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

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

TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISKETTE 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.

DESCRIPTION:

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

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

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

7.0 REVISION HISTORY

CZRFAO MACRO AND DOCUMENTATION HAV BEEN REVISED TO RUN ON PDP11/21
PROCESSOR AND RENAMED TO CNRFAO TO BE SPECIFIC TO THIS PROCESSOR.
THE CHANGES INCLUDE PROCESSOR PRIORITY BEING LOWERED TO 6 FROM 7.

8.0 LISTING INDEX

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145-	4175	TEST 5 - READ STATUS - FNC TST
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149-	4246	TEST 7 - READ & WRITE SECTOR - FNC TST
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155-	4352	TEST 9 - SET DENSITY - FNC TST
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163-	4518	TEST 12 - JBR BITS - LGC TST
166-	4574	TEST 13 - CSR-DPR COMMON BYTE - LGC TST
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179-	4837	TEST 18 - NPR - LGC TST
183-	4926	- MOD U.SFT.NAT - ADDRESS NPR ADDRESS TEST
184-	4973	TEST 19 - NPR NON-EXISTENT MEM - LGC TST
187-	5022	TEST 20 - INTERRUPT - LGC TST
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191-	5135	TEST 22 - INITIALIZE CONTROL - LGC TST
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236- 6116	HARDWARE PARAMETER CODING SECTION
238- 6188	SOFTWARE PARAMETER CODING SECTION
240- 6250	- RX02 FILL BUFFER AREA
240- 6258	- RX02 EMPTY BUFFER AREA
240- 6273	- PATCH AREA

PARAMETER CODING

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.NLIST SEQ,LD,BIN,CND

.REPT 0

```

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  CNRXFA0,0,0,170,0
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

```

PROGRAM HEADER AND TABLES
DEFAULT HARDWARE P-TABLE

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108
109
110
111
112
113
114 002274
115 002276 177170
116 002300 000264
117 002302 000000
118 002304 000000
119 002306 000005
125 002310
126
129
130
131
132
133
134 002310
135 002310 000000
136 002312 177777
137 002314 000004
138 002316
140
141
142
143
144
145
146 002316
147 002320 000001
148 002322 000000
149 002324 000001
150 002326 000000
151 002330 000000
152 002332 000020
153 002334 000000
154 002336 000114
155 002340 000001
156 002342 000032
157 002344 160000
158 002346 000000
165 002350
166
167
168
169
170
171
172
173
174 002350

```
.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.
:--
```

```
BGNHW  DFPTBL
.WORD  177170      ;UNIBUS ADDRESS
.WORD  264        ;VECTOR ADDRESS
.WORD  0          ;DRIVE #
.WORD  0          ;FUTURE EXPANSION
.WORD  5          ;BR LEVEL #'S
ENDHW
```

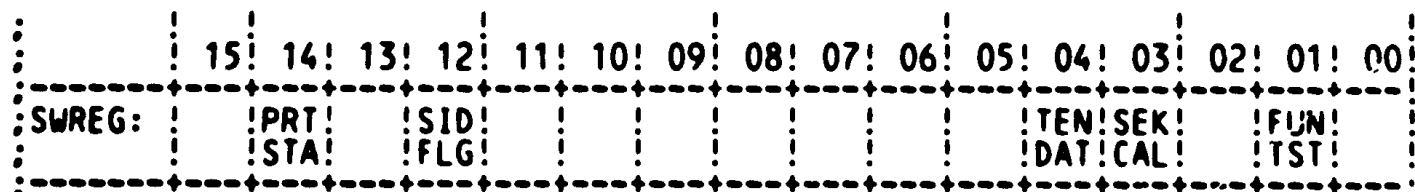
```
.SBTTL  LOAD DEVICE PROTECTION
:++
: LOAD DEVICE PROTECTION TABLE - USED TO CHECK HARDWARE P-TABLE
: AGAINST LOAD DEVICE.
:--
```

```
BGNPROT
.WORD  0          ;P-TABLE OFFSET->CSR
.WORD -1          ;P-TABLE OFFSET->VECTOR-DON'T CARE
.WORD  4          ;P-TABLE OFFSET->DRIVE
ENDPROT
```

```
.SBTTL  SOFTWARE P-TABLE
:++
: THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
: PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
:--
```

```
DVTL:  BGNPRT  SFPTBL
.WORD  1          ;HARD ERROR->DEVICE FATAL THRESHOLD LEVEL
.WORD  0          ;CONTROL WORD FOR SOFTWARE P-TABLES
TSTMOD:: .WORD  1 ;TEST MODE
TSTPAT:: .WORD  0 ;TEST PATTERN #
TRKSEQ:: .WORD  0 ;TRACK SEQUENCE #
SWREG::  .WORD  20 ;SOFTWARE SWITCH REG
OD::    .WORD  0  ;OUTSIDE DIA. TRACK LIMIT
ID::    .WORD  114 ;INSIDE DIA. TRACK LIMIT.
MINSEC:: .WORD  1 ;MINIMUM SECTOR LIMIT
MAXSEC:: .WORD  32 ;MAXIMUM SECTOR LIMIT
NXMADR:: .WORD  160000 ;NON-EXISTENT MEMORY-ADR
XADBIT:: .WORD  0  ;EXTENDED ADDRESS BITS
```

ENDSW



ENDMOD

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SOFTWARE P-TABLE

```

188 .TITLE GLOBAL AREAS
189 .SBTTL GLOBAL EQUATES SECTION
215
225 :-----< TEST MACROS >-----
226 : THIS SECTION CONTAINS MACROS USED THROUGHOUT THE TESTS
227 :-----
273
291
297
326
332
344
416
422
452
458
488 002350 BGNMOD
489
490 :++
491 : THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
492 : ARE USED IN MORE THAN ONE TEST.
493 :--
494
495 002350 EQUALS
:
: BIT DEFINITIONS
:
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

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 5-1
GLOBAL EQUATES SECTION

000040	EF.START==	32.	:	BIT POSITION IN SECOND STATUS WORD
000037	EF.RESTART==	31.	:	(100000) START COMMAND WAS ISSUED
000036	EF.CONTINUE==	30.	:	(040000) RESTART COMMAND WAS ISSUED
000035	EF.NEW==	29.	:	(020000) CONTINUE COMMAND WAS ISSUED
000034	EF.PWR==	28.	:	(010000) A NEW PASS HAS BEEN STARTED
			:	(004000) 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

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 6
 GLOBAL EQUATES SECTION

```

497          ;***** PROGRAM EQUIVALENTS *****
498
499          000010      DLDCMD =          BIT3      ;DEL. DATA CMD BIT-----<CSR>
500          100000      ERRBIT =         BIT15     ;ERROR BIT-----<CSR>
501          040000      RXINIT =         BIT14     ;RXINIT BIT-----<CSR>
502          004000      RX2BIT =         BIT11     ;RX02 BIT-----<CSR>
503          001000      SIDE1  =         BIT9      ;SIDE #1 BIT-----<CSR> & <CSR>
504          000400      DENBIT =         BIT8      ;DENSITY BIT-----<CSR>
505          000200      TRBIT  =         BIT7      ;TR BIT-----<CSR>
506          000040      DNBIT  =         BIT5      ;DONE BIT-----<CSR>
507          000020      DRV1   =         BIT4      ;DRIVE 1-----<CSR>
508          004000      NXMBIT =         BIT11     ;NON-EXISTENT MEM-----<ESR>
509          002000      WCOVRF =         BIT10     ;WORD COUNT OVERFLOW----<ESR>
510          000400      DRIVE1 =         BIT8      ;DRIVE #1 BIT-----<ESR>
511          000200      DRVRDY =         BIT7      ;DRIVE READY BIT-----<ESR>
512          000100      DLDBIT =         BIT6      ;DEL. DATA BIT-----<ESR>
513          000040      DRVDEN =         BIT5      ;DRIVE DENSITY-----<ESR>
514          000020      DENERR =         BIT4      ;DENSITY ERROR-----<ESR>
515          000010      ACLOW  =         BIT3      ;AC LOW BIT-----<ESR>
516          000004      INITDN =         BIT2      ;INITIALIZE DONE BIT----<ESR>
517          000002      SIDRDY =         BIT1      ;SIDE READY BIT-----<ESR>
518          000001      CRCERB =         BIT0      ;CRC ERROR BIT-----<ESR>
519          000004      BTRP4  =          4        ;BUS TRAP LOC #4 - TRAP HANDLER
520          000006      BTRP6  =          6        ;BUS TRAP LOC #4 - PSW
521          000001      LOGICT =         BIT0      ;LOGIC TEST BIT-----<SWREG>
522          000002      FUNCTT =         BIT1      ;FUNCTION TEST BIT-----<SWREG>
523          010000      SIDFLG =         BIT12     ;SIDE FLAG SOFT-P TABLE-<SWREG>
524          000400      ITK    =         BIT8      ;INITIALIZE TRACKS FLAG   <TKSCFG>
525          001000      ISC    =         BIT9      ;INITIALIZE SECTORS FLAG  <TKSCFG>
526          000001      STK    =         BIT0      ;SEQUENCE TRACKS FLAG    <TKSCFG>
527          000002      SSC    =         BIT1      ;SEQUENCE SECTORS FLAG   <TKSCFG>
528          000000      RTK    =          0        ;RANDOM TRACKS FLAG       <TKSCFG>
529          000000      RSC    =          0        ;RANDOM SECTORS FLAG      <TKSCFG>
530          000004      ILTK   =         BIT2      ;ILLEGAL TRACKS FLAG     <TKSCFG>
531
532          ;***** DEVICE COMMANDS *****
533
534          000000      FBCMD  =          0        ;FILL BUFFER CMD
535          000002      EBCMD  =          2        ;EMPTY BUFFER CMD
536          000004      WSCMD  =          4        ;WRITE SECTOR
537          000006      RSCMD  =          6        ;READ SECTOR
538          000010      SDCMD  =         10       ;SET DENSITY
539          000012      STCMD  =         12       ;STATUS
540          000014      WDDCMD =         14       ;WRITE DELETED DATA CMD
541          000016      RECCMD =         16       ;READ ERROR CODE CMD

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 8
GLOBAL EQUATES SECTION

```

544          ;***** ERROR NUMBER EQUIVALENTS *****
545
546          000002      WRTERR =      2.          :WRITE ERR          -HRD
547          000003      RDERR  =      3.          :READ ERR           -HRD
548          000004      CRCERR =      4.          :CRC ERR            -HRD
549          000005      DATERR =      5.          :DATA ERR           -HRD
550          000006      SEKERR =      6.          :SEEK ERR           -HRD
551          000007      DLDERR =      7.          :DELETED DATA ERR -HRD
552          :-----
553
554          000012      FILERR =     10.          :FILL BUFFER ERR    -HRD
555          000013      EMPERR =     11.          :EMPTY BUFFER ERR   -HRD
556          000014      INTNDN =     12.          :INTERRUPT, NO DONE ERR -HRD
557          000015      DNNINT =     13.          :DONE, NO INTERRUPT ERR -HRD
558          000016      ERRNST =     14.          :ERROR NOT SET ERR  -HRD
559          000017      ILLERC =     15.          :ILLEGAL ERROR CODE -HRD
560          000020      DENDSK =     16.          :DENSITY OF DISK-NOT ERR -HRD
561          000021      RECERR =     17.          :READ ERROR CODE ERR -HRD
562          :-----
563
564          000023      WCERR  =     19.          :WORD COUNT ERROR   -DVCFTL
565          000024      SDRDYE =     20.          :SIDE READY         -DVCFTL
566          000025      DVRDYE =     21.          :DRIVE READY        -DVCFTL
567          000026      SIDWRG =     22.          :SIDE WRONG         -DVCFTL
568          000027      DRVWRG =     23.          :DRIVE WRONG        -DVCFTL
569          000030      DENERR =     24.          :DENSITY ERR        -DVCFTL
570          000031      DENMIX =     25.          :DENSITY MIXED ON DISK ERR -DVCFTL
571          000032      DLDTER =     26.          :DELETED DATA ERR  -DVCFTL
572          000033      CSRERR =     27.          :RXCSR-ERR          -DVCFTL
573          000034      DBRERR =     28.          :RXESR-ERR          -DVCFTL
574          000035      STDNER =     29.          :SET DENSITY ERR    -DVCFTL
575          000036      SDKYWD =     30.          :SET DENSITY KEYWORD (VARIFY) -DVCFTL
576          000037      ACLOWD =     31.          :AC LOW             -DVCFTL
577          000040      ALGO2E =     32.          :ALGO2 ERROR        -DVCFTL
578          000041      TRKAER =     33.          :TRACK ADDRESS      -DVCFTL
579          000042      SECAER =     34.          :SECTOR ADDRESS     -DVCFTL
580          :-----
581
582          000050      ACLOWF =     40.          :AC LOW FATAL ERR   -SYSFTL
583          000051      WCOVFE =     41.          :WORD COUNT OVERFLOW ERR -SYSFTL
584          000052      NXMERR =     42.          :NON-EXISTENT MEMORY ERR -SYSFTL
585          000053      NPRERR =     43.          :NPR LOGIC ERR      -SYSFTL
586          000054      PRILEV =     44.          :PRIORITY LEVEL ERR -SYSFTL
587          000055      DATABF =     45.          :DATA BUFFER INTEG ERR -SYSFTL
588          000056      HDSFDG =     46.          :HARDWARE SELF DIAC ERR -SYSFTL
589          000057      NOTRBT =     47.          :"TR" BIT TIME OUT ERR -SYSFTL
590          000060      NODNBT =     48.          :"DONE" BIT TIBIT TIME OUT ERR -SYSFTL
591          000061      NOITDB =     49.          :NO "INIT DONE" BIT ERR -SYSFTL
592          000062      NOITDP =     50.          :NO PROG "INIT DONE" BIT ERR -SYSFTL
593          000063      DNNOTR =     51.          :"DONE" BIT, NO "TR" BIT -SYSFTL
594          :-----

```


GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 10
GLOBAL EQUATES SECTION

```

597          ;***** FRU CALLOUT MESSAGE EQUIVALENTS *****
598          000000 INTERF = 0 ;INTERFACE=0
599          000002 CONTRL = 2*1. ;FRUM1 ;CONTROLLER
600          000004 RWELEC = 2*2. ;FRUM2 ;R-W ELECTRONICS
601          000006 PHYDRV = 2*3. ;FRUM3 ;PHYSICAL DRIVE
602          000010 CABLES = 2*4. ;FRUM4 ;CABLES
603          000012 POWRSP = 2*5. ;FRUM5 ;POWER SUPPLY
604          000014 DISKET = 2*6. ;FRUM6 ;DISKETTE
605          000016 INTFSW = 2*7. ;FRUM7 ;INTERFACE SWITCHES
606          000020 NPRJPR = 2*8. ;FRUM8 ;NPR JUMPER
607          000022 CONTSW = 2*9. ;FRUM9 ;CONTROLLER SWITCHES
608          000024 INTFCB = 2*10. ;FRUM10 ;INTERFACE CABLE
609          000026 DOOROP = 2*11. ;FRUM11 ;DOOR OPEN
610          000030 DISKSP = 2*12. ;FRUM12 ;DISK SPINNING-DRIVE BELT
611          000032 MOTOR = 2*13. ;FRUM13 ;MOTOR AC POWER NOT ROTATING
612          000034 NOPWR = 2*14. ;FRUM14 ;POWER CORD, BLOWN FUSE, DRIVE POWER
613          ;CONNECTOR POWER SUPPLY FAULT.
614
615          ;***** TEST FLAGS REGISTER EQUIVALENTS (FLAGST) *****
616          000001 REGCK = BIT0 ;REGISTER CHECK
617          000002 DDCFLG = BIT1 ;DOUBLE DENSITY CONTROL FLAG (DD=1)
618          000004 DATCK = BIT2 ;DATA CHECK
619          000010 DLPDN = BIT3 ;DO LOOP DONE
620          000020 EMBUFF = BIT4 ;EMPTY BUFFER-<USED BY DATA CHECK>
621          000040 FUNTST = BIT5 ;FUNCTION TEST FLAG
622          000100 HDRPRT = BIT6 ;ERROR CALL HEADER PRINT
623          000200 RECFLG = BIT7 ;READ ERROR CODE FLAG
624          001000 TRKDON = BIT9 ;TRACK DONE
625          002000 SECDON = BIT10 ;SECTOR DONE
626          004000 NEGST = BIT11 ;NEGATIVE TEST FLAG
627          010000 ILLGAL = BIT12 ;ILLEGAL FLAG
628          020000 CKERR = BIT13 ;CHECK ERROR WORDS FLAG
629          040000 HRDERR = BIT14 ;HARD ERROR
630          100000 ERRFLG = BIT15 ;ERROR
631
632          ;***** PROGRAM/PRINT FLAGS REGISTER EQUIV (FLAGSP) *****
633
634          000001 TKPRT = BIT0 ;TRACKS PRINT
635          000002 SCPRT = BIT1 ;SECTORS PRINT
636          000004 RGPRT = BIT2 ;REGISTERS PRINT
637          000010 PROPRT = BIT3 ;PROTOCOL LEVEL PRINT
638          000100 HDRPRT = BIT6 ;HEADER PRINT
639          000200 RECTST = BIT7 ;ERROR CODE TEST (INVOKE ERROR CODE)
640          000400 LSIFLG = BIT8 ;LSI FLAG
641          010000 FONZFG = BIT12 ;FONZ FLAG
642          040000 RESFLG = BIT14 ;RESTART FLAG
643          100000 STAFLG = BIT15 ;START FLAG
644
645          ;***** "SYS ERR" & "TYP ERR" REGISTER EQUIVALENTS *****
646
647          000020 CMDERR = BIT4 ;COMMAND ERROR
648          004000 DVFERR = BIT11 ;DEVICE FATAL ERROR
649          002000 SYFERR = BIT10 ;SYSTEM FATAL ERROR
650

```

```

664 .SBTTL GLOBAL DATA SECTION
665
666 : **
667 : THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
668 : IN MORE THAN ONE TEST.
669 :
670 : STORAGE FOR DEVICE REGISTERS
671 :
676 -----
677 002350 000000 RXCS: .WORD 0 :UNIT BUS ADR-CSR <UUT *>
678 002352 000000 RXDB: .WORD 0 :UNIT BUS ADR-DBR <UUT *>
679 002354 000000 VECT: .WORD 0 :UNIT VECTOR <UUT *>
680 002356 000000 RXPRI: .WORD 0 :PRIORITY FOR DEVICE INTERRUPTS <UUT *>
681 002360 000000 EMPADR: .WORD 0 :EMPTY BUFFER ADDRESS
682 002362 000000 FILADR: .WORD 0 :FILL BUFFER ADDRESS
683 002364 000000 RECADR: .WORD 0 :READ ERROR CODE ADDRESS
684 002366 000000 EXTADR: .WORD 0 :EXTENDED ADDRESS (BITS: #12 & #13)
685 002370 000000 WDCNT: .WORD 0 :WORD COUNT
686 002372 000000 VARIFY: .WORD 0 :VARIFY WORD
687 002374 000000 TRACK: .WORD 0 :TRACK ADR
688 002376 000000 SECTOR: .WORD 0 :SECTOR ADR
689 -----
690 002400 000000 CMD: .WORD 0 :COMMAND WORD-TO DEVICE
691 002402 000000 DELDAT: .WORD 0 :DELETED DATA FLAG & WORD <CMD>
692 002404 000000 INTERT: .WORD 0 :INTERRUPT WORD <CMD>
693 002406 000000 DRIVE: .WORD 0 :DRIVE WORD <CMD*>
694 002410 000000 SIDE: .WORD 0 :SIDE WORD <CMD*>
695 002412 000000 DENSTY: .WORD 0 :DENSITY CONTROL WORD <CMD>
696 002414 000000 DENSTA: .WORD 0 :DENSITY STATUS WORD-DRIVE DENSITY
697 002416 000000 PRIORT: .WORD 0 :PRIORITY OF INTERRUPT HANDLER-WATCH DOG
698 002420 000000 DRVOFF: .WORD 0 :DRIVE BYTE OFFSET
699 -----
700 002422 000000 ERRCMD: .WORD 0 :ERROR COMMAND
701 002424 000000 LCMD: .WORD 0 :LAST COMMAND
702 002426 000000 LRXCSR: .WORD 0 :LAST RX CSR STORAGE
703 002430 000000 LRXESR: .WORD 0 :LAST RX ESR STORAGE
704 002432 000000 RXCSR: .WORD 0 :RX CSR STORAGE
705 002434 000000 RXESR: .WORD 0 :RX ESR STORAGE
706 002436 000000 REGEXP: .WORD 0 :REGISTER EXPECTED
707 002440 000000 REGACT: .WORD 0 :REGISTER ACTUAL
708 -----
709 :
710 : * = INFO FROM HARDWARE P-TABLES
711 :
712 :
713 :
714 :
715 .SBTTL - READ ERROR CODE BUFFER
716 -----
715 002442 000 XERUUT: .BYTE 0 :ERROR CODE UUT
716 002443 000 WC: .BYTE 0 :WORD COUNT UUT
717 002444 000 CTKO: .BYTE 0 :CUR TRK DRV#0
718 002445 000 CTK1: .BYTE 0 :CUR TRK DRV#1
719 002446 000 TTRK: .BYTE 0 :TARGET TRACK
720 002447 000 TSEC: .BYTE 0 :TARGET SECTOR
721 002450 000 SFTSTS: .BYTE 0 :MICRO CODE SOFT STATUS
722 002451 000 BTRK: .BYTE 0 :BAD TRACK ADR (ONLY APPLIES IF ERR CODE = 150)
723 -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 13
- READ ERROR CODE BUFFER

725																							
726	002452	000000	ABORT:	.WORD	0	:	ABORT FLAG																TEST
727	002454	000000	FIN:	.WORD	0	:	FINI COMMAND FLAG																ERROR
728	002456	000000	SYSERR:	.WORD	0	:	SYSTEM ERROR																
729	002460	000000	TYPERR:	.WORD	0	:	TYPE ERROR																
730	002462	000000	RECERN:	.WORD	0	:	READ ERROR CODE-ERROR NUMBER																STATUS
731	002464	000000	NGTSER:	.WORD	0	:	NEG TEST EXPECTED ERROR																INFO
732																							
733	002466	000000	TSTID:	.WORD	0	:	TEST IDENT WORD																TEST
734	002470	000000	TCMDCT:	.WORD	0	:	TEST COMMAND COUNTER																
735	002472	000000	PROTCT:	.WORD	0	:	PROTOCOL COUNT																INFO
736	002474	000004	DNWTMT:	.WORD	4	:	DONE WAIT MULTIPLIER																
737																							
738	002476	000000	FLAGST:	.WORD	C	:	SOFTWARE TEST FLAGS -> SEE BELOW																TEST
739	002500	000000	FLAGSP:	.WORD	0	:	SOFTWARE PROG/PRT FLAGS-->SEE BELOW																
740	002502	000004	FLGDRS:	.WORD	4	:	FLAGS FROM 'DRS'																CONTROL
741	002504	000000	TTEMP1:	.WORD	0	:	TEST TEMP 1																
742	002506	000000	TSAVE1:	.WORD	0	:	TEST SAVE 1																FLAGS
743	002510	000000	TKSCFG:	.WORD	0	:	TRACK & SECTORS FLAGS --> SEE BELOW																
744																							
745	002512	000000	UNTPRT:	.WORD	0	:	UNIT #-PRINT																DEVICE
746	002514	000	DRVPR:	.BYTE	0	:	DRIVE #-PRINT																PRINT
747	002515	000	SIDPR:	.BYTE	0	:	SIDE #-PRINT																
748																							
757	002516		ERRTBL																				
	002516	000000	ERRTYP:	.WORD	0																		
	002520	000000	ERRNBR:	.WORD	0																		
	002522	000000	ERRMSG:	.WORD	0																		
	002524	000000	ERRBLK:	.WORD	0																		
759																							
760																							
761																							
762																							
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***** SOFTWARE REGISTER DEFINITIONS *****

	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
TYPERR:	ERR	ERR	DON	ITR	WRT	RD	FIL	UNK		DD	DD			CK		
	BIT	NOT	NO	NO	ERR	ERR	EMP	ERR	-	MIS	UNX	CMD	DAT	SUM	SEK	CRC
		SET	ITR	DON			ERR					ERR				
SYSERR:	UNR		DEN		DVF	SYF		WRONG	TR	SID	DRV	NO	DONE	FUNCTION		
	ERR		ERR		ERR	ERR	SID	DRV	ERR	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	EMB	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:								SC	TK					IL	S	S
														TK	SC	TK

:NOTE: RXXX IS REFERENCE FOR FURTHER EXPANSION

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 15
GLOBAL TEXT SECTION

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.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
:

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 17
 GLOBAL ERROR REPORT SECTION

837
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 847 002526
 848 002526 004737 002550
 849 002532
 850
 851 002534
 852 002534 004737 002570
 853 002540
 854
 855 002542
 856 002542 004737 002612
 857 002546
 858
 859 002550
 860 002566 000207
 861
 862 002570
 863 002610 000207
 864
 865 002612
 866 002634 000207
 867
 868 002636
 869 002662 000207
 870
 871 002664
 872 002712 000207
 873
 874 002714
 875 002732 000207
 876
 877 002734
 878 002754 000207
 879
 880 002756
 881 003000 000207
 882
 883 003002
 884 003026 000207
 885
 886 003030
 887 003056 000207
 888

.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..
:--
    
```

```

:-----
:          BGNMSG  PRTB0
:          CALL    PRTB0S
:          ENDMSG
:-----
:          BGNMSG  PRTB1
:          CALL    PRTB1S
:          ENDMSG
:-----
:          BGNMSG  PRTB2
:          CALL    PRTB2S
:          ENDMSG
:-----
PRTB0S: PRINTB  R1
:          RETURN                                ;RETURN
:-----
PRTB1S: PRINTB  R1,R2
:          RETURN                                ;RETURN
:-----
PRTB2S: PRINTB  R1,R2,R3
:          RETURN                                ;RETURN
:-----
PRTB3S: PRINTB  R1,R2,R3,R4
:          RETURN                                ;RETURN
:-----
PRTB4S: PRINTB  R1,R2,R3,R4,R5
:          RETURN                                ;RETURN
:-----
PRTX0S: PRINTX  R1
:          RETURN
:-----
PRTX1S: PRINTX  R1,R2
:          RETURN
:-----
PRTX2S: PRINTX  R1,R2,R3
:          RETURN
:-----
PRTX3S: PRINTX  R1,R2,R3,R4
:          RETURN
:-----
PRTX4S: PRINTX  R1,R2,R3,R4,R5
:          RETURN
:-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 19
 - MOD U.ERR.ERR - ERROR

```

891 .SBTTL - MOD U.ERR.ERR - ERROR
892 -----
893     BGNSUB      ERR
894     :          IF ERK NBR NOT=0                                [F]
895     :          THEN-SET ERR SAVE = ERR NUMBER
896     :          CALL ERROR NUMBER EVALUATION
897     :          SETUP ERROR BLOCK CODE ADDRESS
898     :          CALL PRINT ERROR TYPE
899     :          IF PROGRAM FLAGS-PRT REGS ??? SET                [J]
900     :          THEN-IF ERNBR=CSR ERROR                          [I]
901     :          : THEN-CALL PRINT REGS
902     :          : ENDIF
903     :          ENDIF
904     :          IF COMMAND ERROR SET IN TYPERR                    [B]
905     :          : THEN-CALL PRINT COMMAND ERROR
906     :          ENDIF
907     :          IF FUNCTION TEST NOT SET                          [A]
908     :          : THEN-IF PRINT FLAGS=REGS PRINT                  [E]
909     :          : THEN-CALL REGISTERS PRINT
910     :          : ENDIF
911     :          : IF PRINT FLAG=SECTOR PRINT                      [G]
912     :          : THEN-CALL SECTOR PRINT
913     :          : ENDIF
914     :          : IF PRINT FLAG=TRACK PRINT                       [C]
915     :          : THEN-CALL TRACKS PRINT
916     :          : ENDIF
917     :          : CALL PRINT FRU
918     :          : CALL PRINT UNIT STATUS
919     :          : ELSE-IF SWITCH REGISTER BIT #14 SET            [D]
920     :          : THEN-CALL PRINT UNIT STATUS
921     :          : ENDIF
922     :          ENDIF
923     :          IF ERR SAVE = ERR OLD                              [K]
924     :          : THEN - INCREMENT ERROR CTR
925     :          : IF ERROR CTR = 10 ERRORS                       [L]
926     :          : THEN - SET ABORT = 20
927     :          : ENDIF
928     :          : ELSE - SET ERR OLD = ERR SAVE
929     :          : CLEAR ERR SAVE
930     :          : CLEAR ERR CTR
931     :          : ENDIF
932     :          CALL CLEAR ERRORS
933     :          ENDIF
934     :          ENDSUB
935     -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 21
 - MOD U.ERR.ERR - ERROR

```

938 003060 000240          ERROR:  NOP
939 003062 005737 002520  IFERR:  TST      ERRNBR
940 003066 001520          BEQ      EFERR
941 003070 013737 002520 003336  MGV     ERRNBR,ERRSAV
942 003076 004737 003344          CALL    ERNBEV
943 003102 012737 003502 002524  MOV     #ERIDNT,ERRBLK
944 003110 004737 003474          CALL    PTERTY
945 003114 032737 000004 002500  IJERR: #RGPRT,FLAGSP
946 003122 001006          BNE     IBERR
947 003124 022737 000033 002520  IIERR: CMP     #CSRERR,ERRNBR
948 003132 001002          BNE     IBERR
949 003134 004737 007564          CALL    PRTREG
950 003140 032737 000020 002460  IBERR: BIT     #CMDERR,TYPERR
951 003146 001402          BEQ     IAERR
952 003150 004737 007040          CALL    PRTCDE
953 003154 032737 000040 002476  IAERR: BIT     #FUNTST,FLAGST
954 003162 001027          BNE     IDERR
955 003164 032737 000004 002500  IEERR: BIT     #RGPRT,FLAGSP
956 003172 001402          BEQ     IGERR
957 003174 004737 007564          CALL    PRTREG
958 003200 032737 000002 002500  IGERR: BIT     #SCPRT,FLAGSP
959 003206 001402          BEQ     ICERR
960 003210 004737 007674          CALL    PRTSEC
961 003214 032737 000001 002500  ICERR: BIT     #TKPRT,FLAGSP
962 003222 001402          BEQ     ECERR
963 003224 004737 010002          CALL    PRTRK
964 003230 004737 005404          ECERR: CALL    PRTRFRU
965 003234 004737 015240          CALL    PRSTTA
966 003240 000406          BR      EAERR
967 003242 032737 040000 002332  IDERR: BIT     #BIT14,SWREG
968 003250 001402          BEQ     EAERR
969 003252 004737 015240          CALL    PRSTTA
970 003256 000240          EAERR: NOP
971 003260 023737 003336 003340  IKERR: CMP     ERRSAV,ERROLD
972 003266 001011          BNE     LKERR
973 003270 005237 003342          INC     ERRCTR
974 003274 022737 000012 003342  ILERR: CMP     #10,ERRCTR
975 003302 012737 000020 002452  MOV     #20,ABORT
976 003310 000407          BR      EFERR
977 003312 013737 003336 003340  LKERR: MOV     ERRSAV,ERROLD
978 003320 005037 003336          CLR     ERRSAV
979 003324 005037 003342          CLR     ERRCTR
980 003330 004737 010300          EFERR: CALL    CLRERR
981 003334 000207          XERROR: RETURN
982
983 003336 000000          ERRSAV: 0
984 003340 000000          ERROLD: 0
985 003342 000000          ERRCTR: 0
986

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 23
- MOD U.SFT.ENV - ERROR NUMBER EVALUATION

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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
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
ENDSUB
-----

```

1020 003344 000240
1021 003346 022737 000047 002520
1022 003354 101003
1023 003356 005037 002516
1024 003362 000416
1025 003364 022737 000023 002520
1026 003372 101004
1027 003374 012737 000001 002516
1028 003402 000406
1029 003404 005737 002520
1030 003410 001403
1031 003412 012737 000002 002516
1032 003420 022737 000002 002516
1033 003426 001017
1034 003430 032737 000004 002502
1035 003436 001413
1036 003440 005237 003472
1037 003444 023737 002320 003472
1038 003452 101005
1039 003454 012737 000001 002516
1040 003462 005037 003472
1041 003466 000240
1042 003470 000207
1043
1044 003472 000000

```

-----
ERNBEV: NOP
IAENV: CMP #39.,ERRNBR ; IF ERR NBR > 39.
      BHI IBENV ; THEN
      CLR ERRTYP ; SET ERRTYP=SYS FTL
      BR IFENV ; BR TO IF 'F'
IBENV: CMP #19.,ERRNBR ; IF ERR NBR > 19.
      BHI IDENV ; THEN
      MOV #1,ERRTYP ; SET ERRTYP=DVC FTL
      BR IFENV ; BR TO IF 'F'
IDENV: TST ERRNBR ; IF ERR NBR > 0
      BEQ IFENV ; THEN
      MOV #2,ERRTYP ; SET ERRTYP=HARD ERR
IFENV: CMP #2,ERRTYP ; IF ERRTYP = HARD ERR
      BNE EFENV ; THEN
IGENV: BIT #BIT2,FLGDRS ; IF EVAL IN DRS FLAGS
      BEQ EFENV ; SET, THEN
      INC WETLCT ; INCREMENT HARD ERR THRESHOLD LEVEL CTR
IHENV: CMP DVTL,WETLCT ; IF DEVICE FTL THRES LVL=SFT LEV
      BHI EFENV ; THEN
      MOV #1,ERRTYP ; SET ERRTYP=DEV FTL ERR
      CLR WETLCT ; CLEAR HARD ERR THRES LVL CTR
EFENV: NOP
ERNBE: RETURN ; RETURN
-----
WETLCT: 0 ; HARD ERROR THRESHOLD LEVEL CTR
-----

```


GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 25
- MOD U.PRT.PET - PRINT ERROR TYPE

```

1048 .SBTTL - MOD U.PRT.PET - PRINT ERROR TYPE
1051 -----
1052 : BGNSUB
1053 : CALL ERROR - REVC
1054 : ENDSUB
1055 -----
1056
1057 003474 000240 PTERTY: NOP
1058 003476 ERROR
1059 003500 000207 RETURN ;RETURN
1060 -----
1120
1121 .SBTTL - MOD U.ERR.IDT - GET & PRINT ERROR IDENTIFICATION MESSAGE
1122 -----
1123 : BGNMSG ERIDENT
1124 : LET R1=ERROR #
1125 : DOUBLE R1 FOR ADDRESSING - MESSAGE OFFSET
1126 : LET R1=ERR MSG TABLE ADD + MESSAGE OFFSET
1127 : PRINT BASIC R1
1128 : PUT MESSAGE TABLE ADDRESS IN R1
1129 : PRINT BASIC R1
1130 : ENDMSG
1131 -----
1132
1133
1134 003502 BGNMSG ERIDENT
1135 003502 013701 002520 MOV ERRNBR,R1 ;GET ERR #
1136 003506 006301 ASL R1 ;DOUBLE IT FOR ADDRESSING
1137 003510 000240 NOP
1138 003512 016101 003534 MOV ERMSTB(R1),R1 ;GET ERR MSG ADR FROM TABLE
1139 003516 004737 002550 CALL PRTBOS ;CALL PRINT BASIC NO ARG
1140 003522 013701 003534 MOV ERMSTB,R1 ;GET RESI OF ERR MSG FROM TABLE
1141 003526 004737 002550 CALL PRTBOS ;CALL PRINT BASIC NO ARG
1142 003532 ENDMSG
1143 -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 27
 - MOD U.ERR.IDT - GET & PRINT ERROR IDENTIFICATION MESSAGE

1146	: ERROR MESSAGE TABLE			ERROR DESCRIPTION	-CLASS
1147	:-----:-----:-----:-----:-----:-----				
1148	003534	003706	ERMSTB: .WORD ERMS0	:ERROR :	
1149	003536	003706	.WORD ERMS0	:ERR#0 :	
1150	003540	003717	.WORD ERMS2	:ERR#2 :WRITE	-HARD
1151	003542	003731	.WORD ERMS3	:ERR#3 :READ	-HARD
1152	003544	003742	.WORD ERMS4	:ERR#4 :CRC	-HARD
1153	003546	003752	.WORD ERMS5	:ERR#5 :DATA ERR	-HARD
1154	003550	003763	.WORD ERMS6	:ERR#6 :SEEK	-HARD
1155	003552	003774	.WORD ERMS7	:ERR#7 :DEL DATA	-HARD
1156	003554	003706	.WORD ERMS0	:ERR#8 :	-HARD
1157	003556	003706	.WORD ERMS0	:ERR#9 :	-HARD
1158	003560	004015	.WORD ERMS10	:ERR#10 :FILL BUFFER	-HARD
1159	003562	004035	.WORD ERMS11	:ERR#11 :EMPTY BUFFER	-HARD
1160	003564	004056	.WORD ERMS12	:ERR#12 :INTR-NO DONE	-HARD
1161	003566	004112	.WORD ERMS13	:ERR#13 :DONE-NO INTR	-HARD
1162	003570	004146	.WORD ERMS14	:ERR#14 :ERR-NOT SET	-HARD
1163	003572	004177	.WORD ERMS15	:ERR#15 :ILLEG ERR CODE	-HARD
1164	003574	004226	.WORD ERMS16	:ERR#16 :DISK DENSITY MIXED OR WRG	-HARD
1165	003576	004264	.WORD ERMS17	:ERR#17 :READ ERROR CODE-ERROR WRG	-HARD
1166	003600	003706	.WORD ERMS0	:ERR#18 :	
1167	003602	004314	.WORD ERMS19	:ERR#19 :WORD COUNT	
1168	003604	004333	.WORD ERMS20	:ERR#20 :SIDE NOT RDY	-DEVFTL
1169	003606	004356	.WORD ERMS21	:ERR#21 :DRIVE NOT RDY	-DEVFTL
1170	003610	004402	.WORD ERMS22	:ERR#22 :SIDE RESPONDING WRG	-DEVFTL
1171	003612	004434	.WORD ERMS23	:ERR#23 :DRIVE RESPONDING WRG	-DEVFTL
1172	003614	004467	.WORD ERMS24	:ERR#24 :DENSITY	-DEVFTL
1173	003616	004503	.WORD ERMS25	:ERR#25 :DENSITY DISK	-DEVFTL
1174	003620	004532	.WORD ERMS26	:ERR#26 :DEL DATA	-DEVFTL
1175	003622	004553	.WORD ERMS27	:ERR#27 :CSR	-DEVFTL
1176	003624	004564	.WORD ERMS28	:ERR#28 :DBR	-DEVFTL
1177	003626	003706	.WORD ERMS0	:ERR#29 :	-DEVFTL
1178	003630	004625	.WORD ERMS30	:ERR#30 :SET DENSITY KEYWORD	-DEVFTL
1179	003632	004655	.WORD ERMS31	:ERR#31 :AC LOW	-DEVFTL
1180	003634	004670	.WORD ERMS32	:ERR#32 :ALGO2	-DEVFTL
1181	003636	004711	.WORD ERMS33	:ERR#33 :TRACK ADDRESS	-DEVFTL
1182	003640	004733	.WORD ERMS34	:ERR#34 :SECTOR ADDRESS	-DEVFTL
1183	003642	003706	.WORD ERMS0	:ERR#35 :	
1184	003644	003706	.WORD ERMS0	:ERR#36 :	
1185	003646	003706	.WORD ERMS0	:ERR#37 :	
1186	003650	003706	.WORD ERMS0	:ERR#38 :	
1187	003652	003706	.WORD ERMS0	:ERR#39 :	
1188	003654	004756	.WORD ERMS40	:ERR#40 :AC LOW FATAL	-SYSFTL
1189	003656	004777	.WORD ERMS41	:ERR#41 :WORD COUNT OVERFLOW	-SYSFTL
1190	003660	005027	.WORD ERMS42	:ERR#42 :NON-EXISTENT MEM	-SYSFTL
1191	003662	005054	.WORD ERMS43	:ERR#43 :NON PROCESSOR REQUEST	-SYSFTL
1192	003664	005102	.WORD ERMS44	:ERR#44 :PRIORITY LEVEL	-SYSFTL
1193	003666	005125	.WORD ERMS45	:ERR#45 :DATA BUFFER INTEG	-SYSFTL
1194	003670	005153	.WORD ERMS46	:ERR#46 :HARDWARE SELF DIAG	-SYSFTL
1195	003672	005202	.WORD ERMS47	:ERR#47 :"TR" BIT TIME OUT	-SYSFTL
1196	003674	005230	.WORD ERMS48	:ERR#48 :"DONE" BIT TIME OUT	-SYSFTL
1197	003676	005260	.WORD ERMS49	:ERR#49 :NO BUS "INIT DONE"	-SYSFTL
1198	003700	005307	.WORD ERMS50	:ERR#50 :NO PROG "INIT DONE"	-SYSFTL
1199	003702	005337	.WORD ERMS51	:ERR#51 :"DONE" SET->WAITING FOR "TR" BIT	-SYSFTL
1200	003704	003706	.WORD ERMS0	:ERR#52 :	-SYSFTL
1201	:-----:-----:-----:-----:-----:-----				

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 29
- ERROR MESSAGES

```

1204          .SBTTL - ERROR MESSAGES
1205          -----
1206 003706    045    101    040 ERMS0: .ASCIZ /%A ERROR/
1207          :ERMS1: .ASCIZ /%A 1 ?/
1208 003717    045    101    040 ERMS2: .ASCIZ /%A WRITE/
1209 003731    045    101    040 ERMS3: .ASCIZ /%A READ/
1210 003742    045    101    040 ERMS4: .ASCIZ /%A CRC/
1211 003752    045    101    040 ERMS5: .ASCIZ /%A DATA/
1212 003763    045    101    040 ERMS6: .ASCIZ /%A SEEK/
1213 003774    045    101    040 ERMS7: .ASCIZ /%A DELETED DATA/
1214          :ERMS8: .ASCIZ /%A 8 ?/
1215          :ERMS9: .ASCIZ /%A 9 ?/
1216 004015    045    101    040 ERMS10: .ASCIZ /%A FILL BUFFER/
1217 004035    045    101    040 ERMS11: .ASCIZ /%A EMPTY BUFFER/
1218 004056    045    101    040 ERMS12: .ASCIZ /%A INTERRUPT-NO 'DONE' BIT/
1219 004112    045    101    040 ERMS13: .ASCIZ /%A 'DONE' BIT-NO INTERRUPT/
1220 004146    045    101    040 ERMS14: .ASCIZ /%A ERROR BIT NOT SET-ON/
1221 004177    045    101    040 ERMS15: .ASCIZ /%A ILLEGAL ERROR CODE/
1222 004226    045    101    040 ERMS16: .ASCIZ /%A DISK DENSITY MIXED OR WRG/
1223 004264    045    101    040 ERMS17: .ASCIZ /%A RD ERR CODE-ERR WRG/
1224          :ERMS18: .ASCIZ /%A 18 ?/
1225 004314    045    101    040 ERMS19: .ASCIZ /%A WORD COUNT/
1226 004333    045    101    040 ERMS20: .ASCIZ /%A SIDE NOT READY/
1227 004356    045    101    040 ERMS21: .ASCIZ /%A DRIVE NOT READY/
1228 004402    045    101    040 ERMS22: .ASCIZ /%A WRONG SIDE RESPONDING/
1229 004434    045    101    040 ERMS23: .ASCIZ /%A WRONG DRIVE RESPONDING/
1230 004467    045    101    040 ERMS24: .ASCIZ /%A DENSITY/
1231 004503    045    101    040 ERMS25: .ASCIZ /%A DISK-MIXED DENSITY/
1232 004532    045    101    040 ERMS26: .ASCIZ /%A DELETED DATA/
1233 004553    045    101    040 ERMS27: .ASCIZ /%A CSR-/
1234 004564    045    101    040 ERMS28: .ASCIZ /%A DBR-/
1235 004575    045    101    040 ERMS29: .ASCIZ /%A DENSITY DID NOT SET/
1236 004625    045    101    040 ERMS30: .ASCIZ /%A SET DENSITY KEYWORD/
1237 004655    045    101    040 ERMS31: .ASCIZ /%A AC LOW/
1238 004670    045    101    040 ERMS32: .ASCIZ /%A ALGO2 FAILED/
1239 004711    045    101    040 ERMS33: .ASCIZ /%A TRACK ADDRESS/
1240 004733    045    101    040 ERMS34: .ASCIZ /%A SECTOR ADDRESS/
1241          :ERMS35: .ASCIZ /%A 35 ?/
1242          :ERMS36: .ASCIZ /%A 36 ?/
1243          :ERMS37: .ASCIZ /%A 37 ?/
1244          :ERMS38: .ASCIZ /%A 38 ?/
1245          :ERMS39: .ASCIZ /%A 39 ?/
1246 004756    045    101    040 ERMS40: .ASCIZ /%A AC LOW FATAL/
1247 004777    045    101    040 ERMS41: .ASCIZ /%A WORD COUNT OVERFLOW/
1248 005027    045    101    040 ERMS42: .ASCIZ /%A NON-EXISTENT MEM/
1249 005054    045    101    040 ERMS43: .ASCIZ /%A NON-PROCESSOR REQ/
1250 005102    045    101    040 ERMS44: .ASCIZ /%A PRIORITY LEVEL/
1251 005125    045    101    040 ERMS45: .ASCIZ /%A DATA BUFFER INTEG/
1252 005153    045    101    040 ERMS46: .ASCIZ /%A HARDWARE SELF DIAG/
1253 005202    045    101    040 ERMS47: .ASCIZ /%A 'TR' BIT TIME OUT/
1254 005230    045    101    040 ERMS48: .ASCIZ /%A 'DONE' BIT TIME OUT/
1255 005260    045    101    040 ERMS49: .ASCIZ /%A NO BUS 'INIT DONE'/
1256 005307    045    101    040 ERMS50: .ASCIZ /%A NO PROG 'INIT DONE'/
1257 005337    045    101    040 ERMS51: .ASCIZ /%A 'DONE' SET->WAITING FOR 'TR' BIT/
1258          :ERMS52: .ASCIZ /%A 52 ?/
1259          .EVEN :800. BYTES-->680.
1260

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 29-1
 - ERROR MESSAGES

```

1261      : BIT-NAMES FOR THE DEVICE REGISTERS
1262      :
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 TER
1285      : : : : FRU TABLE ADDRESS THIS TEST SEQ=TABLE ADR PTR+TEST
1286      : : : : ENDF
1287      : : ENDF
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      : : : : ENDF
1295      : : : : CALL FRU PRINT
1296      : : : : ELSE-SET FRU PRINT=TABLE ENTRY
1297      : : : : CALL FRU PRINT
1298      : : : ENDF
1299      : : : ADVANCE TABLE ADDRESS
1300      : : ENDDO
1301      : : NOP
1302      : : ENDSUB
1303      : -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 31
- MOD U.SFT.FRU - GET & PRINT FRU'S IDENT

```

1306 005404 000240          PRTFRU: NOP
1307 005406 005737 002454  IAFRU:  TST    FIN
1308 005412 001404          BEQ    IBFRU
1309 005414 012737 006640 005610  MOV   #TOFTO,FRUTAD
1310 005422 000431          BR    EAFRU
1311 005424 105737 002442  IBFRU: TSTB  XERUUT
1312 005430 001412          BEQ    LBFRU
1313 005432 032737 000200 002476  BIT   #RECFLG,FLAGST
1314 005440 001406          BEQ    LBFRU
1315 005442 004737 017106          CALL  GTECOF
1316 005446 016137 006660 005610  MOV   TOFTB(R1),FRUTAD
1317 005454 000414          BR    EAFRU
1318 005456 013701 002466  LBFRU: MOV   TSTID,R1
1319 005462 005721  WCFRU: TST   (R1)+
1320 005464 100376          BPL   WCFRU
1321 005466 005721  WDFRU: TST   (R1)+
1322 005470 100376          BPL   WDFRU
1323 005472 013702 002470  MOV   TCMDC, R2
1324 005476 006302          ASL   R2
1325 005500 060201          ADD   R2,R1
1326 005502 011137 005610  MOV   (R1),FRUTAD
1327 005506 012701 005650  EAFRU: MOV   #FRUMOO,R1
1328 005512 004737 002550          CALL  PRTBOS
1329 005516 105777 000066  WEFRU: TSTB  @FRUTAD
1330 005522 100430          BMI   EEFRU
1331 005524 105777 000060  IFFRU: TSTB  @FRUTAD
1332 005530 001014          BNE   LFFRU
1333 005532 032737 000400 002500  IGFRU: BIT   #LSIFLG,FLAGSP
1334 005540 001403          BEQ   LGFRU
1335 005542 012701 005713          MOV   #FRUMOA,R1
1336 005546 000402          BR    EGFRU
1337 005550 012701 005746  LGFRU: MOV   #FRUMOB,R1
1338 005554 004737 002550  EGFRU: CALL  PRTBOS
1339 005560 000406          BR    EFRU
1340 005562 117701 000022  LFFRU: MOVB  @FRUTAD,R1
1341 005566 016101 005612          MOV   FRUTBM(R1),R1
1342 005572 004737 002550          CALL  PRTBOS
1343 005576 005237 005610  EFRU:  INC   FRUTAD
1344 005602 000745          BR    WEFRU
1345 005604 000240  EEFRU: NOP
1346 005606 000207  XPTFRU: RETURN
1347 -----
1348 005610 000000  FRUTAD: 0
1349 -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 33
 - MOD U.SFT.FRU - GET & PRINT FRU'S IDENT

1352	005612	000000	FRUTBM:	.WORD	0
1353	005614	006001		.WORD	FRUM1
1354	005616	006035		.WORD	FRUM2
1355	005620	006070		.WORD	FRUM3
1356	005622	006120		.WORD	FRUM4
1357	005624	006140		.WORD	FRUM5
1358	005626	006173		.WORD	FRUM6
1359	005630	006221		.WORD	FRUM7
1360	005632	006255		.WORD	FRUM8
1361	005634	006324		.WORD	FRUM9
1362	005636	006361		.WORD	FRUM10
1363	005640	006426		.WORD	FRUM11
1364	005642	006451		.WORD	FRUM12
1365	005644	006504		.WORD	FRUM13
1366	005646	006544		.WORD	FRUM14

1367
 1368
 1369
 1370

 .SBTTL - FRU MESSAGES

1371	005650	045	116	045	FRUM00:	.ASCIZ	/XNXA	POSSIBLE FAILING 'FRU'S': %N/
1372	005713	045	123	061	FRUM0A:	.ASCIZ	/XS11XA	INTERFACE - M8029XN/
1373	005746	045	123	061	FRUM0B:	.ASCIZ	/XS11XA	INTERFACE - M8256XN/
1374	006001	045	123	061	FRUM1:	.ASCIZ	/XS11XA	CONTROLLER - M7744XN/
1375	006035	045	123	061	FRUM2:	.ASCIZ	/XS11XA	R-W ELECT - M7745XN/
1376	006070	045	123	061	FRUM3:	.ASCIZ	/XS11XA	PHYSICAL DRIVEXN/
1377	006120	045	123	061	FRUM4:	.ASCIZ	/XS11XA	CABLESXN/
1378	006140	045	123	061	FRUM5:	.ASCIZ	/XS11XA	POWER SUPPLY-H771XN/
1379	006173	045	123	061	FRUM6:	.ASCIZ	/XS11XA	BAD DISKETTEXN/
1380	006221	045	123	061	FRUM7:	.ASCIZ	/XS11XA	INTERFACE SWITCHESXN/
1381	006255	045	123	061	FRUM8:	.ASCIZ	/XS11XA	NPR JUMPER - PDP-11 BACKPLANEXN/
1382	006324	045	123	061	FRUM9:	.ASCIZ	/XS11XA	CONTROLLER SWITCHESXN/
1383	006361	045	123	061	FRUM10:	.ASCIZ	/XS11XA	INTERFACE->CONTROLLER CABLEXN/
1384	006426	045	123	061	FRUM11:	.ASCIZ	/XS11XA	DOOR OPENXN/
1385	006451	045	123	061	FRUM12:	.ASCIZ	/XS11XA	BROKEN DRIVE BELTXN/
1386	006504	045	123	061	FRUM13:	.ASCIZ	/XS11XA	DRIVE MOTOR - AC POWERXN/
1387	006544	045	123	061	FRUM14:	.ASCIZ	/XS11XA	POWER CORD, BLOWN FUSE, DRIVE POWER, POWER SUPPLY %N/

1388
 1400

 .EVEN :506. BYTES

```

1403 .SBTTL - FRU CALLOUT - PRESETUP FOR TESTS
1404 :-----
1405 000000
1406 006640 INFCTL=TOFT0 ;INTERFACE & CONTROLLER
1407 006640 FRUTB 0,INTERF,CONTRL,INTFCB
006641 000 TOFT0: .BYTE INTERF
006642 002 .BYTE CONTRL
006643 024 .BYTE INTFCB
377 .BYTE -1
:-----
1408 ;
1409 006644 INTONL=TOFT40 ;INTERFACE ONLY
1410 006644 FRUTB 40,INTERF
006645 000 TOFT40: .BYTE INTERF
377 .BYTE -1
:-----
1411 ;
1412 006646 CTLINF=TOFT41 ;CONTROLLER & INTERFACE
1413 006646 FRUTB 41,CONTRL,INTERF
006647 002 TOFT41: .BYTE CONTRL
006650 000 .BYTE INTERF
377 .BYTE -1
:-----
1414 ;
1415 006651 CTLRWE=TOFT42
1416 006651 FRUTB 42,CONTRL,RWELEC
006652 002 TOFT42: .BYTE CONTRL
006653 004 .BYTE RWELEC
377 .BYTE -1
:-----
1417 ;
1418 006654 CTLONL=TOFT43
1419 006654 FRUTB 43,CONTRL,INTFCB
006655 002 TOFT43: .BYTE CONTRL
006656 024 .BYTE INTFCB
377 .BYTE -1
:-----
1420 ;
1421 .EVEN

```

1424
1425
1426 006660 000000
1427 006662 006736
1428 006664 006742
1429 006666 000000
1430 006670 006746
1431 006672 006751
1432 006674 000000
1433 006676 006755
1434 006700 000000
1435 006702 006763
1436 006704 006770
1437 006706 006776
1438 006710 000000
1439 006712 007002
1440 006714 007006
1441 006716 007012
1442 006720 007016
1443 006722 000000
1444 006724 007022
1445 006726 007025
1446 006730 007030
1447 006732 007035
1448 006734 177777

```

:-----
: ERROR CODE - FRU CALLOUT ADDRESS TABLE
:-----
TOFTB: .WORD 0
        .WORD TOFT1
        .WORD TOFT2
        .WORD 0
        .WORD TOFT4
        .WORD TOFT5
        .WORD 0
        .WORD TOFT7
        .WORD 0
        .WORD TOFT11
        .WORD TOFT12
        .WORD TOFT13
        .WORD 0
        .WORD TOFT15
        .WORD TOFT16
        .WORD TOFT17
        .WORD TOFT20
        .WORD 0
        .WORD TOFT22
        .WORD TOFT23
        .WORD TOFT24
        .WORD TOFT25
        .WORD -1
:-----

```

1449
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1451
1452
1453 000000
1454 006736 006
006736 002
006737 004
006740 377
1455 006741 006
006742 002
006743 004
006744 377
1456 006745 000
006746 002
006747 377
1457 006750 004
006751 006
006752 002
006753 377
1458 006754 014
006755 004
006756 006
006757 002
006760 000
006761 377
1459 006762 000
006763

```

:-----
: .SBTTL - FRU CALLOUT - PRESETUP FOR ERROR CODE
:-----
IN=0
FRUTB 1,PHYDRV,CONTRL,RWELEC
TOFT1: .BYTE PHYDRV
        .BYTE CONTRL
        .BYTE RWELEC
        .BYTE -1
FRUTB 2,PHYDRV,CONTRL,RWELEC
TOFT2: .BYTE PHYDRV
        .BYTE CONTRL
        .BYTE RWELEC
        .BYTE -1
FRUTB 4,INTERF,CONTRL
TOFT4: .BYTE INTERF
        .BYTE CONTRL
        .BYTE -1
FRUTB 5,RWELEC,PHYDRV,CONTRL
TOFT5: .BYTE RWELEC
        .BYTE PHYDRV
        .BYTE CONTRL
        .BYTE -1
FRUTB 7,DISKET,RWELEC,PHYDRV,CONTRL,INTERF
TOFT7: .BYTE DISKET
        .BYTE RWELEC
        .BYTE PHYDRV
        .BYTE CONTRL
        .BYTE INTERF
        .BYTE -1
FRUTB 11,DISKET,RWELEC,PHYDRV,CONTRL

```


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- FRU CALLOUT - PRESETUP FOR ERROR CODE

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

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1471

: .EVEN

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007040 000240
 007042 012701 007204
 007046 004737 002550
 007052 013702 002422
 007056 032702 040000
 007062 001405
 007064 012701 007452
 007070 012702 000012
 007074 000404
 007076 042702 177761
 007102 016201 007164
 007106 004737 002550
 007112 012701 007216
 007116 004737 002550
 007122 022702 000012
 007126 001415
 007130 032737 000010 002500
 007136 001411
 007140 013702 002472
 007144 012701 007502
 007150 004737 002734
 007154 042737 000020 002460
 007162 000207

```

.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)
:   ENDF
:   CALL PRINT
:   SETUP & PRINT END OF COMMAND ERROR
:   IF PROTOCOL TYPE COMMAND
:   :   THEN-IF PRINT FLAGS=PRINT PROTOCOL SET
:   :   :   THEN-SETUP & PRINT PROTOCOL ERR
:   :   ENDF
:   ENDF
: ENDSUB
-----

PRTCDE: NOP
:   MOV #CMFTMS,R1 :SETUP COMMAND FORMAT MESSAGE
:   CALL PRTBOS :CALL PRINT BASIC-NO ARG
:   MOV ERRCMD,R2 :GET COMMAND
IAPCE: BIT #BIT14,R2 :IF INITIALIZE BIT
:   BEQ LAPCE :SET, THEN
:   MOV #CMDM8,R1 :SET PROGRAMMED INIT MSG
:   MOV #12,R2 :SET R2 TO SHOW COMMAND WITH NO PROTOCOL
:   BR EAPCE :BR TO END 'A'
LAPCE: BIC #177761,R2 :CLEAR TOP BITS & GO BIT
:   MOV CMDMSG(R2),R1 :GET COMMAND MSG ADR FROM TABLE
EAPCE: CALL PRTBOS :CALL PRINT BASIC-NO ARG
:   MOV #CMERMS,R1 :SETUP 'COMMAND ERR' MSG
:   CALL PRTBOS :CALL PRINT BASIC-NO ARG
IBPCE: CMP #12,R2 :IF R2 CONTAINS PROTOCOL TYPE COMMAND
:   BEQ XPCE :THEN
ICPCE: BIT #PROPR8,FLAGSP :IF PRINT PROTOCOL FLAG=FLAGSP
:   BEQ XPCE :SET, THEN
:   MOV PROTCT,R2 :SETUP PRINT PROTOCOL CNT
:   MOV #CMDPE,R1 :SETUP PRINT PROTOCOL ERR MSG
:   CALL PRTX1S :PRINT MSG
:   BIC #CMDERR,TYPERR :CLEAR TYP ERR COMMAND ERROR
XPCE: RETURN :RETURN
-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 41
- COMMAND ERROR MESSAGE TABLE

1521					
1522					
1523	007164	007237			
1524	007166	007255			
1525	007170	007274			
1526	007172	007313			
1527	007174	007331			
1528	007176	007347			
1529	007200	007374			
1530	007202	007430			
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 FAJLED-WAITING TO PASS WORD #%01/
1543					.EVEN
1544					

.SBTTL - COMMAND ERROR MESSAGE TABLE

```

:-----
CMDMSG: .WORD  CMDM0
        .WORD  CMDM1
        .WORD  CMDM2
        .WORD  CMDM3
        .WORD  CMDM4
        .WORD  CMDM5
        .WORD  CMDM6
        .WORD  CMDM7
CMFTMS: .ASCIZ /%N%S6%A->/
CMERMS: .ASCIZ /%A COMMAND ERROR/
CMDM0:  .ASCIZ /%AFILL BUFFER/
CMDM1:  .ASCIZ /%AEMPTY BUFFER/
CMDM2:  .ASCIZ /%AWRITE SECTOR/
CMDM3:  .ASCIZ /%AREAD SECTOR/
CMDM4:  .ASCIZ /%ASET DENSITY/
CMDM5:  .ASCIZ /%AREAD MAINT. STATUS/
CMDM6:  .ASCIZ /%AWRITE SECTOR-DELETED DATA/
CMDM7:  .ASCIZ /%AREAD ERROR CODE/
CMDM8:  .ASCIZ /%APROGRAMMED INITIALIZE/
CMDPE:  .ASCIZ /%N%S8%APROTOCOL FAJLED-WAITING TO PASS WORD #%01/
        .EVEN
:-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 43
- MOD U.ERR.PRE - PRINT REGISTER ERROR

```

1547 .SBTTL - MOD U.ERR.PRE - PRINT REGISTER ERROR
1548 ;-----
1549
1550 007564 000240 PRTREG: NOP ;
1551 007566 012701 007620 MOV #PRTGMS,R1 ;:SETUP REGISTER MESSAGE
1552 007572 013702 002440 MOV REGACT,R2 ;:SETUP REG ACTUAL
1553 007576 013703 002436 MOV REGEXP,R3 ;:SETUP REG EXPECTED
1554 007602 004737 002612 CALL PRTB2S ;:CALL PRINT BASIC-2 ARG
1555 007606 005037 002440 CLR REGACT ;:CLEAR OLD RESULTS
1556 007612 005037 002436 CLR REGEXP ;:CLEAR OLD RESULTS
1557 007616 000207 RETURN ;:RETURN
1558 ;-----
1559 007620 045 116 045 PRTGMS: .ASCII /%N%S6%AREG ACTUAL=%0%N/
1560 007646 045 123 066 .ASCIIZ /%S6%AREG EXPECT=%0%N/
1561 .EVEN
1562 ;-----
1563 .SBTTL - MOD U.PRT.SCP - PRINT SECTORS
1564 ;-----
1565
1566 : BGNSUB
1567 : IF READ ERROR CODE FLAG SET
1568 : : THEN-SETUP PRINT EXPECTED SECTOR
1569 : : : SETUP PRINT DEVICE SECTOR
1570 : : : CALL PRINT
1571 : : : ENDF
1572 : ENDSUB
1573 ;-----
1574
1575 007674 000240 PRTSEC: NOP ;
1576 007676 032737 000200 002476 IASCP: BIT #RECFLG,FLAGST ;:IF READ ERROR CODE FLAG
1577 007704 001424 BEQ XSCP ;:SET, THEN
1578 007706 013702 002376 MOV SECTOR,R2 ;:SETUP EXPECTED SECTOR
1579 007712 012701 010156 MOV #EXMS,R1 ;:SETUP EXPECTED MSG
1580 007716 004737 002550 CALL PRTB0S ;:CALL PRINT BASIC-0 ARG
1581 007722 012701 007760 MOV #ADSCMS,R1 ;:SETUP SECTOR MSG
1582 007726 004737 002570 CALL PRTB1S ;:CALL PRINT BASIC-1 ARG
1583 007732 113702 002447 MOV TSEC,R2 ;:SETUP DEVICE SECTOR
1584 007736 012701 010220 MOV #TGMS,R1 ;:SETUP TARGET MSG
1585 007742 004737 002550 CALL PRTB0S ;:CALL PRINT BASIC-0 ARG
1586 007746 012701 007760 MOV #ADSCMS,R1 ;:SETUP SECTOR MSG
1587 007752 004737 002570 CALL PRTB1S ;:CALL PRINT BASIC-1 ARG
1588 007756 000207 XSCP: RETURN ;:RETURN
1589 ;-----
1590 007760 045 101 040 ADSCMS: .ASCIIZ /%A SECTOR=%D2%A./
1591 .EVEN
1592 ;-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 45
- MOD U.PRT.TKP - PRINT TRACKS

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1614 010002 004737 020600
1615 010006 032737 000200 002476
1616 010014 001445
1617 010016 013702 002374
1618 010022 012701 010156
1619 010026 004737 002550
1620 010032 012701 010257
1621 010036 004737 002570
1622 010042 005737 002406
1623 010046 001403
1624 010050 113702 002445
1625 010054 000402
1626 010056 113702 002444
1627 010062 012701 010177
1628 010066 004737 002550
1629 010072 012701 010257
1630 010076 004737 002570
1631 010102 113702 002446
1632 010106 012701 010220
1633 010112 004737 002550
1634 010116 012701 010257
1635 010122 004737 002570
1636 010126 000412
1637 010130 013702 002374
1638 010134 012701 010241
1639 010140 004737 002550
1640 010144 012701 010257
1641 010150 004737 002570
1642 010154 000207
1643
1644 010156 045 116 045
1645 010177 045 114 045
1646 010220 225 114 045
1647 010241 045 116 045
1648 010257 045 101 045
1649
1650

```

.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 DRVO-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
-----
PRTRK: CALL PRTDID ;CALL PRINT DRIVE IDENT
IATKP: BIT #RECFLG,FLAGST ;IF READ ERROR CODE FLAG
: BEQ LATKP ;FLAG SET, THEN
: MOV TRACK,R2 ;SETUP EXPECTED TRACK
: MOV #EXMS,R1 ;SETUP EXPECTED MSG
: CALL PRTBOS ;CALL PRINT BASIC-0 ARG
: MOV #ADTKMS,R1 ;SETUP PRINT TRACK
IBTKP: CALL PRTB1S ;CALL PRINT BASIC-1 PAR.
: TST DRIVE ;IF DRIVE #1
: BEQ LBTKP ;SELECTED, THEN
: MOVB CTK1,R2 ;SETUP CUR TRK D1-PRT
: BR EBTKP ;BR TO END 'B'
LBTKP: MOVB CTK0,R2 ;SETUP CUR TRK D0-PRT
EBTKP: MOV #CDMS,R1 ;SETUP DRIVE CURRENT MSG
: CALL PRTBOS ;CALL PRINT BASIC-0 ARG
: MOV #ADTKMS,R1 ;SETUP PRINT TRACK
: CALL PRTB1S ;CALL PRINT BASIC-1 PAR.
: MOVB TTRK,R2 ;SETUP TARGET TRACK
: MOV #TGMS,R1 ;SETUP TARGET MSG
: CALL PRTBOS ;CALL PRINT BASIC-0 ARG
: MOV #ADTKMS,R1 ;SETUP PRINT TRACK
: CALL PRTB1S ;CALL PRINT BASIC-1 PAR.
: BR XTKPRT ;BR TO EXIT
LATKP: MOV TRACK,R2 ;SETUP ERROR TRACK
: MOV #ERTKMS,R1 ;SETUP ERROR TRACK MSG
: CALL PRTBOS ;CALL PRINT BASIC-C ARG
: MOV #ADTKMS,R1 ;SETUP PRINT TRACK
: CALL PRTB1S ;CALL PRINT BASIC-1 PAR.
XTKPRT: RETURN
-----
EXMS: .ASCIZ /%N%S%6%Z% EXPECTED/
CDMS: .ASCIZ /%N%S%6%Z% CUR DRV/
TRMS: .ASCIZ /%N%S%6%Z% TRACK%
ERTKMS: .ASCIZ /%N%Z% ERROR -%I/
ADTKMS: .ASCIZ /%Z% TRACK=%D2%Z%/
.EVEN
-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 47
 - MOD U.ERR.CLE - CLEAR ERRORS

```

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1664 010300 000240
1665 010302 005037 002442
1666 010306 005037 002520
1667 010312 005037 002516
1668 010316 012737 003502 002524
1669 010324 005037 002454
1670 010330 005037 002452
1671 010334 042737 100000 002476
1672 010342 000207
1673
    
```

```

.SBTTL - MOD U.ERR.CLE - CLEAR ERRORS
-----
: BGNSUB
:   CLEAR ERROR NUMBER
:   CLEAR ERROR TYPE
:   CLEAR ERROR BLOCK
:   CLEAR FIN
:   CLEAR ABORT
: ENDSUB
-----
CLRERR: NOP
:
: CLR      XERUUT      : CLEAR READ ERR CODE WORD
: CLR      ERRNBR     : CLEAR ERROR NUMBER
: CLR      ERR TYP    : CLEAR ERROR TYPE
: MOV      #ERRIDNT,ERRBLK : CLEAR ERROR BLOCK
: CLR      FIN        : CLEAR FINI
: CLR      ABORT      : CLEAR ABORT
: BIC      #ERRFLG,FLAGST : CLEAR FLAGST ERR FLAG
: RETURN
: RETURN
-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 49
 GLOBAL SUBROUTINES SECTION

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 1816 010344 012700 000001
 1817 010350 063700 010432
 1818 010354 063700 010434
 1819 010360 042700 170000
 1820 010364 000241
 1821 010366 006100
 1822 010370 006100
 1823 010372 010037 010432
 1824 010376 005000
 1825 010400 013700 010434
 1826 010404 006000
 1827 010406 006000
 1828 010410 063700 010432
 1829 010414 042700 170000
 1830 010420 010037 010434
 1831 010424 010037 010436
 1832 010430 000207
 1833
 1834 010432 000000
 1835 010434 000000
 1836 010436 000000
 1837

.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 -----
RANGEN: MOV #1,R0
        ADD RAN1,R0
        ADD RAN2,R0
        BIC #170000,R0
        CLC
        ROL R0
        ROL R0
        MOV R0,RAN1
        CLR R0
        MOV RAN2,R0
        ROR R0
        ROR R0
        ADD RAN1,R0
        BIC #170000,R0
        MOV R0,RAN2
        MOV R0,RANUM
        RTS PC
:-----
RAN1: 0
RAN2: 0
RANUM: 0
:-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 51
 - MOD U.DEV.INT - INITIALIZE DEVICE

```

1840 .SBTTL - MOD U.DEV.INT - INITIALIZE DEVICE
1841 :++
1842 : FUNCTIONAL DESCRIPTION: SUBR TO SEND INITIALIZE TO DEVICE.-ERROR CK
1843 : INPUTS: NONE
1844 : IMPLICIT INPUTS: ERROR BIT
1845 : OUTPUTS: DEVICE INITIALIZE
1846 : IMPLICIT OUTPUTS:
1847 : SUBORDINATE ROUTINES USED: COMMAND ERR CK, GET DEV. REGS, WAIT DONE
1848 : FUNCTIONAL SIDE EFFECTS:
1849 : CALLING SEQUENCE: SUBR
1850 :--
1851 :
1852 :-----
1853 :
1854 010440 012737 040000 002400 INTIAL: MOV #40000,CMD ;SET INT COMMAND
1855 010446 013777 002400 171674 MOV CMD,@RXCS ;INIT UNIT 0
1856 010454 004737 012032 CALL AWDN ;GO AWAIT DONE
1857 010460 004737 011544 XINT: CALL CDERCK ;CALL COMMAND ERROR CK
1858 010464 004737 012244 CALL GETREG ;CALL GET DEV REGS
1859 010470 000207 RTS PC ;RETURN
1860 :-----
1861 :
1862 :
1863 :
1864 .SBTTL - MOD U.DEV.CLD - CLEAR DEVICE
1865 :++
1866 : FUNCTIONAL DESCRIPTION: SUBR TO SEND INIT TO DEVICE - NO ERROR CK
1867 : INPUTS: NONE
1868 : IMPLICIT INPUTS: NONE
1869 : OUTPUTS: DEVICE INITIALIZE
1870 : IMPLICIT OUTPUTS:
1871 : SUBORDINATE ROUTINES USED: A WAIT 'DONE'
1872 : FUNCTIONAL SIDE EFFECTS:
1873 : CALLING SEQUENCE: SUBR
1874 :--
1875 :
1876 :-----
1877 :
1878 010472 012701 040000 CLRDEV: MOV #40000,R1 ;SET INITIALIZE COMMAND
1879 010476 010177 171646 MOV R1,@RXCS ;CLEAR DEVICE
1880 010502 004737 012032 CALL AWDN ;AWAIT DONE
1881 010506 000207 RETURN ;RETURN
1882 :-----

```


GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 53
 - MOD U.DEV.FLB - FILL BUFFER

```

1885 .SBTTL - MOD U.DEV.FLB - FILL BUFFER
1886 :++
1887 : FUNCTIONAL DESCRIPTION: SUBR TO SEND FILL BUFFER COMMAND TO DEVICE.
1888 : INPUTS: NONE
1889 : IMPLICIT INPUTS: NONE
1890 : OUTPUTS: FILL BUFFER TO RX
1891 : IMPLICIT OUTPUTS:
1892 : SUBORDINATE ROUTINES USED: SET COMMANDS, WAIT 'DCNE', WAIT 'TR'
1893 : FUNCTIONAL SIDE EFFECTS:
1894 : CALLING SEQUENCE:
1895 :--
1896 :-----
1897 :
1898 :
1899 010510 004737 011634 FILBUF: CALL DVDNCK ;CALL DEVICE READY CHECK
1900 010514 005737 002454 TST FIN ;IF FINI FLAG SET
1901 010520 001035 BNE XFILBF ;NOT SET, THEN
1902 010522 012737 000001 011542 MOV #1,NCMD ;SET FILL BUFFER COMMAND
1903 010530 004737 011502 CALL SETSCD ;CALL SET SUBSYS COMMAND - MOD U.DEV.SSC
1904 010534 053737 002366 002400 BIS EXTADR,CMD ;SET EXT. ADR. BITS
1905 010542 013777 002400 171600 MOV CMD,@RXCS ;LOAD COMMAND
1906 010550 004737 012110 CALL AWTR ;WAIT FOR 'TR'
1907 010554 005737 002454 IBFLB: TST FIN ;IF FINI FLAG
1908 010560 001015 BNE XFILBF ;EQUALS ZERO THEN
1909 010562 013777 002370 171562 MOV WDCNT,@RXDB ;LOAD WORD COUNT FOR OUTPUT BUFFER
1910 010570 004737 012110 CALL AWTR ;WAIT FOR 'TR'
1911 010574 005737 002454 ICFLB: TST FIN ;IF FINI FLAG
1912 010600 001005 BNE XFILBF ;EQUALS ZERO THEN
1913 010602 013777 002362 171542 MOV FILADR,@RXDB ;LOAD BASE ADDRESS FOR OUTPUT BUFFER
1914 010610 004737 011610 CALL WAIT ;WAIT FOR 'DONE' OR INTERRUPT
1915 010614 004737 011544 XFILBF: CALL CDERCK ;CALL COMMAND ERROR CHECK
1916 010620 004737 012244 CALL GETREG ;CALL GET DEV REGS
1917 010624 000207 RTS PC ;RETURN
1918 :-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 55
 - MOD U.DEV.EMB - EMPTY BUFFER

```

1921 .SBTTL - MOD U.DEV.EMB - EMPTY BUFFER
1922 :++
1923 : FUNCTIONAL DESCRIPTION: SUBR TO SEND EMPTY BUFFER TO DEVICE.
1924 : INPUTS: NONE
1925 : IMPLICIT INPUTS: NONE
1926 : OUTPUTS: EMPTY BUFFER TO RX
1927 : IMPLICIT OUTPUTS:
1928 : SUBORDINATE ROUTINES USED: SETUP COMMANDS, WAIT 'DONE', WAIT 'TR'
1929 : FUNCTIONAL SIDE EFFECTS:
1930 : CALLING SEQUENCE:
1931 :--
1932 :-----
1933 :
1934 :
1935 010626 004737 011634 EMPBUF: CALL DVDNCK ;CALL DEVICE READY CHECK
1936 010632 005737 002454 TST FIN ;IF FINI FLAG
1937 010636 001035 BNE XEMPBF ;NOT SET, THEN
1938 010640 012737 000003 011542 MOV #3,NCMD ;SET EMPTY BUFFER COMMAND
1939 010646 004737 011502 CALL SETSCD ;CALL SET SUBSYS COMMAND
1940 010652 053737 002366 002400 BIS EXTADR,CMD ;SET EXT. ADR. BITS
1941 010660 013777 002400 171462 MOV CMD,@RXCS ;ELSE LOAD COMMAND
1942 010666 004737 012110 CALL AWTR ;WAIT FOR 'TR' DO MOD U.TR
1943 010672 005737 002454 IBEMB: TST FIN ;IF FINI FLAG
1944 010676 001015 BNE XEMPBF ;EQUALS ZERO
1945 010700 013777 002370 171444 MOV WDCNT,@RXDB ;THEN LOAD WORD COUNT FOR INPUT BUFFER
1946 010706 004737 012110 CALL AWTR ;WAIT FOR 'TR' DO MOD U.TR
1947 010712 005737 002454 ICEMB: TST FIN ;IF FINI FLAG
1948 010716 001005 BNE XEMPBF ;EQUALS ZERO
1949 010720 013777 002360 171424 MOV EMPADR,@RXDB ;THEN LOAD BASE ADDRESS FOR INPUT BUFFER
1950 010726 004737 011610 CALL WAIT ;WAIT FOR 'DONE' OR INTERRUPT
1951 010732 004737 011544 XEMPBF: CALL CDERCK ;CALL COMMAND ERROR CHECK
1952 010736 004737 012244 CALL GETREG ;CALL GET DEV REGS
1953 010742 000207 RTS PC ;RETURN
1954 :-----
  
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 57
 - MOD U.DEV.WRT - WRITE SUBROUTINE

```

1957 .SBTTL - MOD U.DEV.WRT - WRITE SUBROUTINE
1958 :++
1959 : FUNCTIONAL DESCRIPTION: SUBR TO SEND WRITE SECTOR TO DEVICE.
1960 : INPUTS: NONE
1961 : IMPLICIT INPUTS: DELETED DATA MODE
1962 : OUTPUTS: WRITE SECTOR TO RX
1963 : IMPLICIT OUTPUTS:
1964 : SUBORDINATE ROUTINES USED: SETUP COMMANDS, WAIT 'DONE', WAIT 'TR'
1965 : FUNCTIONAL SIDE EFFECTS:
1966 : CALLING SEQUENCE:
1967 :--
1968 :-----
1969 :
1970 :
1971 010744 004737 011634 WRITE: CALL DVDNCK ;CALL DEVICE READY CHECK
1972 010750 005737 002454 TST FIN ;IF FINI FLAG
1973 010754 001037 BNE XWRITE ;EQUALS ZERO THEN
1974 010756 012737 000005 011542 MOV #5,NCMD ;SET TO WRITE SECTOR
1975 010764 053737 002402 011542 BIS DELDAT,NCMD ;SETUP WRITE DELETED DATA, IF SET
1976 010772 004737 011502 CALL SETSCD ;CALL SET SUBSYS COMMAND
1977 010776 004737 011462 CALL SETDCD ;CALL SET DEVICE COMMAND - MOD U.DEV.CMD
1978 011002 013777 002400 171340 WRITE1: MOV CMD,@RXCS ;LOAD COMMAND
1979 011010 004737 012110 CALL AWTR ;GO AWAIT TRANSFER READY 'TR'
1980 011014 005737 002454 IBWRT: TST FIN ;IF FINI FLAG
1981 011020 001015 BNE XWRITE ;EQUALS ZERO THEN
1982 011022 013777 002376 171322 MOV SECTOR,@RXDB ;LOAD SECTOR ADDRESS
1983 011030 004737 012110 CALL AWTR ;GO AWAIT TRANSFER READY 'TR'
1984 011034 005737 002454 ICWRT. TST FIN ;IF FINI FLAG
1985 011040 001005 BNE XWRITE ;EQUALS ZERO THEN
1986 011042 013777 002374 171302 MOV TRACK,@RXDB ;LOAD TRACK ADDRESS
1987 011050 004737 011610 CALL WAIT ;WAIT FOR INTERRUPT OR 'DONE'
1988 011054 004737 012244 XWRITE: CALL GETREG ;CALL GET DEV REGS
1989 011060 000207 RTS PC ;RETURN
1990 :-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 59
- MOD U.DEV.RED - READ SUBROUTINE

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2007 011062 004737 011634
2008 011066 005737 002454
2009 011072 001034
2010 011074 012737 000007 011542
2011 011102 004737 011502
2012 011106 004737 011462
2013 011112 013777 002400 171230
2014 011120 004737 012110
2015 011124 005737 002454
2016 011130 001015
2017 011132 013777 002376 171212
2018 011140 004737 012110
2019 011144 005737 002454
2020 011150 001005
2021 011152 013777 002374 171172
2022 011160 004737 011610
2023 011164 004737 012244
2024 011170 000207
2025

```

.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:
:--
:-----
READ:  CALL    DVDNCK      ;CALL DEVICE READY CHECK
      TST     FIN         ;IF FINI FLAG
      BNE    XREAD       ;EQUALS ZERO, THEN
      MOV    #7,NCMD     ;SET READ COMMAND
      CALL   SETSCD      ;CALL SET SUBSYS COMMAND
      CALL   SETDCD      ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
READ1: MOV    CMD,@RXCS  ;LOAD COMMAND
      CALL   AWTR        ;GO AWAIT TRANSFER READY
IBRED: TST     FIN         ;IF FINI FLAG
      BNE    XREAD       ;EQUALS ZERO, THEN
      MOV    SECTOR,@RXDB ;LOAD SECTOR ADDRESS
      CALL   AWTR        ;GO AWAIT TRANSFER READY
ICRED: TST     FIN         ;IF FINI FLAG
      BNE    XREAD       ;EQUALS ZERO, THEN
      MOV    TRACK,@RXDB ;LOAD TRACK ADDRESS
      CALL   WAIT        ;WAIT FOR INTERRUPT OR 'DONE'
XREAD: CALL   GETREG     ;CALL GET DEV REGS
      RETURN
:-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 61
 - MOD U.DEV.SDN - SET DENSITY

```

2028 .SBTTL - MOD U.DEV.SDN - SET DENSITY
2029 :++
2030 : FUNCTIONAL DESCRIPTION: SUBR TO SEND SET DENSITY COMMAND TO DEVICE.
2031 : INPUTS: NONE
2032 : IMPLICIT INPUTS: DENSITY
2033 : OUTPUTS: SET DENSITY TO RX
2034 : IMPLICIT OUTPUTS:
2035 : SUBORDINATE ROUTINES USED: SETUP COMMANDS, WAIT 'DONE', WAIT 'TR'
2036 : FUNCTIONAL SIDE EFFECTS:
2037 : CALLING SEQUENCE:
2038 :--
2039
2040 -----
2041
2042 011172 004737 011634 SETDN: CALL DVDNCK ;CALL DEVICE READY CHECK
2043 011176 005737 002454 TST FIN ;IF FINI FLAG
2044 011202 001024 BNE XSETDN ;NOT SET, THEN
2045 011204 012737 000011 011542 MOV #11,NCMD ;SETUP DENSITY COMMAND
2046 011212 004737 011502 CALL SETSCD ;CALL SET SUBSYS COMMAND
2047 011216 004737 011462 CALL SETDCD ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
2048 011222 013777 002400 171120 MOV CMD,@RXCS ;SEND COMMAND
2049 011230 004737 012110 CALL AWTR ;GO AWAIT 'TR'
2050 011234 005737 002454 IBSDN: TST FIN ;IF FINI FLAG IS
2051 011240 001005 BNE XSETDN ;ZERO
2052 011242 013777 002372 171102 MOV VARIFY,@RXDB ;SEND VARIFY WORD
2053 011250 004737 011610 CALL WAIT ;WAIT FOR 'DONE' OR INTERRUPT
2054 011254 004737 011544 XSETDN: CALL CDERCK ;CALL COMMAND ERROR CHECK
2055 011260 004737 012244 CALL GETREG ;CALL GET DEV REGS
2056 011264 000207 RTS PC ;RETURN
2057 -----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 63
 - MOD U.DEV.RST - READ STATUS

```

2060 .SBTTL - MOD U.DEV.RST - READ STATUS
2061 :++
2062 : FUNCTIONAL DESCRIPTION: SUBR TO SEND READ STATUS COMMAND TO DEVICE.
2063 : INPUTS: NONE
2064 : IMPLICIT INPUTS: NONE
2065 : OUTPUTS: READ STATUS TO RX
2066 : IMPLICIT OUTPUTS: NONE
2067 : SUBORDINATE ROUTINES USED: SETUP COMMANDS, WAIT 'DONE', WAIT 'TR'
2068 : FUNCTIONAL SIDE EFFECTS: NONE
2069 : CALLING SEQUENCE:
2070 :--
2071 :-----
2072 :
2073 :
2074 011266 004737 011634 RDSTAT: CALL DVDNCK ;CALL DEVICE READY CHECK
2075 011272 022737 000060 002520 CMP #NODNBT,ERRNBR ;IF ERRNBR NOT SET=
2076 011300 001416 BEQ XRDSTA ;'NO DONE BIT', THEN
2077 011302 012737 000013 011542 MOV #13,NCMD ;SET READ STATUS
2078 011310 004737 011502 CALL SETSCD ;CALL SET SUBSYS COMMAND
2079 011314 004737 011462 CALL SETDCD ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
2080 011320 013777 002400 171022 MOV CMD,@RXCS ;SEND COMMAND
2081 011326 004737 011610 CALL WAIT ;GO AWAIT 'DONE' OR INTERRUPT
2082 011332 004737 012244 CALL GETREG ;CALL GET DEV REGS
2083 011336 000207 XRDSTA: RETURN ;RETURN
2084 :-----
  
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 65
 - MOD U.DEV.REC - READ ERROR CODE

```

2087 .SBTTL - MOD U.DEV.REC - READ ERROR CODE
2088 :++
2089 : FUNCTIONAL DESCRIPTION: SUBR TO SEND READ ERROR CODE TO DEVICE.
2090 : INPUTS: EXTENDED ADDRESS BITS, FINI FLAG, SETUP COMMAND WORD
2091 : IMPLICIT INPUTS: NONE
2092 : OUTPUTS: READ ERROR CODE FLAG, READ ERROR CODE TO DRIVE, READ ERROR CODE NEW CMD
2093 : IMPLICIT OUTPUTS: NONE
2094 : SUBORDINATE ROUTINES USED: SET DEVICE CMD, WAIT, WAIT FOR 'TR', GET
2095 :                               REG, CMD ERR CK
2096 : FUNCTIONAL SIDE EFFECTS: NONE
2097 : CALLING SEQUENCE: -
2098 :--
2099 :-----
2100
2101 011340 004737 011634 RDERCD: CALL DVDNCK ;CALL DEVICE READY CHECK
2102 011344 022737 000060 002520 CMP #NODNBT,ERRNBR ;IF ERRNBR NOT SET=
2103 011352 001440 BEQ XRDERC ;'NO DONE BIT', THEN
2104 011354 012737 000017 011542 MOV #17,NCMD ;SET ERROR CODE COMMAND
2105 011362 004737 011502 CALL SETSCD ;CALL SET SUBSYS COMMAND
2106 011366 042737 000400 002400 BIC #DENBIT,CMD ;CLEAR DENSITY BIT FROM CMD
2107 011374 05377 002366 002400 BIS EXTADR,CMD ;SET EXTENDED ADDRESS BITS
2108 011402 01377 002400 170740 MOV CMD,@RXCS ;SEND COMMAND
2109 011410 004737 012110 CALL AWTR ;THEN GO AWAIT 'TR'
2110 011414 005737 002454 IBREC: TST FIN ;IF FINI FLAG
2111 011420 001015 BNE XRDERC ;EQUALS ZERO THEN
2112 011422 013777 002364 170722 MOV RECADR,@RXDB ;SET BASE ADDR FOR READ ERR CODE
2113 011430 004737 011610 CALL WAIT ;GO AWAIT 'DONE' OR INTERRUPT
2114 011434 005737 002454 ICREC: TST FIN ;IF FINI FLAG
2115 011440 001005 BNE XRDERC ;NOT SET, THEN
2116 011442 052737 000200 002476 BIS #RECFLG,FLAGST ;SET PRINT ERROR CODE OR FLAG
2117 011450 004737 012244 CALL GETREG ;CALL GET DEV REGS
2118 011454 004737 011544 XRDERC: CALL CDERCK ;CALL COMMAND ERROR CHECK
2119 011460 000207 RTS PC ;RETURN
2120 :-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 67
- MOD U.DEV.CMD - SETUP DEVICE COMMAND

```

2123 .SBTTL - MOD U.DEV.CMD - SETUP DEVICE COMMAND
2124 :++
2125 : FUNCTIONAL DESCRIPTION: SUBR TO SETUP DEVICE COMMAND WORD - I.E.,
2126 : SET DRIVE & SIDE BITS
2127 :
2128 : INPUTS: NONE
2129 : IMPLICIT INPUTS: SIDE & DRIVE BITS, COMMAND
2130 : OUTPUTS: COMMAND WORD FOR DEVICE
2131 : IMPLICIT OUTPUTS: NONE
2132 : SUBORDINATE ROUTINES USED: NONE
2133 : FUNCTIONAL SIDE EFFECTS: NONE
2134 : CALLING SEQUENCE: SUBR
2135 :--

```

```

-----
2137 :
2138 011462 000240 SETDCD: NOP ;
2139 011464 053737 002406 002400 BIS DRIVE,CMD ;SETUP DRIVE BIT
2140 011472 053737 002410 002400 BIS SIDE,CMD ;SETUP SIDE BIT
2141 C11500 000207 RETURN ;RETURN
2142 :
2143 :

```

```

-----
2144 .SBTTL - MOD U.DEV.SSC - SETUP SUBSYSTEM COMMANDS
2145 :++
2146 : FUNCTIONAL DESCRIPTION: SUBR TO SETUP SUBSYSTEM COMMANDS - I.E.
2147 : SET BITS THAT ARE NOT DRIVE RELATED
2148 :
2149 : INPUTS: NEW COMMAND
2150 : IMPLICIT INPUTS: COMMAND, DENSITY, INTERRUPT BIT
2151 : OUTPUTS: COMMAND
2152 : IMPLICIT OUTPUTS: LAST COMMAND, PROTOCOL CTR
2153 : SUBORDINATE ROUTINES USED: NONE
2154 : FUNCTIONAL SIDE EFFECTS: NONE
2155 : CALLING SEQUENCE: SUBR
2156 :--

```

```

-----
2157 011502 000240 SETSCD: NOP ;
2158 011504 013737 002400 002424 MOV CMD,LCMD ;SAVE LAST COMMAND
2159 011512 013737 011542 002400 MOV NCMD,CMD ;SETUP NEW COMMAND
2160 011520 005037 002472 CLR PROTCT ;CLEAR TEST COMMAND PROTOCOL COUNTER
2161 011524 053737 002412 002400 BIS DENSITY,CMD ;SETUP DENSITY BIT
2162 011532 053737 002404 002400 BIS INTERT,CMD ;SETUP INTERRUPT BIT
2163 011540 000207 RETURN ;
2164 :

```

```

-----
2165 011542 000000 NCMD: 0 ;NEW COMMAND
2166 :
2167 :

```


GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 69
 - MOD U.DEV.CEC - DEVICE COMMAND ERROR CHECK

```

2170 .SBTTL - MOD U.DEV.CEC - DEVICE COMMAND ERROR CHECK
2171 -----
2172 :++
2173 : FUNCTIONAL DESCRIPTION: SUBR TO CHECK FOR DEVICE COMMAND FATAL ERRORS.
2174 : INPUTS: NONE
2175 : IMPLICIT INPUTS: FIN FLAG, FLAGS(NEG TEST), ERR NBR
2176 : OUTPUTS: NCNE
2177 : IMPLICIT OUTPUTS: ERROR CONDITION
2178 : SUBORDINATE ROUTINES USED: ERROR
2179 : FUNCTIONAL SIDE EFFECTS: DROP UNIT & CLEAN UP
2180 : CALLING SEQUENCE: SUBR
2181 :--
2182 -----
2183 :
2184 :
2185 011544 000240 CDERCK: NOP ;
2186 011546 005737 002454 TST FIN ;IF FINI FLAG
2187 011552 001415 BEQ XCEC ;SET, THEN
2188 011554 005737 002520 TST ERRNBR ;IF ERROR NUMBER
2189 011560 001412 BEQ XCEC ;NOT=0, THEN
2190 011562 032737 004000 002476 BIT #NEGTST,FLAGST ;IF NEG TEST FLAG
2191 011570 001006 BNE XCEC ;NOT SET, THEN
2192 011572 004737 003060 CALL ERROR ;CALL ERROR-MOD
2193 011576 DODU UNIT ;DROP UNIT
2194 011604 DOCLN ;DO CLEAN-UP
2195 011606 000207 XCEC: RETURN ;RETURN
2196 -----
  
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 71
- MOD U.DEV.WAT - WAIT SUBROUTINE

```

2199 .SBTTL - MOD U.DEV.WAT - WAIT SUBROUTINE
2200 :++
2201 : FUNCTIONAL DESCRIPTION: SUBR TO DETERMINE TO WAIT FOR 'DONE' OR INTERRUPTS
2202 : INPUTS: DEVICE COMMAND
2203 : IMPLICIT INPUTS: NONE
2204 : OUTPUTS: NONE
2205 : IMPLICIT OUTPUTS: NONE
2206 : SUBORDINATE ROUTINES USED: WATCH & A WAIT DONE
2207 : FUNCTIONAL SIDE EFFECTS: NONE
2208 : CALLING SEQUENCE: SUBR
2209 :--
2210 :-----
2211 :
2212 :
2213 011610 032737 000100 002400 WAIT: BIT #100,CMD ;IF COMMAND-INTERRUPT BIT
2214 011616 001403 BEQ 1$ ;SET, THEN
2215 011620 004737 011662 CALL WATCH ;CALL WATCH DOG WAIT FOR INTERRUPT
2216 011624 000402 BR XWAIT ;BR TO END
2217 011626 004737 012032 1$: CALL AWDN ;ELSE, CALL WAIT FOR DONE
2218 011632 000207 XWAIT: RETURN ;RETURN
2219 :-----
2220 :

```

```

2221 :
2222 :
2223 .SBTTL - MOD U.DEV.DRC - DEVICE DONE CHECK
2224 :++
2225 : FUNCTIONAL DESCRIPTION: SUBR TO CK IF DEVICE IS READY TO ACCEPT A CMD
2226 : INPUTS: NONE
2227 : IMPLICIT INPUTS: DONE BIT
2228 : OUTPUTS: NONE
2229 : IMPLICIT OUTPUTS: NONE
2230 : SUBORDINATE ROUTINES USED: WATCH & A WAIT DONE
2231 : FUNCTIONAL SIDE EFFECTS: NONE
2232 : CALLING SEQUENCE: SUBR
2233 :--
2234 :-----
2235 :
2236 :
2237 011634 005003 DVDNCK: CLR R3 ;CLEAR REC
2238 011636 032777 000040 170504 1$: BIT #DNBIT,@RXCS ;IF DEVICE DONE
2239 011644 001005 BNE XDVRCK ;NOT SET
2240 011646 005203 INC R3 ;BUMP TIMEOUT COUNTER
2241 011650 001372 BNE 1$ ;IF TIME OUT, THEN
2242 011652 BRESET ;EXECUTE BUS RESET
2243 011654 004737 012032 CALL AWDN ;CALL A WAIT 'DONE'
2244 011660 000207 XDVRCK: RETURN ;RETURN
2245 :-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 73
 - MOD U.DEV.WCH - WATCH DOG TIMER

```

2248 .SBTTL - MOD U.DEV.WCH - WATCH DOG TIMER
2249 :++
2250 : FUNCTIONAL DESCRIPTION: SUBR TO WATCH DOG DEVICE 'DONE' & INTERRUPTS
2251 : INPUTS: PROCESSOR LOW PRIORITY
2252 : IMPLICIT INPUTS: DEVICE 'DONE' & INTERRUPTS
2253 : OUTPUTS: DONE TIMEOUT ERROR, NO INTERRUPT ERROR
2254 : IMPLICIT OUTPUTS: NONE
2255 : SUBORDINATE ROUTINES USED: NONE
2256 : FUNCTIONAL SIDE EFFECTS: NONE
2257 : CALLING SEQUENCE: SUBR
2258 :--
2259 :-----
2260 :
2261 :
2262 011662 005037 012030 WATCH: CLR DNFLAG ;CLEAR DONE FLAG
2263 011666 SETPRI PRIORT ;SET PROCESSOR PRI - ALLOW INTERRUPTS
2264 011674 013704 012024 MOV DX,R4 ;SET DELAY MULT
2265 011700 013703 012026 BAUWCH: MOV DLY,R3 ;SET DELAY
2266 011704 005737 012030 IBUWCH: TST DNFLAG ;IF INTERRUPTS DONE FLAG
2267 011710 001413 BEQ LBUWCH ;IS SET, THEN
2268 011712 032777 000040 170430 ICUWCH: BIT #DNBIT,@RXCS ;IF DONT BIT
2269 011720 001035 BNE XUWCH ;IS NOT SET, THEN
2270 011722 012737 000014 002520 MOV #INTNDN,ERRNBR ;SET ERROR #=NO DONE BIT
2271 011730 012737 010000 002460 MOV #BIT12,TYPERR ;SET INTERR, BUT NO DONE ERROR
2272 011736 000426 BR XUWCH ;BR TO MOD 'EXIT'
2273 011740 LBUWCH: BREAK
2274 011742 005303 DEC R3 ;DECREMENT DELAY COUNT
2275 011744 001357 UDUWCH: BNE IBUWCH ;DO UNIT DELAY COUNT=0
2276 011746 005304 DEC R4 ;DECREMENT DELAY MULT
2277 011750 001353 UAUWCH: BNE BAUWCH ;DO UNTIL DELAY MULT=0
2278 011752 032777 000040 170370 IEUWCH: BIT #DNBIT,@RXCS ;IF DONE BIT IS
2279 011760 001407 BEQ LEUWCH ;SET, THEN
2280 011762 012737 000015 002520 MOV #DNNINT,ERRNBR ;SET ERR #=DONE, NO INTR
2281 011770 052737 020000 002460 BIS #BIT13,TYPERR ;SET DONE, BUT NO INTERRUPT ERROR
2282 011776 000406 BR XUWCH ;BR TO MOD 'EXIT'
2283 012000 052737 000020 002456 LEUWCH: BIS #BIT4,SYSERR ;SET NO DONE T.O. ERROR
2284 012006 012737 000060 002520 MOV #NODNBT,ERRNBR ;SET ERR #=NO DONE BIT
2285 012014 XUWCH: SETPRI #PRI06 ;SET PROCESSOR PRI=6 - NO INTERRUPTS
2286 012022 000207 RTS PC ;RETURN
2287 :-----
2288 012024 000010 DX: 10 ;DELAY MULT
2289 012026 100000 DLY: 100000 ;DELAY
2290 012030 000000 DNFLAG: 0 ;DONE FLAG
2291 :MOD U.2.3.4 ---- END MODULE -----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 75
 - MOD U.DEV.WDN - AWAIT DONE BIT SUBROUTINE

```

2294 .SBTTL - MOD U.DEV.WDN - AWAIT DONE BIT SUBROUTINE
2295 :++
2296 : FUNCTIONAL DESCRIPTION: SUBR TO WAIT FOR DEVICE 'DONE' BIT
2297 : INPUTS: TIMEOUT PASS COUNTER
2298 : IMPLICIT INPUTS: DEVICE 'DONE' BIT, (RXCSR), DONE WAIT MULTIPLIER
2299 : OUTPUTS: 'DONE' BIT TIMEOUT ERROR
2300 : IMPLICIT OUTPUTS: NONE
2301 : SUBORDINATE ROUTINES USED: GET DEVICE REGISTERS
2302 : FUNCTIONAL SIDE EFFECTS: NONE
2303 : CALLING SEQUENCE: SUBR
2304 :--
2305 :-----
2306 :
2307 :
2308 012032 005004 AWDN: CLR R4 ;RESET TIME OUT MULTIPLIER
2309 012034 005003 1$: CLR R3 ;PRESET TIME OUT COUNTER
2310 012036 032777 000040 170304 2$: BIT #DNBIT,@RXCS ;SEE IF DONE SET
2311 012044 001020 BNE 3$ ;IF SO: BR
2312 012046 BREAK ;TEMPORARY RETURN TO MONITOR
2313 012050 005203 INC R3 ;BUMP TIME OUT COUNTER
2314 012052 001371 BNE 2$ ;IF NOT TIMED OUT: BR
2315 012054 005204 INC R4 ;INCREMENT TIMEOUT MULTIPLIER
2316 012056 023704 002474 CMP DNWTMT,R4 ;IF ON 2ND
2317 012062 101364 BHI 1$ ;TIMEOUT PASS, THEN
2318 012064 012737 000060 002520 MOV #NODNBT,ERRNBR ;SET ERR #=NO DONE BIT
2319 012072 052737 000020 002456 BIS #BIT4,SYSERR ;SET NO DONE BIT ON SYSTEM ERROR
2320 012100 012737 000001 002454 MOV #1,FIN ;EXIT THIS COMMAND
2321 012106 000207 3$: RTS PC ;EXIT
2322 :-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 77
 - MOD U.DEV.WTR - AWAIT TRANSFER READY SUBROUTINE

```

2325 .SBTTL - MOD U.DEV.WTR - AWAIT TRANSFER READY SUBROUTINE
2326 :++
2327 : FUNCTIONAL DESCRIPTION: SUBR TO WAIT FOR DEVICE 'TR' BIT
2328 : INPUTS: NONE
2329 : IMPLICIT INPUTS: DEVICE 'TR', 'DONE' & CSR, ESR
2330 : OUTPUTS: 'TR' TIMEOUT ERROR, NO DONE BIT, PROTOCOL COUNTER
2331 : IMPLICIT OUTPUTS: NONE
2332 : SUBORDINATE ROUTINES USED: GET DEVICE REGISTERS
2333 : FUNCTIONAL SIDE EFFECTS: NONE
2334 : CALLING SEQUENCE: SUBR
2335 :--
2336
2337 -----
2338
2339 012110 005237 002472 AWTR: INC PROTCT ;INCREMENT TEST PROTOCOL COUNTER
2340 012114 005004 CLR R4 ;PRESET TIMEOUT MULTIPLIER
2341 012116 005003 1$: CLR R3 ;PRESET TIME OUT COUNTER
2342 012120 032777 000040 170222 2$: BIT #DNBIT,@RXCS ;IF DONE BIT
2343 012126 001013 BNE 3$ ;NOT SET, THEN
2344 012130 032777 000200 170212 BIT #TRBIT,@RXCS ;SEE IF TRANSFER READY SET
2345 012136 001041 BNE 5$ ;IF SO: BR
2346 012140 BREAK ;TEMPORARY RETURN TO MONITOR
2347 012142 005203 INC R3 ;BUMP TIME OUT COUNTER
2348 012144 001365 BNE 2$ ;IF NOT TIMED OUT: BR
2349 012146 005204 INC R4 ;INCREMENT TIMEOUT MULTIPLIER
2350 012150 022704 000004 CMP #4,R4 ;IF ON 2ND
2351 012154 101360 BHI 1$ ;TIMEOUT PASS, THEN
2352 012156 012737 000001 002454 3$: MOV #1,FIN ;EXIT THIS COMMAND
2353 012164 052737 000020 002460 BIS #CMDERR,TYPERR ;**** ERROR ON COMMAND ****
2354 012172 013737 002400 002422 MOV CMD,ERRCMD ;SETUP ERROR COMMAND
2355 012200 012737 000057 002520 MOV #NOTRBT,ERRNBR ;SET ERR #=NO 'TR' BIT
2356 012206 052737 000200 002456 BIS #TRBIT,SYSERR ;SET SYS ERR=NO 'TR' BIT
2357 012214 032777 000040 170126 BIT #DNBIT,@RXCS ;IF DONE BIT
2358 012222 001004 BNE 4$ ;NOT SET, THEN
2359 012224 052737 000020 002456 BIS #BIT4,SYSERR ;SET NO DONE BIT EITHER
2360 012232 000403 BR 5$ ;BR TO EXIT
2361 012234 012737 000063 002520 4$: MOV #DNNOTR,ERRNBR ;SET ERR #='DONE' NO 'TR'
2362 012242 000207 5$: RTS PC ;RETURN
2363 -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 79
 - MOD U.DEV.REG - GET DEVICE REGISTERS

```

2366 .SBTTL - MOD U.DEV.REG - GET DEVICE REGISTERS
2367 :++
2368 : FUNCTIONAL DESCRIPTION: SUBROUTINE TO GET RX02 CSR & ESR
2369 : INPUTS: NONE
2370 : IMPLICIT INPUTS: DEVICE CSR & ESR
2371 : OUTPUTS: DEVICE CSR & ESR
2372 : IMPLICIT OUTPUTS: OLD CSR & ESR
2373 : SUBORDINATE ROUTINES USED: NONE
2374 : FUNCTIONAL SIDE EFFECTS: NONE
2375 : CALLING SEQUENCE: SUBR
2376 :--
2377 :-----
2378 :
2379 :
2380 012244 013737 002432 002426 GETREG: MOV RXCSR,LXCSR ;SAVE LAST CSR
2381 012252 013737 002434 002430 MOV RXESR,LXESR ;SAVE LAST ESR
2382 012260 017737 170064 002432 MOV @RXCS,RXCSR ;GET RXCSR FOR PRINT
2383 012266 017737 170060 002434 MOV @RXDB,RXESR ;GET RXESR FOR PRINT
2384 012274 000207 RETURN ;RETURN
2385 :-----
2386 :
2387 :
2388 :
2389 .SBTTL - MOD U.DEV.ITR - INTERRUPT HANDLER
2390 :++
2391 : FUNCTIONAL DESCRIPTION: ;DEVICE INTERRUPT HANDLER
2392 : INPUTS: NONE
2393 : IMPLICIT INPUTS: DEVICE 'DONE' BIT & INTERRUPT BIT
2394 : OUTPUTS: DONE FLAG
2395 : IMPLICIT OUTPUTS: NONE
2396 : SUBORDINATE ROUTINES USED: NONE
2397 : FUNCTIONAL SIDE EFFECTS: NONE
2398 : CALLING SEQUENCE: DEVICE INTERRUPT
2399 :--
2400 :-----
2401 :
2402 :
2403 012276 012737 000001 012030 INTRHD: MOV #1,DNFLAG ;SET DONE FLAG
2404 012304 000002 RTI ;RETURN FROM INTERRUPT
2405 :-----
2406 :

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 81
 - MOD U.SFT.DPT - SET DATA PATTERN

```

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 1$: MOV #7,PAT
2427 012334 013704 012660 MOV PAT,R4 ;GET PATTERN BITS
2428 012340 005304 DEC R4 ;ADJUST FOR CORRECT OFFSET
2429 012342 006304 ASL R4
2430 012344 150437 012372 BISB R4,@#BRONPT ;INSERT OFFSET
2431 012350 012704 036224 MOV #DATPAT+2,R4 ;SET UP ADDRESS OF FIRST BYTE
2432 012354 013705 002370 MOV WDCNT,R5 ;SETUP WORD COUNT
2433 012360 006305 ASL R5 ;DOUBLE WORD COUNT FOR ADR
2434 012362 062705 036222 ADD #DATPAT,R5 ;ADD DATA PATTERN ADR
2435 012366 162705 000004 SUB #4,R5 ;ADJ. FOR CHECKSUM
2436 012372 000777 BRONPT: BR ;BRANCH BY OFFSET SELECTED
2437 012374 000137 012430 JMP DATA0 ;000 DATA BYTE
2438 012400 000137 012446 JMP DATA1 ;377 DATA BYTE
2439 012404 000137 012456 JMP FLOAT0 ;FLOAT A 0 THROUGH ALL 1'S
2440 012410 000137 012524 JMP FLOAT1 ;FLOAT A 1 THROUGH ALL 0'S
2441 012414 000137 012532 JMP PAT125 ;125/052 DATA WORD
2442 012420 000137 012556 JMP PAT333 ;314/063 DATA WORD
2443 012424 000137 012566 JMP RANDAT ;RANDOM DATA BYTE
2444 -----
2445 012430 005037 012656 DATA0: CLR DATBYT
2446 012434 004737 012614 PG: JSR PC,LOAD ;GO LOAD THE DATA BUFFER
2447 012440 005705 TST R5 ;IF R5
2448 012442 001463 BEQ END131 ;NOT =0 ,THEN
2449 012444 000773 BR PG
2450 -----
2451 012446 112737 000377 012656 DATA1: MOVB #377,DATBYT
2452 012454 000767 BR PG
2453 -----
2454 012456 112737 000376 012656 FLOAT0: MOVB #376,DATBYT ;SET UP A ONES FIELD
2455 012464 000261 XPG: SEC ;SET THE C BIT TO ROTATE THROUGH THE DATA
2456 012466 012702 000000 1$: 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
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 81-1
 - MOD U.SFT.DPT - SET DATA PATTERN

```

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      XPG:   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     XPG
2478                               -----
2479 012556 112737 000333 012656  PAT333: MOVB  #333,DATBYT
2480 012564 000765              BR     XPG
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 GENERATE:
2497 012630 001401              BEQ   1$              ;IF YES, RETURN
2498 012632 000407              BR   ENLD             ;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      ENLD:  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 -----

```


GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 83
 - MOD U.SFT.GTK - GET TRACK

```

2511          .SBTTL - MOD U.SFT.GTK - GET TRACK
2512          :-----:
2513
2514 012662 000240          GETTRK: NOP          ;
2515 012664 032737 000400 002510 IAGTK: BIT      #ITK,TKSCFG      ;IF INITIALIZE TRK IS
2516 012672 001423          BEQ      ICGTK          ;SET, THEN
2517 012674 042737 000400 002510 BIC      #ITK,TKSCFG      ;RESET INITIALIZE TRK FLG
2518 012702 013737 002336 013100 MOV      ID,TRKCNT      ;GET INSIDE TRACK
2519 012710 163737 002334 013100 SUB      OD,TRKCNT      ;GET OUTSIDE TRACK
2520 012716 005237 013100          INC      TRKCNT          ;INCREMENT # OF TRACKS
2521 012722 013737 002334 002374 MOV      OD,TRACK       ;SET TRACK=O.D.
2522 012730 005337 002374          DEC      TRACK         ;DECREMENT TRACK
2523 012734 042737 001000 002476 BIC      #TRKDON,FLAGST ;CLEAR TRACK DONE FLAG
2524 012742 032737 000004 002510 ICGTK: BIT      #ILTK,TKSCFG      ;IF TK/SC FLAGS=ILLEGAL TRACK
2525 012750 001416          BEQ      LBGTK          ;BIT SET, THEN
2526 012752 012737 000115 002374 MOV      #77,TRACK      ;SET TRACK=77=ILLEGAL TRACK
2527 012760 052737 001000 002476 BIS      #TRKDON,FLAGST ;SET TRACK DONE FLAG
2528 012766 000443          BR      XGTK           ;BR TO EXIT
2529 012770 032737 000001 002510 IBGTK: BIT      #STK,TKSCFG      ;IF TK & SE FLAG=SEQ TRK FLAG
2531 013000 005237 002374          INC      TRACK         ;INCREMENT TRACK
2532 013004 000426          BR      EBGTK          ;BR TO END 'B'
2533 013006 004737 010344          LBGTK: CALL     RANGEN      ;GET A RANDOM NUMBER
2534 013012 042737 177600 010436 BIC      #177600,RANUM  ;CLEAR ALL BUT LOW 7 BITS
2535 013020 123737 010436 002336 IDCOMP: CMPB   RANUM,ID    ;IF RANUM LARGER THAN ID ADDRESS
2536 013026 003401          BLE     ODCOMP        ;THEN
2537 013030 000766          BR      LBGTK          ;BR TO GET ANOTHER RANDOM NUMBER
2538 013032 123737 010436 002334 ODCOMP: CMPB   RANUM,OD    ;IF RANUM SMALLER THAN OD ADDRESS
2539 013040 002001          BGE     PRESCK        ;THEN
2540 013042 000761          BR      LBGTK          ;BR TO GET ANOTHER RANDOM NUMBER
2541 013044 123737 010436 002374 PRESCK: CMPB   RANUM,TRACK ;IF RANUM EQUALS PRESENT TRACK
2542 013052 001755          BEQ     LBGTK          ;GET ANOTHER RANDOM NUMBER
2543 013054 013737 010436 002374 MOV      RANUM,TRACK    ;RANUM OK PUT IT IN TARGET TRACK
2544 013062 005337 013100          EBGTK: DEC     TRKCNT      ;IF TOTAL # OF TRACKS
2545 013066 001003          BNE     XGTK           ;DONE, THEN
2546 013070 052737 001000 002476 BIS      #TRKDON,FLAGST ;THEN SET TRACK DONE FLAG
2547 013076 000207          XGTK:  RTS      PC          ;
2548          :-----:
2549 013100 000000          TRKCNT: .WORD  0          ;DRV TRK TABLE LOCATOR
2550 013102 000000          INITTK: .WORD  0          ;INITIALIZE TRK FLAG
2551          :-----:

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 85
 - MOD U.SFT.GSC - GET SECTOR

```

2554          .SBTTL - MOD U.SFT.GSC - GET SECTOR
2555          ;-----
2556
2557 013104 000240          GETSEC: NOP          ;
2558 013106 032737 001000 002510 IAGSC: BIT      #ISC,TKSCFG      ;IF TK/SC FLAGS=INIT SECTORS BIT
2559 013114 001411          BEQ      IBGSC          ;SET, THEN
2560 013116 042737 001000 002510 BIC      #ISC,TKSCFG      ;CLEAR THE FLAG
2561 013124 012737 000001 002376 MOV      #1,SECTOR      ;SET SECTOR=1
2562 013132 042737 002000 002476 BIC      #SECDON,FLAGST ;CLEAR FLAGST-SECTOR DONE FLAG
2563 013140 105737 002510          IBGSC: TSTB     TKSCFG          ;IF SEQUENCE SECTOR
2564 013144 001411          BEQ      BCGSC          ;SET, THEN
2565 013146 062737 000001 002376 ADD      #1,SECTOR      ;BUMP SECTOR ADDRESS
2566 013154 022737 000033 002376 CMP      #33,SECTOR     ;IF SECTORS
2567 013162 101030          BHI      XGSC          ;DONE, THEN
2568 013164 012737 000001 002376 MOV      #1,SECTOR      ;SET SECTOR=1
2569 013172 052737 002000 002476 BIS      #SECDON,FLAGST ;SET FLAGST-SECTOR DONE FLAG
2570 013200 000421          BR       XGSC          ;BR EXIT
2571 013202 004737 010344          BCGSC: CALL    RANGEN      ;BGN DO 'C'-CALL RANDOM NO. GENERATOR
2572 013206 042737 177740 010436 BIC      #177740,RANUM  ;CLEAR TOP BITS RANDOM NUM.
2573 013214 123727 010436 000033 UCGSC: CMPB    RANUM,#27. ;DUNTIL RANUM < 27.
2574 013222 103367          BHS      BCGSC          ;
2575 013224 105737 010436          IDGSC: TSTB     RANUM          ;IF RANDOM NO.
2576 013230 001002          BNE      EDGSC          ;EQUALS ZERO, THEN
2577 013232 105237 010436          INCB    RANUM          ;SET RANUM = 1
2578 013236 113737 010436 002376 EDGSC: MOVB   RANUM,SECTOR ;SET SECTOR ADR = RANDOM NO.
2579 013244 000207          XGSC: RTS      PC
2580          ;-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 87
 - MOD U.SFT.DCK - DATA CHECK

```

2583          .SBTTL - MOD U.SFT.DCK - DATA CHECK
2584          :-----
2585
2586 013246 005037 013520 DATAACK: CLR DAERCT          :CLEAR DATA ERR COUNT
2587 013252 052737 000100 002500 BIS #HDRPRT,FLAGSP :SET PRINT HEADER FLAG
2588 013260 013737 002370 013514 MOV WDCNT,BYTCNT :SAVE WORD COUNT
2589 013266 006337 013514 ASL BYTCNT :DOUBLE IT SO BYTE COUNT
2590 013272 005037 013516 CLR BYTNUM :CLEAR BYTE NUMBER
2591 013276 013705 013516 BADCK: MOV BYTNUM,R5 :SETUP BYTE NUMBER FOR AUTO INDEX
2592 013302 116501 036222 MOVB DATPAT(R5),R1 :SET TEMP#1=DATA SOURCE BYTE
2593 013306 116502 036622 MOVB DATBUF(R5),R2 :SET TEMP#2=DATA BUFFER BYTE
2594 013312 120102 IBDCCK: CMPB R1,R2 :IF SOURCE BYTE & BUFFER BYTE
2595 013314 001465 BEQ EBDCK :NOT EQUAL
2596 013316 005237 013520 INC DAERCT :INCREMENT DATA ERR COUNT
2597 013322 023727 013520 000012 IEDCK: CMP DAERCT,#10. :IF OVER 10 DATA ERRORS
2598 013330 103404 BLO TFDCK :THEN
2599 013332 032737 000020 002332 IFDCK: BIT #20,SWREG :IF PRINT ONLY 10 DATA ERROR FLAG
2600 013340 001053 BNE EBDCK :IS NOT SET, THEN
2601 013342 110137 013522 TFDCK: MOVB R1,DATASB :GET DATA SHOULD BE->PRINT
2602 013346 110237 013524 MOVB R2,DATAWS :GET DATA WAS->PRINT
2603 013352 032737 000100 002500 IMDCK: BIT #HDRPRT,FLAGSP :IF PRINT HEADER
2604 013360 001431 BEQ EMDCK :OK, THEN
2605 013362 042737 000100 002500 BIC #HDRPRT,FLAGSP :CLEAR PRINT HFADEK
2606 013370 012737 000005 002520 MOV #DATER,ERRNBR :SETUP ERR NBR= DATA ERR
2607 013376 004737 003060 CALL ERROR :CALL ERROR
2608 013402 032737 000020 002476 INDCK: BIT #EMBUFF,FLAGST :IF EMPTY BUFFER BIT
2609 013410 001011 BNE ENDCK :NOT SET, THEN
2610 013412 012701 013526 MOV #DMSG1B,R1 :SETUP MSG FORMAT
2611 013416 013702 002374 MOV TRACK,R2 :SETUP TRACK # PRT
2612 013422 013703 002376 MOV SECTOR,R3 :SETUP SECTOR # PRT
2613 013426 004737 002612 CALL PRTB2S :CALL PRINT BASIC-2 ARG
2614 013432 000400 BR ENDCK :BR TO END 'N'
2615 013434 012701 013561 ENDCK: MOV #DMSG1,R1 :SETUP MSG FORMAT
2616 013440 004737 002550 CALL PRTBOS :CALL PRINT BASIC-0 ARG
2617 013444 012701 013615 EMDCK: MOV #DMSG2,R1 :SETUP MSG FORMAT{
2618 013450 013702 013516 MOV BYTNUM,R2 :SETUP BYTE #
2619 013454 013703 013522 MOV DATASB,R3 :SETUP DATA SHOULD BE
2620 013460 013704 013524 MOV DATAWS,R4 :SETUP DATA WAS
2621 013464 004737 002636 CALL PRTB3S :CALL PRINT BASIC-3 ARG
2622 013470 005237 013516 EBDCK: INC BYTNUM :INCREMENT BYTE #
2623 013474 005337 013514 DEC BYTCNT :DECREMENT BYTE COUNT
2624 013500 005737 013514 UADCK: TST BYTCNT :DOUNTIL BYTE COUNT
2625 013504 003274 BGT BADCK :EQUALS 0
2626 013506 004737 013642 ENDDCK: CALL CLRDAT :CALL CLEAR DATA BUFFER
2627 013512 000207 RTS PC :RETURN
2628          :-----
2629 013514 000000 BYTCNT: 0 :BYTE COUNT
2630 013516 000000 BYTNUM: 0 :BYTE NUMBER
2631 013520 000000 DAERCT: 0 :DATA ERR COUNT
2632 013522 000000 DATASB: 0 :DATA SHOULD BE
2633 013524 000000 DATAWS: 0 :DATA WAS
2634          :-----
2635 013526 045 116 045 DMSG1B: .ASCIZ /%N% TRK#%D3%A. SEC#%D2%A./
2636 013561 045 116 045 DMSG1: .ASCIZ /%N% BYTE#%S2%AGOOD%S6%ABAD/
2637 013615 045 116 045 DMSG2: .ASCIZ /%N%S3%D3%S2%B8%S2%B8/
2638          .EVEN
2639          :-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 89
- MOD U.SFT.CDB - CLEAR DATA BUFFER

2642
2643
2644
2645 013642 012705 036622
2646 013646 012704 000200
2647 013652 005025
2648 013654 005304
2649 013656 005704
2650 013660 001374
2651 013662 000207
2652

```
.SBTTL - MOD U.SFT.CDB - CLEAR DATA BUFFER
:-----
CLRDAT: MOV #DATBUF,R5 ;GET BEGIN OF DATA BUFFER
          MOV #128.,R4 ;SET WORD LENGTH OF TABLE
BACDB: CLR (R5)+ ;CLEAR WORD IN DATA BUFFER TABLE
          DEC R4 ;DECREMENT WORD COUNT
          TST R4 ;DO UNTIL
UACDB: BNE BACDB ;ALL TABLE WORDS ZEROED
          RETURN ;RETURN
:-----
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 91
- MOD U.SFT.RCR - REGISTER CHECK & REPORT

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.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
:   DCUBLE 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
:   ENDF
:   SETUP ESR REG CK
:   IF ESR NOT=ESRCMP
:   : THEN-CALL CK BITS
:   ENDF
: ENDF
GET REGISTER ERR TABLE PTR
TERMINATE ERROR TABLE
ENDIF
NOP
```

ENDSUB

2689 013664 000240
2690 013666 005037 014670
2691 013672 005737 002454
2692 013676 001160
2693 013700 004737 014276
2694 013704 013701 002466
2695 013710 005721
2696 013712 100401
2697 013714 000775
2698 013716 013702 002470
2699 013722 006302
2700 013724 060201
2701 013726 011103
2702 013730 012337 014260
2703 013734 012337 014262
2704 013740 012337 014264
2705 013744 011337 014266
2706 013750 013701 002432
2707 013754 042701 172027
2708 013760 043701 014262
2709 013764 043737 014262 014270
2710 013772 053737 014270 014260
2711 014000 023701 014260

```
REGSCK: NOP
:
: CLEAR REG ERROR TABLE PTR
IARCR: CLR RGETPT
: IF FINI FLAG
: NOT SET, THEN
: CALL SETUP REGS CHECK
: GET TEST TABLE ADDRESS
: DO UNTIL TEST TABLE ENTRY
: EQUALS -1, ADVANCE TEST TABLE ADRS
UBRCR: TST (R1)+
: END DO 'B'
: GET TEST COMMAND CTR
: DOUBLE COMMAND CTR
EBRCR: MOV TCMDCT,R2
: CAL ADRS OF REG TABLE FOR THIS CMD
: GET ADRS FROM TEST TABLE
: SET RXCSR COMPARE WORD=TABLE CSR CMP
: SET RXCSR MASK WORD=TABLE CSR MSK
: SET RXESR COMPARE WORD=TABLE ESR CMP
: SET RXESR MASK WORD=TABLE ESR MSK
CSRCHK: MOV RXCSR,R1
: GET RXCS
: CLEAR OFF WRITE ONLY BIT-CK DRV SELECT BIT ****
: MASK OFF BITS DON'T CARE ABOUT
: MASK OFF CSRSET BITS DON'T CARE
: SET CSR COMMAND VARIABLE BITS
: IF RXCS CONTAINS
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 91-1
 - MOD U.SFT.RCR - REGISTER CHECK & REPORT

```

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 VARIABLE 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  XARCR: 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
-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 93
 - MOD U.SFT.SRC - SETUP REGISTER CHECK

```

2766          .SBTTL - MOD U.SFT.SRC - SETUP REGISTER CHECK
2767          :-----:
2768 014276 000240          SURGCK: NOP          ;
2769 014300 005037 014272          CLR          ESRSET          ;CLEAR ESR SET
2770 014304 032737 040000 002400 IGSRC: BIT          #RXINIT,CMD      ;IF CMD WAS RX INITIALIZE
2771 014312 001406          BEQ          EGSRC          ;THEN
2772 014314 042737 001000 002400 BIC          #SIDE1,CMD      ;CLEAR SIDE #1 SELECT BIT
2773 014322 042737 000400 002400 BIC          #DRIVE1,CMD      ;CLEAR DRIVE #1 SELECT BIT
2774 014330 013705 002400          EGSRC: MOV          CMD,R5          ;GET COMMAND
2775 014334 042705 177761          BIC          #177761,R5        ;CLEAR ALL BUT COMMAND
2776 014340 022705 000016          IASRC: CMP          #16,R5          ;IF COMMAND = READ ERROR CODE
2777 014344 001015          BNE          EASRC          ;THEN
2778 014346 032737 000200 002500 IFSRC: BIT          #RECTST,FLAGSP      ;IF FLAGSP NOT=REC TEST
2779 014354 001011          BNE          EASRC          ;THEN
2780 014356 013737 002424 002400 MOV          LCMO,CMD          ;SET COMMAND=LAST COMMAND
2781 014364 013737 002426 002432 MOV          LRXCSR,RXCSR      ;GET LAST RXCSR
2782 014372 013737 002430 002434 MOV          LRXESR,RXESR      ;GET LAST RXESR
2783 014400 013705 002400          EASRC: MOV          CMD,R5          ;GET COMMAND
2784 014404 010537 014270          MOV          R5,CSRSET        ;SETUP CRS SET
2785 014410 042737 176277 014270 IBSRC: BIC          #176277,CSRSET ;SAVE ONLY: SIDE,DENS,INTR ENA,(DRV SEL CK) BITS
2786 014416 032705 001000          BIT          #SIDE1,R5        ;IF SIDE #1 SELECTED
2787 014422 001403          BEQ          ICSRC          ;THEN
2788 014424 052737 001000 014272 BIS          #SIDE1,ESRSET      ;SETUP ESR SET -> SIDE1
2789 014432 032705 000020          ICSRC: BIT          #DRV1,R5        ;IF DRIVE #1 SELECTED
2790 014436 001403          BEQ          IDSRC          ;THEN
2791 014440 052737 000400 014272 BIS          #DRIVE1,ESRSET      ;SETUP ESRSET -> DRIVE1
2792 014446 032705 000400          IDSRC: BIT          #DENBIT,R5      ;IF DOUBLE DENSITY SELECTED
2793 014452 001403          BEQ          EDSRC          ;THEN
2794 014454 052737 000040 014272 BIS          #DRV DEN,ESRSET      ;SETUP ESR SET = DOUBLE DENSITY
2795 014462 042705 177761          EDSRC: BIC          #177761,R5        ;CLEAR ALL BUT COMMAND
2796 014466 005737 002402          IESRC: TST          DELDAT      ;IF DELETED DATA MODE
2797 014472 001411          BEQ          EESRC          ;AND
2798 014474 022705 000006          CMP          #RSCMD,R5        ;COMMAND=READ SECTOR
2799 014500 001403          BEQ          1$            ;OR
2800 014502 022705 000014          CMP          #WDDCMD,R5        ;COMMAND-WRITE DELETED DATA SECTOR
2801 014506 001003          BNE          EESRC          ;THEN
2802 014510 052737 000100 014272 1$: BIS          #DLDBIT,ESRSET      ;SETUP ESR SET ->DELETED DATA BIT
2803 014516 000240          EESRC: NOP          ;
2804 014520 000207          XSRC: RETURN          ;RETURN
2805          :-----:

```

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 - MOD U.SFT.BTK - BITS SET/NOT SET CHECK

```

2808          .SBTTL - MOD U.SFT.BTK - BITS SET/NOT SET CHECK
2809          :-----
2810
2811 014522 013702 014700      CKBITS: MOV      CMPWRD,R2      ;GET COMPARE WORD
2812 014526 013701 014702      MOV      BADWRD,R1     ;GET BAD WORD
2813 014532 040201             BIC      R2,R1         ;SET R1=BITS THAT SHOULDN'T BE SET
2814 014534 005102             COM      R2             ;COMPLIMENT COMPARE WORD
2815 014536 053702 014702      BIS      BADWRD,R2     ;SET BAD BITS
2816 014542 005102             COM      R2             ;SET R2=BITS THAT SHOULD BE SET
2817 014544 050201             BIS      R2,R1         ;SET R1=ALL BITS THAT SHOULD OR SHOULDN'T BE SET
2818 014546 005737 014676      TST      BITOFF        ;IF BIT OFFSET
2819 014552 001407             BEQ      2$            ;NOT=0, THEN
2820 014554 005337 014676      1$: DEC      BITOFF        ;
2821 014560 000241             CLC                      ;CLEAR CARRY
2822 014562 006001             ROR      R1             ;
2823 014564 005737 014676      TST      BITOFF        ;IF BIT OFFSET
2824 014570 001371             BNE      1$            ;EQUALS 0, THEN
2825 014572 005037 014672      2$: CLR      BITCNT        ;CLEAR BIT COUNTER
2826 014576 032701 000001      3$: BIT      #1,R1       ;IF LSB
2827 014602 001417             BEQ      4$            ;NOT=0, THEN
2828 014604 013702 014672      MOV      BITCNT,R2     ;GET BIT COUNTER
2829 014610 006302             ASL      R2             ;DOUBLE IT FOR ADDRESSING
2830 014612 063702 014704      ADD      RTBADR,R2     ;ADD REG TABLE ADR
2831 014616 011203             MOV      (R2),R3       ;GET ERR# THIS BIT ERROR FROM TABLE
2832 014620 005703             TST      R3            ;IF ERR #
2833 014622 001407             BEQ      4$            ;NOT=0, THEN
2834 014624 013704 014670      MOV      RGETPT,R4     ;SET UP REG ERR TABLE POINTER
2835 014630 006304             ASL      R4             ;DOUBLE IT FOR ADDRESSING
2836 014632 010364 014706      MOV      R3,RGERTB(R4) ;SET THIS ERR# IN TABLE OF REG ERRORS
2837 014636 005237 014670      INC      RGETPT        ;ADVANCE TABLE POINTER TO NEXT LOCATION
2838 014642 005237 014672      4$: INC      BITCNT        ;INCREMENT BIT COUNTER
2839 014646 000241             CLC                      ;CLEAR CARRY
2840 014650 006001             ROR      R1             ;SHIFT NEXT BIT FOR TEST
2841 014652 023737 014674 014672  CMP      BITLIM,BITCNT ;IF ALL BITS SPECIFIED
2842 014660 101346             BHI      3$            ;DONE, THEN
2843 014662 005037 014672      CLR      BITCNT        ;RESET BIT COUNT
2844 014666 000207      XCRBIT: RETURN        ;RETURN
2845          :-----
2846 014670 000000      RGETPT: 0              ;REG ERROR TABLE POINTER
2847 014672 000000      BITCNT: 0              ;BIT COUNTER
2848 014674 000000      BITLIM: 0              ;BIT REGISTER LIMIT
2849 014676 000000      BITOFF: 0              ;BIT REGISTER OFFSET
2850 014700 000000      CMPWRD: 0              ;COMPARE WORD
2851 014702 000000      BADWRD: 0              ;BAD WORD
2852 014704 000000      RTBADR: 0              ;REGISTER ERROR TABLE ADDRESS
2853          :-----

```


2856
2857
2858 014706 000000
2859 014710 177777
2860 014712 177777
2861 014714 177777
2862 014716 177777
2863 014720 177777
2864 014722 177777
2865 014724 177777
2866 014726 177777
2867 014730 177777
2868 014732 177777
2869 014734 177777
2870 014736 177777
2871 014740 177777
2872 014742 177777
2873 014744 177777
2874
2875
2876
2877
2878 014746 000004
2879 014750 000024
2880 014752 000062
2881 014754 004050
2882 014756 004030
2883 014760 004020
2884 014762 000032
2885 014764 000025
2886 014766 000027
2887 014770 000026
2888 014772 004051
2889 014774 004052
2890
2891
2892
2893
2894 014776 000033
2895 015000 000033
2896 015002 000033
2897 015004 000033
2898 015006 000033
2899 015010 000033
2900 015012 000033
2901 015014 000033
2902 015016 000033
2903 015020 000033
2904 015022 000033
2905 015024 000033
2906

REGISTER ERROR #'S - TABLE

```

:-----
RGERTB: .WORD 0
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
          .WORD -1
:-----

```

TABLE - ESR ERROR #'S

```

:-----
ESERTB: .WORD CRCERR          :BIT #00 - CRC ERR
          .WORD SDRDYE          :BIT #01 - SIDE 1 RDY
          .WORD NOITDP          :BIT #02 - INIT DONE
          .WORD ACLOW!NEGTST    :BIT #03 - AC LOW
          .WORD DENERR!NEGTST   :BIT #04 - DEN ERR
          .WORD DENDSK!NEGTST   :BIT #05 - DRV DEN-->NOT ERROR
          .WORD DLDTER          :BIT #06 - DEL DATA
          .WORD DVRDYE          :BIT #07 - DRV RDY
          .WORD DRVWRG          :BIT #08 - UNIT SEL
          .WORD SIDWRG          :BIT #09 - HEAD SEL
          .WORD WCOVFE!NEGTST   :BIT #10 - WC OVFL
          .WORD NXMERR!NEGTST   :BIT #11 - NXM
:-----

```

TABLE - CSR ERROR #'S

```

:-----
CSERTB: .WORD CSRERR          :BIT #04 - UNIT SEL     - R/W
          .WORD CSRERR          :BIT #05 - "DONE"     - R
          .WORD CSRERR          :BIT #06 - INTER ENB  - R/W
          .WORD CSRERR          :BIT #07 - "TR"       - R
          .WORD CSRERR          :BIT #08 - DENSITY    - R/W
          .WORD CSRERR          :BIT #09 - HEAD SEL   - R/W
          .WORD CSRERR          :BIT #10 -
          .WORD CSRERR          :BIT #11 - RX02       - R
          .WORD CSRERR          :BIT #12 -
          .WORD CSRERR          :BIT #13 -
          .WORD CSRERR          :BIT #14 -
          .WORD CSRERR          :BIT #15 - ERR BIT    - R
:-----

```

```

2909      .SBTTL -   PRESETUP REGISTER TABLES
2910      :-----:
2911
2912      TN=0
2913      REGTB  1,04040,0,0,-1      :RXCS ONLY
      015026  000000      TORT1: .WORD 04040      :RXCSR SHOULD BE
      015026  004040      .WORD 0      :RXCSR DONT CARE
      015030  000000      .WORD 0      :RXESR SHOULD BE
      015032  000000      .WORD -1      :RXESR DONT CARE
      015034  177777
2914      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
2915      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
2916      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
2917      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
2918      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
2919      :-----:
2920      CSONLY = TORT1      :RXCS ONLY
2921      CSESAL = TORT2      :RXCS & RXES ALL
2922      CEINIT = TORT3      :RXCS & RXES INITIALIZE CK
2923      CSESIT = TORT4      :RXCS & RXES INITIALIZE ALL
2924      CSESRS = TORT5      :RXCS & RXES READ STATUS CK
2925      CSESND = TORT6      :RXCS & RXES NO DISK OPERATION
2926      :-----:

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GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 101
 - MOD U.SET.GEN - GET ERROR CODE-ERR #

```

2929      .SBTTL - MOD U.SET.GEN - GET ERROR CODE-ERR #
2930      :-----
2931
2932 015106 005002      GTECEN: CLR      R2      ;CLEAR TEMP REG #2
2933 015110 105737 002442  IAGEN: TSTB     XERUUT   ;IF X ERR CODE UUT
2934 015114 001422      BEQ      XGTECN   ;NOT=0, THEN
2935 015116 122737 000260 002442  IBGEN: CMPB     #260,XERUUT ;IF ERR CODE UUT
2936 015124 101003      BHI      LBGEN    ;EXCEEDS 260, THEN
2937 015126 012702 000017      MOV     #ILLERC,R2 ;SET ERR CODE #
2938 015132 000407      BR      EBGEN    ;BR TO END 'B'
2939 015134 052737 100000 002476  LBGEN: BIS     #ERRFLG,FLAGST ;SET FLAGS-ERR FLAG
2940 015142 004737 017106      CALL   GTECOF    ;CALL GET ERROR CODE OFFSET
2941 015146 016102 015164      MOV     ECERNTR1,R2 ;GET ERROR CODE ERR # FROM TABLE
2942 015152 010237 002462      EBGEN: MOV     R2,RECERN ;READ ERR CODE ERR #
2943 015156 010237 020164      MOV     R2,ECERNB  ;PASS ERR CODE ERR # TO 'ERRCHK' MOD
2944 015162 000207      XGTECN: RETURN   ;RETURN
2945      :-----
2946
2947      :      ERROR CODE ERROR # TABLE
2948      :-----
2949
2950 015164 000000      ECERNTR: .WORD   ; 00->NO ERROR      -
2951 015166 000006      .WORD   SEKERR  ; 10->NO HOME DRVD  -SEEK
2952 015170 000006      .WORD   SEKERR  ; 20->NO HOME DRV1  -SEEK
2953 015172 000017      .WORD   ILLERC  ; 30-> --           -
2954 015174 004041      .WORD   TRKAER!NEGTST ; 40->ACC TK > 76  -TRACK ERR
2955 015176 000006      .WORD   SEKERR  ; 50->HOME BEFORE TRK -SEEK
2956 015200 000017      .WORD   ILLERC  ; 60-> --           -
2957 015202 004003      .WORD   RDERR!NEGTST ; 70->NO SEC-52 TRIES -READ
2958 015204 000017      .WORD   ILLERC  ; 100-> --          -
2959 015206 000003      .WORD   RDERR   ; 110->NO STEP CLOCK -READ
2960 015210 000003      .WORD   RDERR   ; 120->NO PREAMBLE  -READ
2961 015212 000003      .WORD   RDERR   ; 130->PREAMBLE-NO I.D. -READ
2962 015214 000017      .WORD   ILLERC  ; 140-> --           -
2963 015216 000006      .WORD   SEKERR  ; 150->GD TRK NOT=TRK -SEEK
2964 015220 000003      .WORD   RDERR   ; 160->TOO MY TRIES IDAM -READ
2965 015222 000003      .WORD   RDERR   ; 170->DATA AM NOT FND  -READ
2966 015224 000004      .WORD   CRCERR  ; 200->CRC           -CRC
2967 015226 000017      .WORD   ILLERC  ; 210-> --           -
2968 015230 000056      .WORD   HDSFDG  ; 220->SELF DIAG    -SELF DIAG
2969 015232 004051      .WORD   WCOVFE!NEGTST ; 230->WRD COUNT OVF  -WRD CTOV
2970 015234 004030      .WORD   DENERR!NEGTST ; 240->DENSITY ERR   -DEN ERR
2971 015236 004036      .WORD   SDKYWD!NEGTST ; 250->WRG KEYWD-S.D. -WRG KEY
2972      :-----

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GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 103
 - MOD U.PRT.STA - PRINT UNIT STATUS

```

2975      .SBTTL - MOD U.PRT.STA - PRINT UNIT STATUS
2976      ;-----
2977
2978 015240 012701 015446      PRTSTA: MOV      #IDENT1,R1      ;SETUP FORMAT MSG
2979 015244 013702 002512      MOV      UNTPRT,R2      ;SETUP UNIT PRT
2980 015250 013703 002432      MOV      RXCSR,R3      ;SETUP RXCSR
2981 015254 013704 002434      MOV      RXESR,R4      ;SETUP RXESR
2982 015260 013705 002400      MOV      CMD,R5      ;SETUP COMMAND
2983 015264 004737 002664      CALL     PRTB4S      ;CALL PRINT BASIC 4-PARM.
2984 015270 005737 002400      IBSTA:  TST      CMD      ;IF CMD
2985 015274 001417      BEQ      IASTA      ;NOT = 0, THEN
2986 015276 032737 040000 002400 ICSTA:  BIT      #BIT14,CMD      ;IF PROG INIT
2987 015304 001403      BEQ      LCSTA      ;THEN
2988 015306 012701 007452      MOV      #CMDM8,R1      ;SETUP PROG INIT MSG
2989 015312 000406      BR      ECSTA      ;BR TO END 'C'
2990 015314 013705 002400      LCSTA:  MOV      CMD,R5      ;GET COMMAND
2991 015320 042705 177761      BIC      #177761,R5      ;CLR ALL BUT CMD
2992 015324 016501 007164      MOV      CMDMSG(R5),R1      ;GET CMD MSG
2993 015330 004737 002550      ECSTA:  CALL     PRTBOS      ;CALL PRINT BASIC 0 - PAR
2994 015334 032737 000200 002476 IASTA:  BIT      #RECFLG,FLAGST ;IF ERR CODE FLAG
2995 015342 001435      BEQ      XPTSTA      ;SET, THEN
2996 015344 004737 015744      CALL     PRTECD      ;CALL PRINT ERROR CODE
2997 015350 004737 017124      CALL     CLRRGS      ;CALL CLEAR REGISTER
2998 015354 012701 015531      MOV      #XER2,R1      ;SETUP FORMAT MSG
2999 015360 113702 002443      MOVB     WC,F2      ;SETUP WORD COUNT
3000 015364 113703 002444      MOVB     CTK0,R3      ;SETUP CTK0
3001 015370 113704 002445      MOVB     CTK1,R4      ;SETUP CTK1
3002 015374 004737 003002      CALL     PRTX3S      ;CALL PRINT-EXT 3 PARAMETERS
3003 015400 012701 015627      MOV      #XER3,R1      ;SETUP FORMAT MSG
3004 015404 113702 002446      MOVB     TTRK,R2      ;SETUP TTRK
3005 015410 113703 002447      MOVB     TSEC,R3      ;SETUP TSEC
3006 015414 113704 002450      MOVB     SFTSTS,R4      ;SETUP SFTSTS
3007 015420 113705 002451      MOVB     BTRK,R5      ;SETUP BTRK
3008 015424 004737 003030      CALL     PRTX4S      ;CALL PR.NT-EXT 4 PAR
3009 015430 042737 000200 002476 XPTSTA: BIC      #RECFLG,FLAGST ;CLEAR ERROR CODE FLAG
3010 015436 005037 015444      CLR      ERRREG      ;CLEAR ERROR REGISTER
3011 015442 000207      RTS      PC      ;RETURN
3012      ;-----
3013 015444 000000      ERRREG: 0      ;
3014      ;-----
3015 015446      045      116      045 IDENT1: .ASCIZ /%N% UNIT#%01% RXCSR=%0% RXESR=%0% CMD=%0% ->/
3016 015531      045      116      045 XER2:  .ASCIZ /%N% WORD CNT=%03%N% CUR TRK DV0=%D2%. CUR TRK DV1=%D2%./
3017 015627      045      116      045 XER3:  .ASCIZ /%N% TARGET TRK =%D2%. TARGET SEC =%D2%. SOFT STAT=%03% BAD TRK=%D2%.%
3018      .EVEN
3019      ;-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 105
 - MOD U.PRT.EC - PRINT UNIT ERROR CODE

```

3022          .SBTTL - MOD U.PRT.EC - PRINT UNIT ERROR CODE
3023          ;-----
3024
3025 015744 012701 016014 PRTECD: MOV #XER1,R1 ;SETUP FORMAT MSG
3026 015750 113702 002442      MOVB XERUUT,R2 ;GET ERROR CODE
3027 015754 042702 177400      BIC #177400,R2 ;CLEAR TOP R2
3028 015760 004737 002734      CALL PRTX1S ;CALL PRINT EXTENDED-1 ARG
3029 015764 105737 002442      TSTB XERUUT ;IF ERROR
3030 015770 001410          BEQ ENDXER ;NOT=0, THEN
3031 015772 004737 017106      CALL GTECOF ;CALL GET ERROR CODE OFFSET
3032 015776 016101 016042      MOV ECTAB-2(R1),R1 ;SET ADR OF ERROR MSG FOR PRINT
3033 016002 004737 002714      CALL PRTX0S ;CALL PRINT EXTENDED-NO ARG
3034 016006 105037 002442      CLRB XERUUT ;CLEAR ERROR CODE
3035 016012 000207          ENDXER: RTS PC ;RETURN
3036          ;-----
3037 016014 045 116 045 XER1: .ASCIZ /%N%A ERR CODE=%03%A ->/
3038          .EVEN
3039          ;-----
3040
3041 016044 016136 ECTAB: .WORD EC1
3042 016046 016175      .WORD EC2
3043 016050 016116      .WORD EC0
3044 016052 016234      .WORD EC4
3045 016054 016274      .WORD EC5
3046 016056 016116      .WORD EC0
3047 016060 016337      .WORD EC7
3048 016062 016116      .WORD EC0
3049 016064 016407      .WORD EC11
3050 016066 016451      .WORD EC12
3051 016070 016477      .WORD EC13
3052 016072 016116      .WORD EC0
3053 016074 016567      .WORD EC15
3054 016076 016640      .WORD EC16
3055 016100 016670      .WORD EC17
3056 016102 016716      .WORD EC20
3057 016104 016116      .WORD EC0
3058 016106 016753      .WORD EC22
3059 016110 017013      .WORD EC23
3060 016112 017033      .WORD EC24
3061 016114 017052      .WORD EC25
3062          ;-----

```

```

3065 .SBTTL - UNIT ERROR CODE MESSAGES
3066 -----
3067 016116 045 101 040 EC0: .ASCIZ /%A ILL ERR CODE/
3068 016136 045 101 116 EC1: .ASCIZ /%ANO HOME ON INITIALIZE DRV 0./
3069 016175 045 101 116 EC2: .ASCIZ /%ANO HOME ON INITIALIZE DRV 1./
3070 .EC3: .ASCIZ /%A ILL ERR CDE./
3071 016234 045 101 124 EC4: .ASCIZ /%A TRIED TO ACCESS A TRACK > 76./
3072 016274 045 101 110 EC5: .ASCIZ /%A HOME FOUND BEFORE DESIRED TRACK./
3073 .EC6: .ASCIZ /%A ILL ERR CDE./
3074 016337 045 101 065 EC7: .ASCIZ /%A 52 HEADERS PASSED & SECTOR NOT FOUND./
3075 .EC10: .ASCIZ /%A ILL ERR CDE./
3076 016407 045 101 116 EC11: .ASCIZ /%ANO STEPCLK SEEN IN 40 MICROSEC./
3077 016451 045 101 120 EC12: .ASCIZ /%A PREAMBLE NOT FOUND./
3078 016477 045 101 120 EC13: .ASCIZ /%A PREAMBLE FOUND BUT NO ID MARK IN TIME./
3079 016550 045 101 111 EC14: .ASCIZ /%A ILL ERR CDE./
3080 016567 045 101 107 EC15: .ASCIZ /%A GOOD HEADER TRACK ADR NOT=SELECTED TRK/
3081 016640 045 101 111 EC16: .ASCIZ /%A IDAM->TOO MANY TRIES./
3082 016670 045 101 116 EC17: .ASCIZ /%ANO DATA AM IN TIME./
3083 016716 045 101 103 EC20: .ASCIZ /%A CRC ERR ON READING SECTOR./
3084 .EC21: .ASCIZ /%A ILL ERR CDE./
3085 016753 045 101 122 EC22: .ASCIZ /%A R-W ELECT. FAILED MAINT. TST./
3086 017013 045 101 127 EC23: .ASCIZ /%A WORD CNT OVF./
3087 017033 045 101 104 EC24: .ASCIZ /%A DENSITY ERR./
3088 017052 045 101 123 EC25: .ASCIZ /%A SET DENSITY WRG KEY WORD./
3089 -----
3090 .EVEN
3091 .SBTTL - MOD U.SFT.GEO - GET ERROR CODE OFFSET
3092 -----
3093
3094 017106 013701 002442 GTECOF: MOV XERUUT,R1 ;SAVE EXTENDED ERROR CODE IN TEMP #1
3095 017112 006201 ASR R1 ;FORMAT E.C.
3096 017114 006201 ASR R1 ;FORMAT E.C. FOR ADR
3097 017116 042701 177700 BIC #177700,R1 ;CLR TOP BYTE
3098 017122 000207 RETURN ;RETURN
3099 -----
3100
3101 .SBTTL - MOD U.SFT.CRS - CLEAR REGISTERS
3102 -----
3103
3104 017124 005001 CLR R1
3105 017126 005002 CLR R2
3106 017130 005003 CLR R3
3107 017132 005004 CLR R4
3108 017134 005005 CLR R5
3109 017136 000207 RETURN ;RETURN
3110 -----
    
```

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 - MOD U.SFT.DSC - DEVICE STATE CHECK

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.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
-----
DVSTCK: MOV     RXCS,R1           ;SET R1=RXCS ADDRESS
IADSC:  BIT     #ERRBIT,(R1)     ;IF RXCS REG=ERR BIT
        BEQ     EADSC           ;SET, THEN
IBDSC:  BIT     #DNBIT,(R1)+    ;IF RXCS REG=DONE BIT
        BEQ     EADSC           ;SET, THEN
ICDSC:  BIT     #ACLOW,(R1)     ;IF RXES REG=AC LOW BIT
        BEQ     EADSC           ;SET, THEN
3139:   MOV     #ACLOWF,ERRNBR   ;SET ERR NBR=AC LOW FATAL ERROR
3140:   CALL    ERROR           ;CALL ERROR
3141:   MOV     #STATER,R1      ;SET MSG->'NO PWR, CABLE BACK...ETC.'
3142:   CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
        DODU                    ;DROP UNIT
        DOCLN                    ;DO CLEAN
EADSC:  RETURN
-----
3147:   STATER: .ASCIZ /%N% ->NO PWR, CABLED BACKWARDS, STRAPPED RX01, PDP-8/
3148:   .EVEN
-----
    
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017140	013701	002350	
017144	032711	100000	
017150	001423		
017152	032721	000040	
017156	001420		
017160	032711	000010	
017164	001415		
017166	012737	000050	002520
017174	004737	003060	
017200	012701	017222	
017204	004737	002550	
017210			
017216			
017220	000207		
017222	045	116	045

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 110
- MOD U.SFT.DSC - DEVICE STATE CHECK

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017310 000240
017312 004737 010472
017316 032777 000200 163026
017324 001010
017326 052737 000040 002456
017334 012737 000025 002520
017342 004737 003060
017346 000207

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.SBTTL - MOD U.SFT.DRC - DEVICE READY CHECK
-----
: BGNSUB
:   CALL CLEAR DEVICE
:   IF RXES DRV RDY NOT SET [A]
:   : THEN-SET SYS ERR-DRV RDY ERR
:   :   SETUP ERR # DRV RDY ERR
:   :   CALL ERR
:   ENDIF
: ENDSUB
-----
DVRVCK: NOP
:
: CALL CLRDEV ;CALL CLEAR DEVICE
IADRC: BIT #DRVRDY,@RXDB ;IF RXDB-DRIVE RDY
: BNE EADRC ;NOT SET, THEN
: BIS #BITS,SYSERR ;SET SYS ERR=DRV RDY ERR
: MOV #DVRDYE,ERRNBR ;SET ERR NBR=DRV RDY ERROR
: CALL ERROR ;CALL ERROR
EADRC: RETURN ;BR TO EXIT
-----

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017350
017354
017362
017364
017370
017376
017402
017406
017410
017416
017420
017426
017430
017434
017442
017446
017452
017456
017460
017462
017464
017470
017472
017500
017504
017512
017514

004737
032737
001054
005037
012737
004737
005737
001042
032777
001404
012737
000402
005037
012737
004737
017701
042701
006301
006301
006301
020137
001411
012737
004737
000207

017310
000040
002374
000012
011062
002454
000040
000400
002414
000114
011062
162700
177737
002414
000020
003060

002456
002376
162734
002414
002374
002520

```

.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
: ENDF
: 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
: ENDF
ENDIF
ENDIF
ENDSUB
-----
DENCHX: CALL DVRYCK ;CALL DEVICE READY CK
IDDC: BIT #BIT5,SYSERR ;IF SYS ERR=DEVICE RDY ERR
: BNE EADDC ;NOT SET, THEN
: CLR TRACK ;SET TRACK=0
: MOV #10,SECTOR ;SET SECTOR=10
: CALL READ ;CALL READ SECTOR
IADDC: TST FIN ;IF FINI
: BNE EADDC ;NOT SET, THEN
IBDDC: BIT #DRV DEN,@RXDB ;IF DRIVE DEN-DOUBLE DEN BIT
: BEQ LBDDC ;SET, THEN
: MOV #DENBIT,DENSTA ;SET DENSITY STATUS=DOUBLE DEN
3211: BR EBDDC ;BR TO END 'B'
LBDDC: CLR DENSTA ;SET DENSITY STATUS=SINGLE DEN
EBDDC: MOV #76,TRACK ;SET TRACK=76.
: CALL READ ;CALL READ SECTOR
: MOV @RXDB,R1 ;GET RXES
: BIC #^CDRV DEN,R1 ;CLEAR ALL BUT DRIVE DENSITY
: ASL R1 ;ADV DRIVE DENSITY
: ASL R1 ;SO EQUAL TO
: ASL R1 ;DENSITY STATUS
ICDDC: CMP R1,DENSTA ;IF RXES DRIVE DENSITY & DENSITY STATUS
: BEQ EADDC ;NOT=, THEN
: MOV #DENDSK,ERRNBR ;SET ERR NBR=DISK DENSITY ERROR
: CALL ERROR ;CALL ERROR-MOD
: DODU UNIT ;DROP UNIT
: DOCLN ;DO CLEAN
EADDC: RETURN ;RETURN
-----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 114
 - MOD U.SFT.TKE - TRACK ERROR CHECK

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.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
: : : : 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
: ENDIF
: NOP
: ENDSUB
-----
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 116
 - MOD U.SFT.TKE - TRACK ERROR CHECK

```

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 017650 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

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 118
 - MOD U.SFT.ECK - ERROR CHECK

```

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 -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 120
 - MOD U.SFT.ECK - ERROR CHECK

```

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 -----
    
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GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 122
 - MOD U.SFT.ENC - ERROR NEG TEST CHECK

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020170 000240
 020172 032702 004000
 020176 001417
 020200 042702 004000
 020204 032737 004000 002476
 020212 001411
 020214 023702 002464
 020220 001002
 020222 005002
 020224 000404
 020226 022702 000020
 020232 001001
 020234 005002
 020236 000207

```

.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
:ENDSUB
-----
ERNTCK: NOP
IAENC:  BIT    #NEGTST,R2      ;IF TEMP REG=NEG TEST FLAG
      BEQ    XENTCK           ;SET, THEN
      BIC    #NEGTST,R2      ;CLEAR NEG TEST FLAG
IBENC:  BIT    #NEGTST,FLAGST ;IF FLAGS=NEG TEST BIT
      BEQ    XENTCK           ;SET, THEN
ICENC:  CMP    NGTSER,R2      ;IF NEG TEST ERR # & SET NEG TEST ERR
      BNE    IDENC           ;ARE EQUAL, THEN
      CLR    R2              ;OK, CLEAR THE ERROR !!
      BR     XENTCK          ;BR TO IF 'I'
IDENC:  CMP    #DENDSK,R2     ;IF DISK DEN
      BNE    XENTCK          ;ERROR, THEN
      CLR    R2              ;CLEAR-NOT ERROR<-----
XENTCK: RETURN                ;RETURN
-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 124
 - MOD U.SFT.DBG - TEST STATUS

```

3423      .SBTTL - MOD U.SFT.DBG - TEST STATUS
3424      ;-----
3425
3426 020240 013702 002476      TSTDBG: MOV     FLAGST,R2
3427 020244 013703 002500      MOV     FLAGSP,R3
3428 020250 013704 002522      MOV     ERRMSG,R4
3429 020254 012701 020306      MOV     #TSDGMS,R1
3430 020260 004737 002636      CALL    PRTB3S
3431 020264 012701 020364      MOV     #TSDGM1,R1
3432 020270 013702 020166      MOV     RGERNB,R2
3433 020274 013703 020164      MOV     ECERNB,R3
3434 020300 004737 002612      CALL    PRTB2S
3435 020304 000207      RETURN
3436      ;RETURN
3437 020306      045      116      045      TSDGMS: .ASCIZ  /%N%>FLAGST=%0% FLAGSP=%0% ERRMSG ADR=%0%N/
3438 020364      045      101      040      TSDGM1: .ASCIZ  /%A REG ERR #0% ERR CODE ERR #0%N/
3439      .EVEN
3440      ;-----
3441
3442      .SBTTL - MOD U.SFT.CDC - COMPLIMENT DENSITY CONTROL
3443      ;-----
3444
3445 020430 000240
3446 020432 005737 002412      CDENC: NOP
3447 020436 001406      IACDC: TST     DENSTY      ;IF CONTROL DENSITY
3448 020440 042737 000002 002476      BEQ     LACDC      ;EQUALS DOUBLE, THEN
3449 020446 005037 002412      BIC     #DDCFLG,FLAGST ;CLEAR DOUBLE DENSITY CONTROL FLAG
3450 020452 000406      CLR     DENSTY      ;SET CONTROL DENSITY=SINGLE
3451 020454 012737 000400 002412      BR      XCDENC      ;BR TO 'X'
3452 020462 052737 000002 002476      LACDC: MOV     #DENBIT,DENSTY ;SET CONTROL DENSITY=DOUBLE
3453 020470 000207      BIS     #DDCFLG,FLAGST ;SET DOUBLE DENSITY CONTROL FLAG
3454      XCDENC: RETURN
3455      ;RETURN
3456      ;-----
3457
3458      .SBTTL - MOD U.SFT.SDC - SETUP DENSITY CONTROL
3459      ;-----
3459 020472 013737 002414 002412      SDENC: MOV     DENSTA,DENSTY ;SET DENSTY CONTROL=DENSITY STATUS
3460 020500 005737 002414      IASDC: TST     DENSTA      ;IF DENSITY STATUS SET TO
3461 020504 001407      BEQ     LASDC      ;DOUBLE DENSITY, THEN
3462 020506 052737 000002 002476      BIS     #DDCFLG,FLAGST ;SET DOUBLE DENSITY CONTROL FLAG
3463 020514 012737 000200 002370      MOV     #128.,WDCNT ;SET WORD COUNT=128
3464 020522 000406      BR      XSDC      ;BR TO EXIT
3465 020524 042737 000002 002476      LASDC: BIC     #DDCFLG,FLAGST ;CLEAR DOUBLE DENSITY CONTROL FLAG
3466 020532 012737 000100 002370      MOV     #64.,WDCNT ;SET WORD COUNT=64
3467 020540 000207      XSDC:  RETURN
3468      ;RETURN
3468      ;-----
    
```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 126
 - MOD U.PRT.UNT - PRINT UNIT IDENT

```

3471 .SBTTL - MOD U.PRT.UNT - PRINT UNIT IDENT
3472 -----
3473 :BGNSUB
3474 :   GET UNIT #
3475 :   GET UNIT MSG
3476 :   CALL PRINT-1 ARG
3477 :ENDSUB
3478 -----
3479
3480 020542 013702 002512          MOV   UNTPRT,R2      ;GET UNIT #
3481 020546 012701 020560          MOV   #PTUTMS,R1    ;GET UNIT MSG
3482 020552 004737 002570          CALL  PRTB1S        ;CALL PRINT BASIC-1 ARG
3483 020556 000207                   RETURN              ;RETURN
3484 -----
3485 020560      045      116      045 PTUTMS: .ASCIZ  /%N% UNIT #%D2/
3486 :   .EVEN
3487 -----
3488
3489 .SBTTL - MOD U.PRT.DID - PRINT DRIVE IDENT
3490 -----
3491 :BGNSUB
3492 :   GET DRIVE #
3493 :   GET SIDE #
3494 :   IF DOUBLE SIDED DEVICE
3495 :   :   THEN-SETUP PRINT IDENT DOUBLE SIDED DEVICE
3496 :   :   :   CALL PRINT BASIC-2 PAR.
3497 :   :   ELSE-SETUP PRINT IDENT SINGLE SIDED DEVICE
3498 :   :   :   CALL PRINT BASIC-1 PAR.
3499 :   ENDIF
3500 :ENDSUB
3501 -----
3502
3503 020600 013702 002514          PRTDID: MOV   DRVPR2,R2      ;SETUP R2=DRV #
3504 020604 012701 020657          MOV   #IDSSMS,R1     ;SETUP PRINT IDENT SINGLE SIDED DEVICE
3505 020610 004737 002570          CALL  PRTB1S        ;CALL PRINT BASIC-1 PAR.
3506 020614 032737 010000 002332 IADID: BIT   #SIDFLG,SWREG ;IF DOUBLE SIDED DEVICE
3507 020622 001406                   BEQ   XPTDID         ;FLAG SET, THEN
3508 020624 013702 002515          MOV   SIDPR2,R2      ;SETUP R3=SID #
3509 020630 012701 020642          MOV   #IDDSMS,R1     ;SETUP PRINT IDENT DOUBLE SIDED DEVICE
3510 020634 004737 002570          CALL  PRTB1S        ;CALL PRINT BASIC-2 PAR.
3511 020640 000207                   XPTDID: RETURN      ;RETURN
3512 -----
3513 020642      045      101      040 IDDSMS: .ASCIZ  /%A SIDE #%01/
3514 020657      045      116      045 IDSSMS: .ASCIZ  /%N% DRIVE #%01/
3515 :   .EVEN
3516 -----

```


GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 128
 - MOD U.TST.FTS - FUNCTION TEST SETUP

```

3519 .SBTTL - MOD U.TST.FTS - FUNCTION TEST SETUP
3520 -----
3521 : BGNSUB
3522 :     SET FUNCTION TEST BIT-FLAGS
3523 :     SETUP TEST IDENT MSG IN 'ERRMSG'
3524 :     SET FLAGS REGISTER CHECK
3525 :     NOP
3526 : ENDSUB
3527 -----
3528 020700 000240 FTSTUP: NOP ;
3529 020702 004737 021122 CALL CLRCR ;CALL CLEAR CTRS & REGS
3530 020706 012737 000040 002476 MOV #FUNTST,FLAGST ;SET FUNCTION TEST BIT-FLAGS
3531 020714 017737 161546 002522 MOV @TSTID,ERRMSG ;SETUP TEST IDENT MSG
3532 020722 052737 000001 002476 BIS #REGCK,FLAGST ;SET FLAGS-REGISTER CHECK
3533 020730 004737 021014 CALL SUDVCD ;CALL SETUP DEVICE COMMANDS
3534 020734 000207 RETURN ;RETURN
3535 -----
3536 .SBTTL - MOD U.TST.LTS - LOGIC TEST SETUP
3537 -----
3538 : BGNSUB
3539 :     CLEAR FUNCTION TEST BIT-FLAGS
3540 :     SETUP TEST IDENT MSG IN 'ERRMSG'
3541 :     GET TEST TABLE ADDRESS
3542 :     INCREMENT TO NEXT ADDRESS
3543 :     SET ANY FLAGS FROM THAT ADDRESS
3544 :     SET FLAGS REGISTER CHECK
3545 :     NOP
3546 : ENDSUB
3547 -----
3548 : LTSTUP: NOP ;
3549 020736 000240 CALL CLRCR ;CALL CLEAR CTRS & REGS
3550 020740 004737 021122 BIC #FUNTST,FLAGST ;CLEAR FUNCTION TEST BIT-FLAGS
3551 020744 042737 000040 002476 MOV @TSTID,ERRMSG ;SETUP TEST IDENT MSG
3552 020752 017737 161510 002522 CALL SUTSFG ;CALL SETUP TEST FLAGS
3553 020760 004737 020772 CALL SUDVCD ;CALL SETUP DEVICE COMMANDS
3554 020764 004737 021014 RETURN ;RETURN
3555 020770 000207
3556 -----
3557 .SBTTL - MOD U.TST.SFG - SETUP TEST FLAGS
3558 -----
3559 : SUTSFG: NOP ;
3560 020772 000240 MOV TSTID,R1 ;GET TEST TABLE ADDRESS
3561 020774 013701 002466 TST (R1)+ ;INC TEST TABLE ADDRESS
3562 021000 005721 MOV (R1)+,FLAGST ;SET TEST FLAGS FROM TABLE
3563 021002 012137 002476 MOVB (R1),FLAGSP ;SET PRINT FLAGS FROM TABLE
3564 021006 111137 002500 RETURN ;RETURN
3565 021012 000207
3566 -----

```

GLOBAL AREAS MACRO M1200 14-DEC-82 16:33 PAGE 130
 - MOD U.SFT.SDC - SETUP DEVICE COMMANDS

```

3569          .SBTTL - MOD U.SFT.SDC - SETUP DEVICE COMMANDS
3570          ;-----
3571
3572 021014 012737 036622 002360 SUDVCD: MOV    #DATBUF,EMPADR ;SETUP EMPTY BUFFER ADDRESS
3573 021022 012737 000111 002372      MOV    #'I,VARIFY      ;SETUP SET DENSITY KEYWORD='I'
3574 021030 012737 036222 002362      MOV    #DATPAT,FILADR ;SETUP FILL BUFFER ADDRESS
3575 021036 032737 000002 002476 1$:  BIT    #DDCFLG,FLAGST ;IF DOUBLE DENSITY FLAGS
3576 021044 001407                BEQ    2$              ;SET, THEN
3577 021046 012737 000400 002412      MOV    #DENBIT,DENSTY ;SET DEVICE DENSITY=DOUBLE
3578 021054 012737 000200 002370      MOV    #128.,WDCNT    ;SET WORD COUNT=DOUBLE DEN SIZE
3579 021062 000405                BR     3$              ;BR
3580 021064 005037 002412      2$:  CLR    DENSTY      ;SET DEVICE DENSITY=SINGLE
3581 021070 012737 000100 002370      MOV    #64.,WDCNT    ;SET WORD COUNT=SINGLE DEN SIZE
3582 021076 012737 002442 002364 3$:  MOV    #XERUUT,RECADR ;SET READ ERROR CODE ADR=NORMAL ADR
3583 021104 012737 000001 002374      MOV    #1,TRACK      ;SETUP TRACK=1
3584 021112 012737 000001 002376      MOV    #1,SECTOR     ;SETUP SECTOR=1
3585 021120 000207                RETURN                ;RETURN
3586          ;-----
3587
3588          .SBTTL - MOD U.TST.CCR - CLEAR TEST CTRS & ERROR REGS
3589          ;-----
3590          :  BGNSUB
3591          :  CLEAR ANY ERRORS FROM PREVIOUS TESTS
3592          :  ENDSUB
3593          ;-----
3594
3595 021122 005037 002400      CLRCR: CLR    CMD          ;CLEAR COMMAND WORD
3596 021126 005037 002454      CLR    FIN            ;CLEAR COMMAND FINI FLAG
3597 021132 005037 002460      CLR    TYPERR        ;CLEAR TYPE ERROR
3598 021136 005037 002470      CLR    TCMDCY        ;CLEAR TEST COMMAND CTR
3599 021142 005037 002442      CLR    XERUUT        ;CLEAR READ ERR CODE WORD
3600 021146 005037 002510      CLR    TKSCFG        ;CLEAR TRK & SEC FLAGS
3601 021152 005037 002402      CLR    DELDAT        ;CLEAR DELETED DATA MODE
3602 021156 005037 002504      CLR    TTEMP1        ;CLEAR TEST TEMP #1
3603 021162 000240                NOP
3604 021164 000240                NOP
3605 021166 000240                NOP
3606 021170 000240                NOP
3607 021172 000207      RETURN                ;RETURN
3608          ;-----
3609
3610          .SBTTL - MOD U.TST.T76 - SET TRACK=76
3611          ;-----
3612
3613 021174 012737 000114 002374 STTK76: MOV    #76.,TRACK ;SET TRACK=76.
3614 021202 012737 000012 002376      MOV    #10.,SECTOR  ;SET SECTOR=10.
3615 021210 000207      RETURN                ;RETURN
3616          ;-----
3617
3618 021212      ENDMOD
3619

```

MISCELLANEOUS SECTIONS MACRO M1200 14-DEC-82 16:33 PAGE 131
- MOD U.TST.T76 - SET TRACK=76

3632
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3661
3662 021212
3663
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3669 021212
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3676 021212
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3688

.TITLE MISCELLANEOUS SECTIONS
.SBTTL REPORT CODING SECTION

BGNMOL

::++
: THE REPORT CODING SECTION CONTAINS THE
: 'PRINTS' CALLS THAT GENERATE STATISTICAL REPORTS.
:--

BGNRPT

ENDRPT

.EVEN

MISCELLANEOUS SECTIONS MACRO M1200 14-DEC-82 16:33 PAGE 132
INITIALIZE SECTION

```

3690          .SBTTL  INITIALIZE SECTION
3691
3692          :++
3693          : THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
3694          : AT THE BEGINNING OF EACH PASS.
3695          :--
3696
3697 021214          BGNINIT
3698
3699 021214 000240  INIT:  NOP
3704 021216          RFLAGS  FLGDRS
3706 021224          READEF  #EF.CONTINUE      ;IF CONTINUE
3707 021232          BCOMPLETE XINIT          ;NOT SET, THEN
3708 021234          READEF  #EF.PWR          ;IF POWER FAIL
3709 021242          BCOMPLETE XINIT          ;NOT SET, THEN
3710 021244 042737 140000 002500  START:  BIC  #RESFLG!STAFLG,FLAGSP ;CLEAR RESTART & START FLAGS
3711 021252          READEF  #EF.START          ;IF START FLAG
3712 021260          BNCOMPLETE RESTAR        ;SET, THEN
3713 021262          STARTO: READBUS           ;IF BUS IS 'LSI-BUS'
3714 021264          BNCOMPLETE UN1           ;THEN
3715 021266 052737 000400 002500  BIS  #LSIFLG,FLAGSP      ;SET LSI FLAG-PROGRAM FLAGS
3716 021274 022737 004177 002120  CMP  #4177,LSHMEM      ;IF HI MEMORY (417776=HI LIMIT 124K)
3717 021302 101007          BHI  START1          ;IS 124K OR HIGHER, THEN
3718 021304 052737 010000 002500  BIS  #FONZFG,FLAGSP      ;SET LSI 11/23 FLAG
3719 021312 000403          BR  START1          ;BR TO 'START1'
3720 021314 042737 000400 002500  UN1:  BIC  #LSIFLG,FLAGSP      ;CLEAR LSI FLAG-PROGRAM FLAGS
3721 021322 052737 100000 002500  START1: BIS  #STAFLG,FLAGSP      ;SET START FLAG
3722 021330 000414          BR  SETUP          ;BR TO 'SET UP'
3723 021332          RESTAR: READEF  #EF.RESTART ;IF RESTART FLAG
3724 021340          BNCOMPLETE NEW           ;SET, THEN
3725 021342 052737 040000 002500  BIS  #RESFLG,FLAGSP      ;SET RESTART FLAG
3726 021350 000404          BR  SETUP          ;BR TO 'SETUP'
3727 021352          NEW:  READEF  #EF.NEW          ;IF NEW PASS FLAG
3728 021360          BNCOMPLETE NEXT          ;THEN
3729 021362 012737 177777 021526  SETUP:  MOV  #-1,UNIT      ;SETUP TO START GETING UNITS OVER
3730 021370 062737 000001 021526  NEXT:  ADD  #1,UNIT      ;BUMP UNIT TO NEXT UNIT
3731 021376 023737 002012 021526  CMP  L$UNIT,UNIT      ;IF 'DRS' UNIT CNT & DIAG UNIT
3732 021404 001426          BEQ  INITER          ;NOT EXCEEDED, THEN
3733 021406          GPHARD  UNIT,PLOC          ;GET NEXT UNIT
3734 021420          BNCOMPLETE NEXT          ;IF FOUND A UNIT,THEN
3735 021422 004737 021742          CALL  INTTBL          ;CALL INITIALIZE TABLES
3736 021426 004737 021572          CALL  UNPKHP          ;UNPACK HARDWARE P-TABLES
3737 021432          SETVEC  VECT,#INTRHD,#PRIO6
3738 021460 000414          BR  XINIT
3739 021462          INITER: PRINTF  #INTER1          ;PRINT 'TOO MANY UNITS'
3740 021502 012737 000001 002452  MOV  #1,ABORT          ;SET ABORT FLAG
3741 021510          DOCLN
3742 021512 000240          XINIT:  NOP
3749 021514 013737 021526 002512  MOV  UNIT,UNTPRT      ;SET USER # = LOGICAL UNIT #
3760 021522          ENDINIT
3761
3762 021524 000000  PLOC:  .WORD  0          ;P-TABLE LOCATION
3763 021526 177777  UNIT:  .WORD  -1          ;LOGICAL UNIT# UNDER TEST
3764
3765 021530 045 116 045  INTER1: .ASCIZ  /%N%START OVER -> TOO MANY UNITS/
3766          .EVEN
3767

```

```

3779          .SBTTL - MOD I.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 DRVO
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      MOV #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      MOV #1,SIDPRT    ;SET PRINT SID #=1
3803 021720 011102          EB11: MOV (R1),R2        ;GET DEVICE PRIORITY
3804 021722 116237 021732 002356      MOV PRITAB(R2),RXPRI ;SETUP PROPER DEVICE PRIORITY
3805 021730 000207          RETURN          ;RETURN
3806          ;-----
3807 021732          000 PRITAB: .BYTE PRI00        ;PRIORITY 0
3808 021733          040      .BYTE PRI01        ;PRIORITY 1
3809 021734          100      .BYTE PRI02        ;PRIORITY 2
3810 021735          140      .BYTE PRI03        ;PRIORITY 3
3811 021736          200      .BYTE PRI04        ;PRIORITY 4
3812 021737          240      .BYTE PRI05        ;PRIORITY 5
3813 021740          300      .BYTE PRI06        ;PRIORITY 6
3814 021741          340      .BYTE PRI07        ;PRIORITY 7
3815          ;-----
3816          .SBTTL - MOD I.2 - INITIALIZE TABLES
3817          ;-----
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          ;-----

```

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021764
 021764
 021772
 021774
 021776
 021776 010002
 022000 012701 022012
 022004 004737 002570
 022010
 022012 045 116
 022054
 022054 004737 022066
 022060
 022062
 022062 000240
 022064
 022066

.SBTTL CLEANUP CODING SECTION

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

```

BGNCLN
CLRVEC VECT ;CLEAR VECTOR
BRESET ;BUS RESET
ENDCLN
.EVEN
    
```

.SBTTL DROP UNIT SECTION

++
 : THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE TO NO
 : LONGER BE TESTED.

```

BGNDU
MOV R0,R2 ;GET LOGICAL UNIT #
MOV #DUMSG1,R1 ;SET DROP MSG
CALL PRTB1S ;CALL PRINTB 1 ARG
ENDDU
    
```

045 DUMSG1: .ASCIZ /%N% DROP UNIT#%D1% FROM TEST%N/

```

.EVEN
    
```

.SBTTL AUTO DROP UNIT SECTION

```

BGNAUTO
CALL ADRTST ;CALL ADDRESSING TST
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.

```

BGNAU
NOP
ENDAU
    
```

```

.EVEN
ENDMOD
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 135
 ADD UNIT SECTION

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 3947
 3983 022066
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 3991
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 3993
 3994
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 3997
 3998
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 4000
 4001
 4002
 4003
 4004
 4005
 4006
 4007
 4008 022066 000240
 4009 022070 005037 002452
 4010 022074
 4011 022122 017701 160222
 4012 022126
 4013 022134 005737 002452
 4014 022140 001413
 4015 022142 012701 022212
 4016 022146 013702 002350
 4017 022152
 4018 022162
 4019 022170 000207
 4020
 4021 022172 101 104 104
 4022 022212 045 101 040
 4023 022246 045 101 040
 4024
 4025
 4026

```

.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
-----
ADRTST: NOP
: CLR ABORT ;CLEAR ABORT FLAG
: SETVEC #BTRP4,#TRAP,#PRIO6
: MOV @RXCS,R1 ;READ RXCSR
: CLRVEC #BTRP4
: TST ABORT ;IF ABORT FLAG
: BEQ 1$ ;SET, THEN
: MOV #TRPMS1,R1 ;SET TRAP MESSAGE
: MOV RXCS,R2 ;SET TRAP ADDRESS
: ERRSF 60,TOMSG,PRTB1
: DODU UNIT
1$: RETURN ;RETURN
-----
TOMSG: .ASCIZ /ADDRESSING TEST/
TRPMS1: .ASCII /%A BUS TRAP AT ADDRESS:%06ZN/
: .ASCIZ /%A INTERFACE BAD OR NOT SET TO ABOVE ADDRESS/
: .EVEN
-----

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 136
 - MOD U.SFT.TRP - BUS TRAP HANDLER

```

4028 .SBTTL - MOD U.SFT.TRP - BUS TRAP HANDLER
4029 :++
4030 : FUNCTIONAL DESCRIPTION: SUBR TO HANDLE DEVICE BUS TRAP
4031 : INPUTS: NONE
4032 : IMPLICIT INPUTS: BUS TRAP
4033 : OUTPUTS: ABORT FLAG
4034 : IMPLICIT OUTPUTS: NONE
4035 : SUBORDINATE ROUTINES USED: NONE
4036 : FUNCTIONAL SIDE EFFECTS: NONE
4037 : CALLING SEQUENCE: INTERRUPT
4038 :--
4039

```

```

4040 -----
4041 :
4042 022324 005237 002452 TRAP: INC ABORT ;SET ABORT FLAG
4043 022330 000002 RTI ;RETURN FROM TRAP INTERRUPT
4044 -----

```

```

4045 :
4046 : TEST SETUP DEFINITIONS
4047 :
4048 :
4049 000000 FRUS1=0
4050 000000 TN=0
4051 000001 FUNCT=1

```


HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 137
 TEST 1 - INITIALIZE - FNC TST

4053 .SBITL 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 : ENDF
 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 #FUNCTI,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

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 139
TEST 2 - READ ERROR CODE - FNC TST

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

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

BGNTST
: IF FUNCTION TEST
: THEN-SETUP TEST IDENT
: CALL FUNCTION TEST SETUP
: PROGRAM INITIALIZE RX
: CALL ERROR CHECK
: SETUP ERROR CODE ADDRESS
: CALL READ ERROR CODE
: CALL ERROR CHECK
: ENDIF
: ENDTST

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

4116 022604 015026 REGS1=CSONLY
022604 022460 TTBL
022606 177777 T2TBL: .WORD T2MSG
022610 T2RTB: .WORD -1
022610 015026 .WORD REGS1
022612 177777 .WORD -1
4117 022614 ENDTST

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 141
TEST 3 - FILL BUFFER - FNC TST

4120 .SBTTL TEST 3 - FILL BUFFER - FNC TST
022616 000414 BR BGNT3 ;BR TO BGM TST
022620 040 040 106 T3MSG: .ASCIZ / FILL BUFFER - FNC TST/
.EVEN

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

: BGNTST
: IF FUNCTION TEST
: THEN-SETUP TEST IDENT
: SETUP DENSITY CONTROL
: CALL SETUP DEVICE COMMANDS
: CALL FILL BUFFER
: NOP
: ENDIF
: ENDTST

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

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

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 TEST 4 - EMPTY BUFFER - FNC TST

```

4147      022732 000415      .SBTTL TEST 4 - EMPTY BUFFER - FNC TST
          022734 040      BR BGNT4 ;BR TO BGN TST
          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      :-----
    
```

```

4164 022766      TSETUP
          022766 012737 023036 002466 BGNT4: MOV #T4TBL,TSTID ;SETUP TEST ID TBL-TEST# 4
          022774 032737 000002 002324 IAT4: BIT #FUNCTI,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,FL.GST ;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
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 145
TEST 5 - READ STATUS - FNC TST

4175 .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

4176
4177 : **
4178 : TEST TO VERIFY THAT A DEVICE MAINTENANCE READ STATUS (RXES) COMMAND
4179 : WILL EXECUTE WITHOUT ERROR.

4180 -----
4181 : BGNTST
4182 : IF FUNCTION TEST
4183 : THEN-SETUP TEST IDENT
4184 : SETUP DENSITY CONTROL=SINGLE
4185 : CALL SETUP DEVICE COMMANDS
4186 : CALL READ MAINT STATUS
4187 : CALL ERROR CHECK
4188 : NOP
4189 : ENDIF
4190 : ENDTST
4191 -----
4192

4193 023102 TSETUP
023102 012737 023154 002466 BGNT5: MOV #T5TBL,TSTID ;SETUP TEST ID TBL-TEST# 5
023110 032737 000002 002324 IAT5: BIT #FUNCTI,T5TMOD ;IF TEST MODE=FUNCTION TEST
023116 001414 BEQ XT5 ;BIT SET, THEN
023120 004737 020700 CALL FTSTUP ;CALL FUNCTION TEST SETUP
4194 023124 042737 000002 002476 BIC #DDCFLG,FLAGST ;CLEAR DOUBLE DENSITY CONTROL FLAG
4195 023132 000240 NOP ;
4196 023134 004737 021014 CALL SUDVCD ;CALL SETUP DEVICE COMMANDS
4197 023140 004737 011266 CALL RDSTAT ;CALL READ MAINT STATUS
4198 023144 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
4199 023150 XT5: EXIT TST
4200 023154 REGTBL CSONLY
REGS1=CSONLY
4201 023154 TTBL
023154 023052 T5TBL: .WORD T5MSG
023156 177777 .WORD -1
023160 T5RTB:
023160 015026 .WORD REGS1
023162 177777 .WORD -1
4202 023164 ENDTST

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TEST 6 - FILL & EMPTY BUFFER - FNC TST

4205 .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

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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

023230 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
4229 023252 052737 000002 002476 BIS #DDCFLG,FLAGST ;SET DOUBLE DENSITY CONTROL FLAG
4230 023260 004737 021014 CALL SUDVCD ;CALL SETUP DEVICE COMMANDS
4231 023264 005037 012660 CLR PAT ;SET DATA PATTERN=RANDOM
4232 023270 004737 012306 CALL STDATP ;CALL SET DATA PATTERN
4233 023274 004737 010510 CALL FILBUF ;CALL FILL BUFFER
4234 023300 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
4235 023304 004737 010626 CALL EMPBUF ;CALL EMPTY BUFFER
4236 023310 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
4237 023314 052737 000020 002476 BIS #EMBUFF,FLAGST ;SET EMPTY BUFFER FLAG
4238 023322 004737 013246 CALL DATAK ;CALL DATA CHECK
4239 023326 042737 000020 002476 BIC #EMBUFF,FLAGST ;CLEAR EMPTY BUFFER FLAG
4240 023334 XT6: EXIT TST
4241 023340 REGTBL CSONLY
REGS1=CSONLY
4242 023340 TTBL
023340 023170 T6TBL: .WORD T6MSG
023342 177777 .WORD -1
023344 T6RTB:
023344 015026 .WORD REGS1
023346 177777 .WORD -1
4243 023350 ENDTST

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 TEST 7 - READ & WRITE SECTOR - FNC TST

4246 .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

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:++
: 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
: BGND0
: : 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
-----

```

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 TEST 7 - READ & WRITE SECTOR - FNC TST

```

4280 023414          TSETUP
      023414 012737 023602 002466 BGNT7: MOV #T7TBL,TSTID ;SETUP TEST ID TBL-TEST# 7
      023422 032737 000002 002324 IAT7. BIT #FUNCTI,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,NGTSE ;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 CHFK
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
                                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
    
```


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TEST 8 - WRITE SECTOR DELETED DATA - FNC TST

4310 .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

4311
4312
4313 :+
4314 : TEST TO VERIFY THAT THE DEVICE WILL WRITE A DELETED DATA MARK ON THE
4315 : DISKETTE WITHOUT ERROR.

4316 : BGNTST
4317 : IF FUNCTION TEST
4318 : THEN-SETUP TEST IDENT
4319 : SET TRACK=76, SECTOR=10
4320 : CALL DENSITY CHECK
4321 : SET DELETED DATA FLAG
4322 : SET DENSITY CONTROL WORD=DISK DENSITY
4323 : CALL WRITE SECTOR
4324 : CALL ERROR CK
4325 : CALL READ SECTOR SECTOR
4326 : CALL ERROR CK
4327 : CLEAR DELETED DATA FLAG
4328 : CALL WRITE SECTOR
4329 : CALL ERROR CK
4330 : ENDF
4331 : ENDTST

4332
4333 023664 TSETUP
023664 012737 023772 002466 BGNT8: MOV #T8TBL,TSTID ;SETUP TEST ID TBL-TEST# 8
023672 032737 000002 002324 IAT8: BIT #FUNCTI,TSTMOD ;IF TEST MODE=FUNCTION TEST
023700 001432 BEQ XT8 ;BIT SET, THEN
023702 004737 020700 CALL FTSTUP ;CALL FUNCTION TEST SETUP
4334 023706 004737 021174 CALL STTK76 ;CALL SET TRACK=76.
4335 023712 004737 017350 CALL DENCHK ;CALL DENSITY CHECK
4336 023716 004737 020472 CALL SDENC ;CALL SET DENSITY CONTROL=DENSITY STATUS
4337 023722 012737 000010 002402 MOV #DLDCMD,DELDT ;SETUP DELETED DATA COMMAND MODE
4338 023730 004737 010744 CALL WRITE ;CALL WRITE SECTOR
4339 023734 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
4340 023740 004737 011062 CALL READ ;CALL READ SECTOR
4341 023744 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
4342 023750 005037 002402 CLR DELDAT ;CLEAR DELETED DATA COMMAND MODE
4343 023754 004737 010744 CALL WRITE ;CALL WRITE SECTOR
4344 023760 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
4345 023764 000240 NOP ;
4346 023766 XT8: EXIT TST
4347 023772 REGTBL CSESAL ;REGS1=CSESAL

4348 023772 TTBL
023772 023616 T8TBL: .WORD T8MSG
023774 177777 .WORD -1
023776
023776 015036 T8RTB: .WORD REGS1
024000 177777 .WORD -1
4349 024002 ENDTST

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 TEST 9 - SET DENSITY - FNC TST

4352 .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

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..**
 : 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
-----
    
```

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TEST 9 - SET DENSITY - FNC TST

```

4387 024036          TSETUP
      024036 012737 024210 002466 BGNT9: MOV #T9TBL,TSTID ;SETUP TEST ID TBL-TEST# 9
      024044 032737 000002 002324 IAT9: BIT #FUNCTI,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 ;REGS1=CSESAL

4411 024210 015036          TTBL
      024210 024006
      024212 177777
      024214
      024214 015036
      024216 177777

4412 024220          ENDTST

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 159
TEST 10 - POSITIONING - FNC TST

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 : **
4419 : TEST TO VERIFY THE DEVICE WILL CHANGE SECTORS AND TRACKS WITHOUT
4420 : INCURRING AN ERROR.

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 : BGND0
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

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

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 TEST 11 - CSR BITS - LGC TST

4456 .SBTTL TEST 11 - CSR BITS - LGC TST
 024364 000412 BR BGNT11 :BR TO BGN TST
 024366 040 103 123 T11MSG: .ASCIZ / CSR BITS - LGC TST/
 .EVEN

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4457
4458
4459 :++
4460 : TEST TO VERIFY THAT THE READ/WRITE BITS OF THE CONTROL AND STATUS REG-
4461 : ISTER CAN BE WRITTEN INTO AND READ AND OTHERWISE BEHAVE AS EXPECTED.
4462 :-----
4463 : BGNTST
4464 : IF LOGIC TEST
4465 : THEN-SETUP TEST TEST IDENT
4466 : CALL RX LEGAL STATE CHECK
4467 : WRITE RXCSR-ALL 1'S (EXCEPT BITS #14 & #1)
4468 : SETUP EXPECTED REGISTER RESULTS
4469 : IF RXCSR DOES NOT=037566
4470 : THEN-SETUP ACTUAL REGISTER RESULTS
4471 : SETUP ERRNBR=CSR ERROR
4472 : CALL ERROR
4473 :
4474 : ENDF
4475 : WRITE RXCSR-ALL 0'S
4476 : IF RXCSR DOES NOT=004040
4477 : THEN-SETUP ACTUAL REGISTER RESULTS
4478 : SETUP ERRNBR=CSR ERROR
4479 : CALL ERROR
4480 :
4481 : ENDF
4482 : ENDTST
4483 :-----
4484 : BOARD CALLOUT:
4485 : 1. INTERFACE
4486 :-----
  
```

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 TEST 11 - CSR BITS - LGC TST

```

4489 024412          TSETUP
      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
4512 024602          REGTBL
4513 024602          TTBL 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
    
```

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TEST 12 - DBR BITS - LGC TST

4518 024622 000412 .SBTTL TEST 12 - DBR BITS - LGC TST
024624 040 104 102 BR BGNT12 ;BR TO BGN TST
T12MSG: .ASCIZ / DBR BITS - LGC TST/
.EVEN

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:**
: 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 ERPOR
: 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

:--

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 165
 TEST 12 - DBR BITS - LGC TST

```

4551 024650          TSETUP
      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 TSI
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          T12FTB:
      025024          .WORD INTONL
      025024 006644          .WORD -1
      025026 177777
4571 025030          ENDTST

```


HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 166
 TEST 13 - CSR-DBR COMMON BYTE - LGC TST

4574 .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

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:+
 : 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

 :--

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 168
 TEST 13 - CSR-DBR COMMON BYTE - LGC TST

```

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          T13FTB:
      025254          .WORD INTONL
      025254 006644          .WORD -1
      025256 177777
4630 025260          ENDTST
  
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 169
 TEST 14 - BUS INITIALIZE - LGC TST

4633 .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

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:++
: 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
:-----
:--
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 171
 TEST 14 - BUS INITIALIZE - LGC TST

```

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
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
  
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 172
TEST 15 - PROGRAMMED INITIALIZE - LGC TST

4689 .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

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4692 : **
4693 : TEST TO VERIFY THAT THE INTERFACE BOARD WILL COMPLETE A PROGRAMMED
4694 : INITIALIZE.

4695 :-----
4696 : BGNTST
4697 : IF LOGIC TEST
4698 : THEN-SETUP TEST IDENT
4699 : CALL PROGRAMMED INITIALIZE
4700 : CALL DEVICE STATE CK
4701 : CALL ERROR CHECK
4702 : NOP
4703 : ENDIF
4704 : ENDTST

4705 :-----
4706 : BOARD CALLOUT:
4707 : 1. INTERFACE
4708 : 2. CONTROLLER
4709 :-----
4710 :--

4711 025546 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
4712 025570 004737 010440 CALL INTIAL ;CALL PROG INITIALIZE
4713 025574 004737 017140 CALL DVSTCK ;CALL DEVICE STATE CK
4714 025600 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
4715 025604 XT15: EXIT TST

4716
4717 025610 REGTBL CSESIT REGS1=CSESIT
015056
4718 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

4719 025624 FRUTBL INFCTL T15FTB:
025624 .WORD INFCTL
025624 006640 .WORD -1
025626 177777
4720 025630 ENDTST

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 173
TEST 16 - POWER FAIL - LGC TST

4723 .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

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:++
: 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
: ENDTST
-----
: BOARD CALLOUT:
: 1. INTERFACE
-----
:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 175
 TEST 16 - POWER FAIL - LGC TST

```

4756 025662          TSETUP
      025662 012737 026102 002466 BGNT16: MOV #T16TBL,TSTID ;SETUP TEST ID TBL-TEST# 16
      025670 032737 000001 002324 IAT16: 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          IBT16: 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 ICT16: 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 #NEGST,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 IDT16: BIT #2,TTEMP1 ;IF RX02 IS
4771 026056 001407          BEQ XT16 ;POWERED UP, THEN
4772 026060 042737 004000 002476          BIC #NEGST,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% 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
    
```

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 TEST 17 - CONTROLLER-INTERFACE - LGC TST

4788 .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

4789
 4790 : **
 4791 : TEST TO VERIFY THAT THE INTERFACE BOARD STATE SEQUENCER IS FUNCTIONAL.
 4792 : ALSO TO VERIFY THE CONTROLLER-INTERFACE HANDSHAKE BY TRYING FUNCTIONS
 4793 : WITH MINIMUM READ/WRITE BOARD INVOLVEMENT.
 4794 :-----
 4795 : BGNTST
 4796 : IF LOGIC TEST
 4797 : THEN:-SETUP TEST IDENT
 4798 : SET PROTOCOL CHECK (TEST SETUP SETS VIS TEST TABLE)
 4799 : CALL READ ERROR CODE
 4800 : CALL ERROR CHECK
 4801 : CALL FILL BUFFER
 4802 : CALL ERROR CHECK
 4803 : CALL EMPTY BUFFER
 4804 : CALL ERROR CHECK
 4805 : CALL READ MAINT STATUS
 4806 : CALL ERROR CHECK
 4807 : ENDF
 4808 : ENDTST
 4809 :-----
 4810 : BOARD CALLOUT:
 4811 : 1. CONTROLLER
 4812 : 2. INTERFACE
 4813 :-----
 4814 :--

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 178
TEST 17 - CONTROLLER-INTERFACE - LGC TST

```

4817 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
4818 026320 052737 000200 002500 BIS #RECTST,FLAGSP ;SET READ ERROR CODE TEST=FLAGSP
4819 026326 004737 011340          CALL RDERCD ;CALL READ ERNOR CODE
4820 026332 004737 017724          CALL ERRCHK ;CALL ERROR CHECK
4821 026336 042737 000200 002500 BIC #RECTST,FLAGSP ;CLEAR READ ERROR CODE TEST=FLAGSP
4822 026344 004737 010510          CALL FILBUF ;CALL FILL BUFFER
4823 026350 004737 017724          CALL ERRCHK ;CALL ERROR HECK
4824 026354 004737 010626          CALL EMPBUF ;CALL EMPTY BUFFER
4825 026360 004737 017724          CALL ERRCHK ;CALL ERROR CHECK
4826 026364 005237 002470          INC TCMDCNT ;INCREMENT TST COMMAND CTR *****
4827 026370 004737 011266          CALL RDSTAT ;CALL READ MAINTENANCE STATUS
4828 026374 004737 017724          CALL ERRCHK ;CALL ERROR CHECK
4829 026400          XT17: EXIT TST
4830
4831 026404          REGTBL CSESND,CSESRS REGS1=CSESND
      015076          REGS2=CSESRS
      015066
4832 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
4833 026422          FRUTBL CTLINF T17FTB:
      026422          .WORD CTLINF
      026422 006646          .WORD -1
      026424 177777
4834 026426          ENDTST

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 179
 TEST 18 - NPR - LGC TST

4837 .SBTTL TEST 18 - NPR - LGC TST
 026430 000410 BR BGNT18 ;BR TO BGN TST
 026432 040 116 120 T18MSG: .ASCIZ / NPR - LGC TST/
 .EVEN

```

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4839
4840 :++
4841 : TEST TO VERIFY THAT THE NPR LOGIC WILL STORE A WORD IN MEMORY.
4842 :-----
4843 : BGNTST
4844 : IF LOGIC TEST
4845 : THEN-SETUP TEST IDENT
4846 : SET ERROR CODE STORAGE=1'S
4847 : CALL READ ERROR CODE
4848 : IF ERROR CODE STORAGE=1'S
4849 : THEN-CALL ERROR
4850 : ENDF
4851 : SET WORD COUNT=128.
4852 : SET DATA PATTERN=0'S
4853 : CALL SET DATA PATTERN
4854 : DATA BUFFER AREA=1'S (BEGIN, END & END+1)
4855 : SET DENSITY CONTROL=DOUBLE DENSITY
4856 : CALL FILL BUFFER
4857 : CALL LOGIC TEST ERROR CK
4858 : CALL EMPTY BUFFER
4859 : CALL ERROR CK
4860 : IF BEGIN DATA BUFFER AREA NOT=0'S
4861 : THEN-SETUP NPR ERROR
4862 : CALL ERROR
4863 : ENDF
4864 : IF END DATA BUFFER AREA NOT=0'S
4865 : THEN-CALL NPR ERROR
4866 : CALL ERROR
4867 : ENDF
4868 : IF END+1 DATA BUFFER NOT=1'S
4869 : THEN-CALL NPR ERROR
4870 : CALL ERROR
4871 : ENDF
4872 : ENDTST
4873 :-----
4874 :--
4875

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 181
 TEST 18 - NPR - LGC TST

```

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 IST18: 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,FLAGST ;CLEAR RED ERR COD FLG = FLAGS TST
4886 026536 012737 000200 002370          MOV #128,,WDCNT ;SET LEVICE 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          MOV R2,DATBUF(R1) ;SET DATA BUFFER END=1'S
4896 026616 005201          INC R1 ;BUMP INDEX
4897 026620 110261 036622          MOV 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          CALL 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
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 181-1
TEST 18 - NPR - LGC TST

026766
026766 006640
026770 177777
4923 026772

ENDTS;

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SEQ 131

T18FTB:
.WORD INFCTL
.WORD -1

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 183
- MOD U.SFT.NAT - ADDRESS NPR ADDRESS TEST

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026774 000240
026776 022737 000002 027100
027004 103014
027006 005737 027100
027012 001003
027014 005037 027102
027020 000403
027022 012737 000002 027102
027030 005237 027100
027034 000420
027036 005237 027100
027042 006337 027102
027046 022737 040000 027102
027054 101407
027056 005037 027100
027062 005037 027102
027066 052737 000010 002476
027074 000240
027076 000207
027100 000000
027102 000000

.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  
: : : ENDF  
: : INCREMENT COUNTER  
: : ELSE-INCREMENT COUNTER  
: : : DOUBLE ADR (ADR=2XADR)  
: : : IF ADR > 40000  
: : : : THEN-SET DONE IN FLAGS  
: : : : CLEAR CTR  
: : : : CLEAR ADR  
: : : : SET DO LOOP DONE FLAG  
: : : ENDF  
: : ENDF  
: ENDSUB  
-----
```

```
NAT: NOP ;  
IANAT: CMP #2,NATCTR ;IF CTR  
: BHIS LANAT ;LESS THAN 2, THEN  
: IENAT: TST NATCTR ;IF CTR  
: BNE LBNAT ;EQUALS 0, THEN  
: CLR NATADR ;CLEAR ADRS  
: BR EBNAT ;BR TO END 'B'  
LBNAT: MOV #2,NATADR ;ELSE, SET ADR=2  
EBNAT: INC NATCTR ;INCREMENT COUNTER  
: BR EANAT ;BR TO END 'A'  
LANAT: INC NATCTR ;INCREMENT COUNTER  
: ASL NATADR ;DOUBLE ADDRESS  
ICNAT: CMP #40000,NATADR ;IF ADDRESS  
: BLOS ECNAT ;GREATER THAN 40000, THEN  
: CLR NATCTR ;CLEAR COUNTER  
: CLR NATADR ;CLEAR ADDRESS  
: BIS #DLPDN,FLAGST ;SET DO LOOP DONE FLAG  
ECNAT: NOP ;  
EANAT: RETURN ;RETURN  
-----  
NATCTR: 0 ;COUNTER  
NATADR: 0 ;ADDRESS  
-----
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 184
 TEST 19 - NPR NON-EXISTENT MEM - LGC TST

4973 .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

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```

:++
: 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
-----
:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 186
TEST 19 - NPR NON-EXISTENT MEM - LGC TST

```

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,#PRIO6
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

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 187
 TEST 20 - INTERRUPT - LGC TST

```

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
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5025      : **
5026      : TEST TO VERIFY THAT THE INTERRUPTS CAN BE SET AND THAT THE DEVICE
5027      : RESPONDS AS EXPECTED.
5028      :-----
5029      : BGNTST
5030      : IF LOGIC TEST
5031      : THEN-SETUP TEST IDENT
5032      : SET PROCESSOR PRIORITY-> -> NO INTERRUPTS
5033      : CAUSE RX INTERRUPT (WHEN PRIORITY LOWERED)
5034      : CALL WATCH DOG TO LOWER PRIORITY & WAIT FOR INTERRUPT
5035      : CALL ERROR
5036      : CLEAR RX INTERRUPT BIT
5037      : NOP
5038      : ENDTST
5039      :-----
5040      : BOARD CALLOUT:
5041      : 1. INTERFACE
5042      :-----
5043      :--
5044      : 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 #PRI06 ;SET PROCESSOR PRI=NO INTERRUPTS
5047 027424 052777 000100 152716 BIC #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: .WORD -1
          027472 177777      .WORD -1
5055 027474      FRUTBL INTONL T20FTB: .WORD INTONL
          027474      .WORD -1
          027474 006644
          027476 177777
5056 027500      ENDTST
    
```


HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 188
 TEST 21 - PRIORITY LVL - LGC TST

5059 .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

```

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5062 : **
5063 : TEST TO VERIFY THAT THE DEVICE PRIORITY IS SET TO THE CORRECT LEVEL.
5064 : -----
5065 : BGNTST
5066 : IF LOGIC TEST
5067 : THEN-SETUP TEST IDENT
5068 : LOWER WATCH DOG TIMEOUT MULTIPLIER
5069 : SETUP PROCESSOR PRIORITY=6 (PRESET VALUE)
5070 : BGND0
5071 : SET PROCESSOR PRIORITY (PRESET VALUE)
5072 : SET DEVICE INTERRUPT BIT TO ENABLE INTERRUPT
5073 : IF INTERRUPT OR ERROR OCCURRED
5074 : THEN-SET DO LOOP DONE BIT -> FLAGS
5075 : ELSE-LOWER SETUP PROCESSOR PRIORITY
5076 : CLEAR DEVICE INTERRUPT BIT
5077 : ENDF
5078 : DUNTIL DO LOOP DONE BIT SET, PROCESSOR PRI=0 OR NO DONE BIT ESR
5079 : IF SETUP PROCESSOR PRI NOT=DEVICE PRIORITY
5080 : THEN-CALL LOGIC TEST ERROR
5081 : ENDF
5082 : ENDTST
5083 : -----
5084 : BOARD CALLOUT:
5085 : 1. INTERFACE
5086 : -----
5087 : --

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 190
 TEST 21 - PRIORITY LVL - LGC TST

```

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 #PRI06 ;SET PROCESSOR PRI=06 (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 #DLDPDN,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 #DLDPDN,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%$6%A RX SET AT PRI LEV=%03%N%$6%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: .WORD -1
      030116 177777          FRUTBL INTONL
      030120          T21FTB: .WORD INTONL
      030120 006644          .WORD -1
      030122 177777          .WORD -1
5132 030124          ENDTST
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 191
TEST 22 - INITIALIZE CONTROL - LGC TST

5135 .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

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5137 :+
5138 : TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE INITIALIZE.
5139 :-----

5140 : BGNTST
5141 : IF LOGIC TEST
5142 : : THEN-SETUP TEST IDENT
5143 : : ISSUE DEVICE PROGRAMMED INITIALIZE
5144 : : CALL ERRCHK
5145 : : ENDF
5146 : : ENDTST
5147 :-----

5148 : BOARD CALLOUT:
5149 : 1. CONTROLLER
5150 : 2. INTERFACE
5151 :-----
5152 :--

5153 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
5154 030210 004737 010440 CALL INTIAL ;CALL INITIALIZE
5155 030214 004737 017724 CALL ERRCHK ;CALL ERROR CHECK
5156 030220 XT22: EXIT TST
5157 030224 REGTBL CEINIT

5158 030224 015046 REGS1=CEINIT
030224 030130 TTBL REGCK, RGPRT
030226 000001 T22TBL: .WORD T22MSG
030230 000004 .WORD REGCK
030232 177777 .WORD RGPRT
030234 .WORD -1
030234 015046 T22RTB: .WORD REGS1
030236 177777 .WORD -1
5159 030240 FRUTBL CTLINF
030240 T22FTB: .WORD CTLINF
030240 006646 .WORD -1
030242 177777
5160 030244 ENDTST

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 192
 TEST 23 - DATA BUF INTEGRITY - LGC TST

5163 .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

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: 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
:   :   BGND0
:   :   : 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
:   :   :   :   ENDF
:   :   :   ENDF
:   :   ENDF
:   : DOUNTIL DO LOOP DONE FLAG SET
:   : NOP
:   ENDF
: ENDTST
-----
: BOARD CALLOUT:
:   1. CONTROLLER
:   2. INTERFACE
-----
:--
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 194
TEST 23 - DATA BUF INTEGRITY - LGC TST

```

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
5205 030356          ESCAPE TST ;IF NO ERROR, THEN
5207 030362 004737 013246          CALL DATAK ;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 ;DUNTIL 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: .WORD -1
5218 030442          FRUTBL CTLINF T23FTB: .WORD CTLINF
      030442          006646          .WORD -1
      030444 177777
5219 030446          ENDTST

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 195
TEST 24 - WRD CNT INTEGRITY - LGC TST

5222 030450 000417
030452 040 127 122

.SBTTL TEST 24 - WRD CNT INTEGRITY - LGC TST
BR BGNT24 ;BR TO BGN TST
T24MSG: .ASCIZ / WRD CNT INTEGRITY - LGC TST/
.EVEN

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:++
: 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.
: BGND0
: 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
: ENDF
: ENDF
: ENDF
: DOUNTIL DO LOOP DONE FLAG SET
: NOP
: ENDF
: ENDTST
-----
: BOARD CALLOUT:
: 1. CONTROLLER
-----
:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 197
 TEST 24 - WRD CNT INTEGRITY - LGC TST

```

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

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 198
 TEST 25 - CONTROLLER-READ*WRITE ELECT - LGC TST

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

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```

:++
: TEST TO VERIFY MINIMAL CONTROLLER BOARD-READ/WRITE ELECTRONICS BOARD
: INTERFACE VIA INITIALIZE OF A SELECTED DRIVE.
-----
: BGNTST
:   IF LOGIC TEST
:     THEN-SETUP TEST IDENT
:     NOP
:     ISSUE PROGRAMMED INITIALIZE
:     CALL ERROR CK
:     CALL READ ERROR CODE
:     IF NO ERROR (ESCAPE TEST)
:       THEN-CALL ERROR CK
:     ENDIF
:   ENDIF
: ENDTST
-----
: BOARD CALLOUT:
:   1. CONTROLLER
:   2. R/W ELECTRONICS
-----
:--

```


HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 200
TEST 25 - CONTROLLER-READ*WRITE ELECT - LGC TST

```

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

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 201
 TEST 26 - READ SECTOR-PRT:1 - LGC TST

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

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

 : 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

: ENDF

: NOP

: ENDF

: ENDF

: ENDTST

 : BOARD CALLOUT:

: 1. CONTROLLER

: 2. R/W ELECTRONICS

 : --

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 203
TEST 26 - READ SECTOR-PRT:1 - LGC TST

```

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 #NEGTEST,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

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 204
 TEST 27 - POSITIONING - LGC TST

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

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```

:++
: TEST TO VERIFY THAT THE DRIVE WILL READ THE HEADERS ON ALL TRACKS OF
: THE DEIVE AS EXPECTED.
-----
: BGNTST
:   IF LOGIC TEST
:   : THEN-SETUP TEST IDENT
:   :   SET TRACK INIT FLAG
:   :   SET SECTOR=10
:   :   BGND0
:   :   : CALL GET TRACK
:   :   : CALL READ ERROR CODE
:   :   : CALL READ SECTOR
:   :   : IF NO COMMAND ERRORS (ESCAPE TST)
:   :   :   THEN-CALL ERROR CHECK
:   :   :   : CALL TRACKS ERROR CK
:   :   :   : CLEAR TRACK INIT FLAG
:   :   :   : NOP
:   :   : ENDF
:   : DOUNTIL TRACKS DONE, ABORT FLAG SET, OR TRACK ERRORS=10
:   : NOP
:   ENDF
: ENDTST
-----
: BOARD CALLOUT:
:   1. CONTROLLER
:   2. R/W ELECTRONICS
-----
:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 206
 TEST 27 - POSITIONING - LGC TST

```

5418 031332          TSETUP
      031332 012737 031446 002466 BGNT27: MOV #T27TBL,TSTID ;SETUP TEST ID TBL-TEST# 27
      031340 032737 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
                                     REGS1=CSESAL
5433 031446 015036          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
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 207
 TEST 28 - WRITE SECTOR-PRT:1 - LGC TST

5438 .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

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```

:++
: 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
:   ENDF
:   NOP
: ENDIF

```

```

: ENDTST
-----

```

```

: BOARD CALLOUT:
: 1. CONTROLLER
: 2. R/W ELECTRONICS
-----
:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 209
 TEST 28 - WRITE SECTOR-PRT:1 - LGC TST

```

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
                                REGS1=CSESAL
                                TTBL REGCK,0
5485 031642          T28TBL: .WORD T28MSG
      031642 031472          .WORD REGCK
      031644 000001          .WORD 0
      031646 000000          .WORD -1
      031650 177777          T28RTB:
      031652          .WORD REGS1
      031652 015036          .WORD -1
      031654 177777          T28FTB:
5486 031656          FRUTBL CTLRWE          .WORD CTLRWE
      031656          .WORD -1
      031656 006651
      031660 177777
5487 031662          ENDTST
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 210
TEST 29 - DELETED DATA WRITE PRT:1 - LGC TST

5490 .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

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```

:++
: 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
:   :   :   :   :   ENDF
:   :   :   :   ENDF
:   :   ENDF
:   ENDTST
-----
: BOARD CALLOUT:
:   1. CONTROLLER
:   2. R/W ELECTRONICS
-----
:--
```


HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 212
 TEST 29 - DELETED DATA WRITE PRT:1 - LGC TST

```

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,DELDT ;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 #DLDTERR,ERRNBR ;SETUP ERROR NUMBER=DELETED DATA ERROR
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 CTRLWE
      032072          T29FTB:
      032072 006651          .WORD CTRLWE
      032074 177777          .WORD -1
5542 032076          ENDTST
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 213
 TEST 30 - SET DENSITY - LGC TST

5545 .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

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```

:++
: 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
: ENDTST
-----
: BOARD CALLOUT:
: 1. CONTROLLER
: 2. R/W ELECTRONICS
-----
:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 215
TEST 30 - SET DENSITY - LGC TST

```

5594 032132          TSETUP
      032132 012737 032356 002466 BGN130: 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 #NEGST,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 #NEGST,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

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 216
 TEST 31 - SECTOR ADR - LGC TST

5630 .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

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 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
  : BGND0
  : : 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
  : BGND0
  : : 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
  -----
  --
  
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 218
 TEST 31 - SECTOR ADR - LGC TST

```

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 CHFCK
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 #NEGST,FLAGST ;SET FLAGST-NEG TEST FLAG
5704 032620 012737 000003 002464          MOV #RDERR,NGTSE ;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 CTRLWE
      032744          T31FTB:
    
```

HARDWARE TESTS, MACRO M1200 14-DEC-82 16:33 PAGE 218-1
TEST 31 - SECTOR ADR - LGC TST

032744 006651
032746 177777
5723 032750

ENDTST

.WORD CTLRWE
.WORD -1

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 219
 TEST 32 - TRACK ADR - LGC TST

5726 .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

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:++
: 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
:   :   BGND0
:   :   : BGND0
:   :   : 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
:   :   : 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
:   : 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
-----
:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 221
TEST 32 - TRACK ADR - LGC TST

```

5778 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
5779 033024 004737 017350          CALL DENCHK ;CALL DENSITY CHECK
5780 033030 004737 020472          CALL SDENC ;CALL SET DENSITY CONTROL=DENSITY STATUS
5781 033034 012737 000401 002510          MOV #ITK!STK,TKSCFG ;SET INITIALIZE & SEQUENCE TRACKS FLAG (TRACK/SECTOR FLAGS)
5782 033042 000240          BBT32: NOP ;
5783 033044 004737 012662          BCT32: CALL GETTRK ;CALL GET TRACK ADR
5784 033050 042737 000401 002510          BIC #ITK!STK,TKSCFG ;CLEAR INITIALIZE TRACKS FLAG
5785 033056 004737 011062          CALL READ ;CALL READ SECTOR
5786 033062 004737 011340          CALL RDERCD ;CALL READ ERROR CODE
5787 033066 005737 002454          IDT32: TST FIN ;IF FINI FLAG
5788 033072 001062          BNE UCT32 ;NOT SET, THEN
5789 033074 123737 002374 002446 IET32: CMPB TRACK,TTRK ;IF TRACK ADR & TARGET TRACK
5790 033102 001405          BEQ EET32 ;NOT EQUAL, THEN
5791 033104 012737 000041 002520          MOV #TRKAER,ERRNBR ;SETUP ERR NBR=TRACK ADDRESS ERROR
5792 033112 004737 003060          CALL ERROR ;CALL ERROR
5793 033116 013705 002420          EET32: MOV DRVOFF,R5 ;SET R5=DRIVE BYTE OFFSET
5794 033122 032737 010000 002476 IFT32: BIT #ILLGAL,FLAGST ;IF ILLEGAL FLAG
5795 033130 001024          BNE IIT32 ;NOT SET, THEN
5796 033132 123765 002374 002444 IGT32: CMPB TRACK,CTKO(R5) ;IF TRACK ADR & CURRENT TRACK OF SELECTED DRV (R5)
5797 033140 001406          BEQ IHT32 ;NOT EQUAL, THEN
5798 033142 012737 000041 002520          MOV #TRKAER,ERRNBR ;SETUP ERR NBR=TRACK ADDRESS ERROR
5799 033150 004737 003060          CALL ERROR ;CALL ERROR
5800 033154 000431          BR UCT32 ;BR TO DOUNTIL 'C'
5801 033156 122737 000040 002442 IHT32: CMPB #40,XERUUT ;IF ERR CODE
5802 033164 001025          BNE UCT32 ;SET=40, THEN
5803 033166 012737 000021 002520          MOV #RECERR,ERRNBR ;SETUP ERRNBR=READ ERR CODE-ERR WRG
5804 033174 004737 003060          CALL ERROR ;CALL ERROR
5805 033200 000417          BR UCT32 ;BR TO DOUNTIL 'C'
5806 033202 123765 002374 002444 IIT32: CMPB TRACK,CTKO(R5) ;IF TRACK ADR & CURRENT TRACK OF SELECTED DRV (R5)
5807 033210 001004          BNE IJT32 ;EQUAL, THEN
5808 033212 012737 000041 002520          MOV #TRKAER,ERRNBR ;SETUP ERR NBR=TRACK ADR ERROR
5809 033220 000407          BR UCT32 ;BR TO DOUNTIL 'C'
5810 033222 122737 000040 002442 IJT32: CMPB #40,XERUUT ;IF ERR CODE NOT
5811 033230 001403          BEQ UCT32 ;SET=40
5812 033232 012737 000021 002520          MOV #RECERR,ERRNBR ;SETUP ERR NBR=READ ERR CODE-ERR WRG
5813 033240 005737 002454          UCT32: TST FIN ;DOUNTIL FINI FLAG
5814 033244 001004          BNE ECT32 ;SET OR
5815 033246 032737 001000 002476          BIT #TRKDON,FLAGST ;TRACKS DONE FLAG
5816 033254 001673          BEQ BCT32 ;SET
5817 033256 042737 001000 002476 ECT32: BIC #TRKDON,FLAGST ;CLEAR TRACKS DONE FLAG
5818 033264 005037 002510          CLR TKSCFG ;CLR TRACK FLAGS
5819 033270 052737 000004 002510          BIS #ILTK,TKSCFG ;SETUP ILLEGAL TRACKS FLAG
5820 033276 032737 010000 002476 IKT32: BIT #ILLGAL,FLAGST ;IF ILLEGAL FLAG
5821 033304 001004          BNE LKT32 ;NOT SET, THEN
5822 033306 052737 010000 002476          BIS #ILLGAL,FLAGST ;SET ILLEGAL FLAG
5823 033314 000403          BR UBT32 ;BR TO DOUNTIL 'C'
5824 033316 042737 010000 002476 LKT32: BIC #ILLGAL,FLAGST ;CLEAR ILLEGAL FLAG
5825 033324 032737 010000 002476 UBT32: BIT #ILLGAL,FLAGST ;DOUNTIL ILLEGAL FLAG CLEAR
5826 033332          XT32: EXIT TST
5827 033336          REGTBL
5828 033336          TTBL 0,0
      033336 032754          T32TBL: .WORD T32MSG
      033340 000000          .WORD 0

```


HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 221-1
TEST 32 - TRACK ADR - LGC TST

033342 000000
033344 177777
033346
5829 033346 177777
033350
033350 006654
033352 177777
5830 033354

FRUTBL CTLONL

ENDTST

T32RTB: .WORD 0
.WORD -1
.WORD -1
T32FTB: .WORD CTLONL
.WORD -1

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 222
 TEST 33 - READ SECTOR-PRT:2 - LGC TST

5833 .SRTTL 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

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:++
: 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
-----
:--
    
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 224
 TEST 33 - READ SECTOR-PRT:2 - LGC TST

```

5867 033416          TSETUP
      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 #NEGST,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
      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
  
```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 225
 TEST 34 - WRITE SECTOR-PRT:2 - LGC TST

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

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```

: **
: TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A WRITE SECTOR IN
: BOTH DENSITIES & RETURN A VALID ERROR CODE, SIMILAR TO WRITE
: SECTOR PRT:1, BUT WITH DISKETTE IN OPPOSITE DENSITY.
-----

```

```

: 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
: ENDF
: NOP
: ENDF
: NOP

```

```

: ENDF

```

```

: ENDTST
-----

```

```

: BOARD CALLOUT:

```

1. CONTROLLER
 2. R/W ELECTRONICS
- ```

: --

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 227  
TEST 34 - WRITE SECTOR-PRT:2 - LGC TST

```

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 #NEGST,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

 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 T34R1B:
 033740 015036 .WORD REGS1
 033742 177777 .WORD -1
5940 033744 FRUTBL CTRLWE
 033744 T34FTB:
 033744 006651 .WORD CTRLWE
 033746 177777 .WORD -1

5941
5942 033750 ENDTST

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 228  
 TEST 35 - DELETED DATA WRITE PRT:2 - LGC TST

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

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```

:++
: 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 TEST 1.

: 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
: ENDTST

: BOARD CALLOUT:
: 1. CONTROLLER
: 2. R/W ELECTRONICS

:--

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 230  
 TEST 35 - DELETED DATA WRITE PRT:2 - LGC TST

```

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,DELDT ;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 #DLDTERR,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 C00000 .WORD 0
 034156 177777 .WORD -1
 034160 T35RTB:
 034160 015036 .WORD REGS1
 034162 177777 .WORD -1
5999 034164 FRUTBL CTLRWE T35FTB:
 034164 .WORD CTLRWE
 034164 006651 .WORD -1
 034166 177777
6000
6001 034170 ENDTST

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 231  
 TEST 36 - DISKETTE & DENSITY DATA CHECK - LGC TST

6004 .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

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:+  
 : 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  
 : BGND0  
 : SET DATA PATTERN=RANDOM  
 : CALL DATA PATTERN GENERATOR  
 : SET TRACK & SECTOR INITIALIZE FLAG  
 : SET TRACK & SECTOR=SEQUENCE MODE  
 : BGND0  
 : 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  
 :-----

---



HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 233  
 TEST 36 - DISKETTE & DENSITY DATA CHECK - LGC TST

```

6051
6052 034246 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
6053 034270 005037 002504 CLR TTEMP1 ;CLEAR COUNTER (TEST TEMP #1)
6054 034274 004737 017350 CALL DENCHK ;CALL DENSITY CHECK
6055 034300 004737 020472 CALL SDENC ;CALL SETUP DENSITY CONTROL=DENSITY STATUS
6056 034304 005037 012660 BBT36: CLR PAT ;SETUP DATA PATTERN=RANDOM
6057 034310 004737 012306 CALL STDATP ;CALL SET DATA PATTERN
6058 034314 052737 001400 002510 BIS #ITK!ISC,TKSCFG ;SET TRACK & SECTOR INITIALIZE FLAGS
6059 034322 052737 000003 002510 BIS #STK!SSC,TKSCFG ;SET TRACK & SECTOR SEQUENCE MODE FLAGS
6060 034330 004737 012662 BCT36: CALL GETTRK ;CALL GET TRACK
6061 034334 004737 013104 CALL GETSEC ;CALL GET SECTOR
6062 034340 004737 010510 CALL FILBUF ;CALL FULL BUFFER
6063 034344 004737 010744 CALL WRITE ;CALL WRITE SECTOR
6064 034350 004737 013642 CALL CLRDAT ;CALL CLEAR DATA BUFFER
6065 034354 012737 036622 002362 MOV #DATBUF,FILADR ;SETUP TO CLEAR RX INTERNAL BUFFER
6066 034362 004737 010510 CALL FILBUF ;CLEAR THE BUFFER
6067 034366 012737 036222 002362 MOV #DATPAT,FILADR ;SETUP DATA BUFFER ADDRESS
6068 034374 004737 011062 CALL READ ;CALL READ SECTOR
6069 034400 004737 010626 CALL EMPBUF ;CALL EMPTY BUFFER
6070 034404 004737 013246 CALL DATAK ;CALL DATA CHECK
6071 034410 022737 000012 013520 UCT36: CMP #10,DAERCT ;DUNTIL DATA ERROR COUNT
6072 034416 001410 BEQ ECT36 ;EQUALS 10, OR
6073 034420 032737 001000 002476 BIT #TRKDON,FLAGST ;TRACKS DONE FLAG
6074 034426 001740 BEQ BCT36 ;SET, AND
6075 034430 032737 002000 002476 BIT #SECDON,FLAGST ;SECTORS DONE FLAG
6076 034436 001734 BEQ BCT36 ;SET
6077 034440 004737 020430 ECT36: CALL CDENC ;CALL COMPLIMENT DENSITY CONTROL
6078 034444 004737 011172 CALL SETDN ;CALL SET DENSITY
6079 034450 005237 002504 INC TTEMP1 ;INCREMENT COUNTER
6080 034454 012737 000100 002370 MOV #64.,WDCNT ;SET WORD COUNT
6081 034462 005737 002454 UBT36: TST FIN ;DUNTIL FIN FLAG
6082 034466 001004 BNE XT36 ;SET OR
6083 034470 022737 000002 002504 CMP #2,TTEMP1 ;COUNT
6084 034476 001302 BNE BBT36 ;EAUALS 2
6085 034500 XT36: EXIT TST
6086
6087 034504 REGTBL CSESAL
 015036 REGS1=CSESAL
6088 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
6089 034520 FRUTBL CTRLWE
 034520 T36FTB:
 034520 006651 .WORD CTRLWE
 034522 177777 .WORD -1
6090
6091 034524 ENDTST

```

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 235  
TEST 36 - DISKETTE & DENSITY DATA CHECK - LGC TST

6099 034526  
6100

ENDMOD

HARDWARE TESTS MACRO M1200 14-DEC-82 16:33 PAGE 236  
TEST 36 - DISKETTE & DENSITY DATA CHECK - LGC TST

6103  
6104  
6115  
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6145 034526  
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6156 034526  
6157  
6158 034530  
6159 034540  
6160 034550  
6161 034562  
6162 034574  
6163  
6169 034606  
6170  
6171 034606  
6172 034621  
6173 034634  
6174 034647  
6175 034662  
6176  
6177  
6178  
6185

.NLIST BEX,ME  
.TITLE PARAMETER CODING  
.SBTTL HARDWARE PARAMETER CODING SECTION  
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.  
:--

BGNHRD

GPRMA MSG1,0,0,0,177777,YES  
GPRMA MSG2,2,0,0,177777,YES  
GPRMD MSG3,4,0,177777,0,1,YES  
GPRMD MSG4,6,0,177777,0,1,YES  
GPRMD MSG4A,10,0,177777,0,7,YES

ENDHRD

-----  
MSG1: .ASCIZ /RX BUS ADR/  
MSG2: .ASCIZ /VECTOR ADR/  
MSG3: .ASCIZ /DRIVE # /  
MSG4: .ASCIZ /EXP WRD-CR/  
MSG4A: .ASCIZ /BR-LEVEL /  
.EVEN  
-----

122 130 040  
126 105 103  
104 122 111  
105 130 120  
102 122 055

PARAMETER CODING      MACRO M1200    14-DEC-82 16:33    PAGE 238  
SOFTWARE PARAMETER CODING SECTION

6188  
6189  
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6197  
6198  
6199 034676  
6200  
6201 034700  
6202 034706  
6203 034710  
6204 034716  
6205 034724  
6206 034732  
6207 034744  
6208 034754  
6209 034766  
6210 034774  
6211 034776  
6212 035004  
6219 035012  
6220  
6221  
6222  
6223 035012  
6224 035044  
6225 035057  
6226 035106  
6227 035160  
6228 035213  
6229 035301  
6230 035332  
6231 035403  
6232 035461  
6233 035552  
6237 035651  
6238 035677  
6239 035722  
6240 035745  
6241 036014  
6242 036053  
6243 036124  
6244 036150  
6245  
6246

.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.
:--

```

BGNSFT

```

GPRML MSG6,2,1,YES
XFERF 1$
GPRML MSG7,2,2,YES
1$: GPRML MSG8,4,LOGICT,YES
GPRML MSG9,4,FUNCTT,YES
GPRMD MSG10,0,0,177777,1,177777,YES
GPRMA MSG14,24,0,0,177777,YES
GPRMD MSG15,26,0,030000,0,3,YES
GPRML MSG17,2,100,YES
XFERF 6$
GPRML MSG20,12,20,YES
6$: GPRML MSG5,12,SIDFLG,YES
ENDSFT

```

```

:-----:
: CR==15 : CARRIAGE RETURN
: LF==12 : LINE FEED
MSG5: .ASCIZ /EXPANSION WORD TYPE <CR> /
MSG6: .ASCIZ /TEST HELP /
MSG7: .ASCII /DIAGNOSTIC MODES ARE: /<CR><LF>
 .ASCII / LOGIC TEST, FUNCTION TEST, OR BOTH /<CR><LF>
 .ASCII / -FUNCTION TESTS (1-10) /<CR><LF>
 .ASCII / ACT AS QUICK VERIFY & REPORT FAILING FUNCTIONS /<CR><LF>
 .ASCII / -LOGIC TESTS (11-36) /<CR><LF>
 .ASCII / ANALYZE FAILURE & GIVE ERROR INFO /<CR><LF>
 .ASCII / REPORT FIELD REPLACEABLE UNITS 'FRU'S' /<CR><LF>
 .ASCII / ->DEVICE FATAL THRESHOLD LEVEL (DVTL) IS SET = 1 /<CR><LF>
 .ASCII / 'DVTL' = NO. OF HARD ERRS THAT CAUSE DEVICE FATAL ERR /<CR><LF>
MSG8: .ASCIZ /TYPE "CR" TO CONTINUE/
MSG9: .ASCIZ /LOGIC TEST MODE /
MSG10: .ASCIZ /FUNCTION TEST MODE/
MSG14: .ASCIZ /HARD ERR -> DEVICE FATAL THRESHOLD LVL/
MSG15: .ASCIZ /NON-EXISTANT MEM ADR (NXM TST)/
MSG17: .ASCIZ /EXTENDED ADR BITS: 13 & 12 (NPR-NXM TST)/
MSG20: .ASCIZ /TEST CONTROL FLAGS /
 .ASCIZ / PRINT ONLY 10 DATA ERRORS & CONTINUE /
:-----:

```

.EVEN

PARAMETER CODING      MACRO M1200    14-DEC-82 16:33    PAGE 240  
 SOFTWARE PARAMETER CODING SECTION

```

6249
6250 .SBTTL - RX02 FILL BUFFER AREA
6251
6252 :-----:
6253 036222 000400 DATPAT: .REPT 256. ;DATA PATTERN - RX02 FILL BUFFER
6254 :-----:
6255
6256 .SBTTL - RX02 EMPTY BUFFER AREA
6257
6258 :-----:
6259
6260 DATBUF: .REPT 256. ;DATA BUFFER - RX02 EMPTY BUFFER
6261 036622 000400 .WORD 0
6262 037222 000000 .WORD 0
6263 037224 000000
6264
6265 :-----:
6266 .SBTTL - PATCH AREA
6267
6268 :-----:
6269 037226 000000 PATCH: 0 ;PATCH AREA
6270 .+.400
6271
6272 :-----:
6273
6274 LASTAD
6275 037630 L$LAST::
6276 037634 ENDMOD
6277
6278
6279 037634 BGNSETUP 2
6280
6281 037634 BGNPTAB
6282 037634 177170
6283 037640 177170 264
6284 037642 000264 0
6285 037644 000000 0
6286 037646 000000 5
6287 037650 000005 ENDPTAB
6288 037652 BGNPTAB
6289 037652 177170
6290 037656 177170 264
6291 037660 000264 1
6292 037662 000001 0
6293 037664 000000 5
6294 037666 000005 ENDPTAB
6295 037670 ENDSETUP
6296 037670
6297 000001 .END

```

PARAMETER CODING  
SYMBOL TABLE

MACRO M1200 14-DEC-82 16:33 PAGE 240-1

|         |        |         |        |          |        |            |        |         |        |
|---------|--------|---------|--------|----------|--------|------------|--------|---------|--------|
| ABORT   | 002452 | BGNT35  | 034020 | CMDERR=  | 000020 | C\$ESCA=   | 000010 | DISKSP= | 000030 |
| ACLOW = | 000010 | BGNT36  | 034246 | CMDMSG   | 007164 | C\$SEEG=   | 000005 | DLDBIT= | 000100 |
| ACLOW=  | 000037 | BGNT4   | 022766 | CMDM0    | 007237 | C\$ESUB=   | 000003 | DLDCMD= | 000010 |
| ACLOWF= | 000050 | BGNT5   | 023102 | CMDM1    | 007255 | C\$SETST=  | 000001 | DLDER=  | 000007 |
| ADR =   | 000020 | 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 | CMDPE    | 007502 | C\$INIT=   | 000011 | DNFLAG  | 012030 |
| BACDB   | 013652 | BIT00 = | 000001 | CMERMS   | 007216 | C\$INLP=   | 000020 | DNNINT= | 000015 |
| BADCK   | 013276 | BIT01 = | 000002 | CMFTMS   | 007204 | C\$MANI=   | 000050 | DNNOTR= | 000063 |
| BADWRD  | 014702 | BIT02 = | 000004 | CMPRD    | 014700 | C\$MEM =   | 000031 | DNWTMT  | 002474 |
| BAUWCH  | 011700 | BIT03 = | 000010 | CONTRL=  | 000002 | C\$MESSG = | 000023 | DOOROP= | 000026 |
| BBT10   | 024314 | BIT04 = | 000020 | CONTSW=  | 000022 | C\$OPEN=   | 000034 | DRIVE   | 002406 |
| BBT21   | 027600 | BIT05 = | 000040 | CR =     | 000015 | C\$PNTB=   | 000014 | DRIVE1= | 000400 |
| BBT23   | 030336 | BIT06 = | 000100 | CRCERB=  | 000001 | C\$PNTF=   | 000017 | DRVDE=  | 000040 |
| BBT24   | 030546 | BIT07 = | 000200 | CRCERR=  | 000004 | C\$PNTS=   | 000016 | DRVOFF  | 002420 |
| BBT27   | 031400 | BIT08 = | 000400 | CSERTB   | 014776 | C\$PNTX=   | 000015 | DRVPT   | 002514 |
| BBT31   | 032474 | BIT09 = | 001000 | CSESAL=  | 015036 | C\$QIO =   | 000377 | DRVRDY= | 000200 |
| BBT32   | 033042 | BIT1 =  | 000002 | CSESIT=  | 015056 | C\$RDBU=   | 000007 | DRVWRG= | 000027 |
| BBT36   | 034304 | BIT10 = | 002000 | CSESND=  | 015076 | C\$REFG=   | 000047 | DRV1 =  | 000020 |
| BBT7    | 023460 | BIT11 = | 004000 | CSESRS=  | 015066 | C\$RESE=   | 000033 | DUMSG1  | 022012 |
| BCGSC   | 013202 | BIT12 = | 010000 | CSONLY=  | 015026 | C\$REVI=   | 000003 | DVDNCK  | 011634 |
| BCT32   | 033044 | BIT13 = | 020000 | CSRCHK   | 013750 | C\$RFLA=   | 000021 | DVFERR= | 004000 |
| BCT36   | 034330 | BIT14 = | 040000 | CSRCP    | 014260 | C\$RPT =   | 000025 | DVRDYE= | 000025 |
| BET31   | 032642 | BIT15 = | 100000 | CSRERR=  | 000033 | C\$SEFG=   | 000046 | DVRYCK  | 017310 |
| BGNT1   | 022364 | BIT2 =  | 000004 | CSRMSK   | 014262 | C\$SPRI=   | 000041 | DVSTCK  | 017140 |
| BGNT10  | 024254 | BIT3 =  | 000010 | CSRSET   | 014270 | C\$SVEC=   | 000037 | DVTL    | 002320 |
| BGNT11  | 024412 | BIT4 =  | 000020 | CTK0     | 002444 | C\$TPRI=   | 000013 | DX      | 012024 |
| BGNT12  | 024650 | BIT5 =  | 000040 | CTK1     | 002445 | DAERCT     | 013520 | EADDC   | 017514 |
| BGNT13  | 025074 | BIT6 =  | 000100 | CTLINF=  | 006646 | DATABF=    | 000055 | EADRC   | 017346 |
| BGNT14  | 025316 | BIT7 =  | 000200 | CTLONL=  | 006654 | DATACK     | 013246 | EADSC   | 017220 |
| BGNT15  | 025546 | BIT8 =  | 000400 | CTLRWE=  | 006651 | DATASB     | 013522 | EAERR   | 003256 |
| BGNT16  | 025662 | BIT9 =  | 001000 | C\$AU =  | 000052 | DATAWS     | 013524 | EAFRU   | 005506 |
| BGNT17  | 026276 | BOE =   | 000400 | 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 | DELDT      | 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 | EBT18   | 026530 |
| BGNT33  | 033416 | CLRRGS  | 017124 | C\$ERSF= | 000054 | DIAGMC=    | 000000 | EBT31   | 032604 |
| BGNT34  | 033616 | CMD     | 002400 | C\$ERSO= | 000057 | DISKET=    | 000014 | ECERNB  | 020164 |

PARAMETER CODING  
SYMBOL TABLE

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|         |          |         |          |          |          |           |          |       |          |
|---------|----------|---------|----------|----------|----------|-----------|----------|-------|----------|
| ECERNT  | 015164   | END131  | 012612   | ERRNST=  | 000016   | F\$DU =   | 000016   | IAGEN | 015110   |
| ECERR   | 003230   | EPECK   | 020140   | EROLD    | 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   |
| EC11    | 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\$OF SI= | 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   | G\$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   | ERMS56  | 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 | 010672   |
| ENDLD   | 012652   | ERRMSG  | 002522 G | F\$BGN = | 000040   | IAERR     | 003154   | IBENC | 020204   |
| ENDXER  | 016012   | ERRNBR  | 002520 G | F\$CLEA= | 000007   | IAFRU     | 005406   | IBENV | 003364   |

PARAMETER CODING SYMBOL TABLE

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|        |        |        |        |   |         |        |         |         |        |         |        |   |
|--------|--------|--------|--------|---|---------|--------|---------|---------|--------|---------|--------|---|
| IBERR  | 003140 | ID     | 002336 | G | IJT32   | 033222 | LBDDC   | 017430  | LSEXP4 | 002064  | G      |   |
| IBFLB  | 010554 | IDCOMP | 013020 |   | IKERR   | 003260 | LBFRU   | 005456  | LSEXP5 | 002066  | G      |   |
| IBFRU  | 005424 | IDDDC  | 017354 |   | IKT32   | 033276 | LBGEN   | 015134  | LSHARD | 034530  | G      |   |
| IBGEN  | 015116 | IDDSMS | 020642 |   | ILERR   | 003274 | LBGTK   | 013006  | LSHIME | 002120  | G      |   |
| IBGSC  | 013140 | IDECK  | 020022 |   | ILLERC= | 000017 | LBI1    | 021704  | LSHPCP | 002016  | G      |   |
| IBGTK  | 012770 | IDENC  | 020226 |   | ILLGAL= | 010000 | LBNAT   | 027022  | LSHPTP | 002022  | G      |   |
| IBI1   | 021666 | IDENT1 | 015446 |   | ILTK =  | 000004 | LBTKP   | 010056  | LSHW   | 002276  | G      |   |
| IBNAT  | 027006 | IDENV  | 003404 |   | IMDCK   | 013352 | LBUWCH  | 011740  | LSICP  | 002104  | G      |   |
| IBPCE  | 007122 | IDERR  | 003242 |   | IMECK   | 020074 | LCMD    | 002424  | LSINIT | 021214  | G      |   |
| IBREC  | 011414 | IDGSC  | 013224 |   | INDCK   | 013402 | LCSTA   | 015314  | LSLADP | 002026  | G      |   |
| IBRED  | 011124 | IDSRC  | 014446 |   | INECK   | 017752 | LCT24   | 030634  | LSLAST | 037634  | G      |   |
| IBSDM  | 011234 | IDSSMS | 020657 |   | INFCTL= | 006640 | LCT29   | 032042  | LSLOAD | 002100  | G      |   |
| IBSRC  | 014416 | IDTKE  | 017556 |   | INIT    | 021214 | LDT11   | 024474  | LSLUN  | 002074  | G      |   |
| IBSTA  | 015270 | IDT11  | 024454 |   | INITDN= | 000004 | LDT31   | 032562  | LSMREV | 002050  | G      |   |
| IBTKE  | 017540 | IDT14  | 025376 |   | INITER  | 021462 | LDT35   | 034134  | LSNAME | 002000  | G      |   |
| IBTKP  | 010042 | IDT16  | 026050 |   | INITTK  | 013102 | LET14   | 025446  | LSPRIO | 002042  | G      |   |
| IBT11  | 024502 | IDT18  | 026700 |   | INTERF= | 000000 | LET21   | 027770  | LSPROT | 002310  | G      |   |
| IBT12  | 024714 | IDT24  | 030640 |   | INTERT  | 002404 | LEWCH   | 012000  | LSPRT  | 002112  | G      |   |
| IBT13  | 025140 | IDT29  | 032016 |   | INTER1  | 021530 | LF =    | 000012  | LSREPP | 002062  | G      |   |
| IBT14  | 025342 | IDT31  | 032516 |   | INTFCB= | 000024 | LFFRU   | 005562  | LSREV  | 002010  | G      |   |
| IBT16  | 025710 | IDT32  | 033066 |   | INTFSW= | 000016 | LGFRU   | 005550  | LSRPT  | 021212  | G      |   |
| IBT18  | 026506 | IDT35  | 034110 |   | INTIAL  | 010440 | LGT31   | 032712  | LSSOFT | 034700  | G      |   |
| IBT19  | 027170 | IDU =  | 000040 | G | INTNDN= | 000014 | LKERR   | 003312  | LSSPC  | 002056  | G      |   |
| IBT29  | 031776 | IEDCK  | 013322 |   | INTONL= | 006644 | LKT32   | 033316  | LSSPCP | 002020  | G      |   |
| IBT30  | 032334 | IEERR  | 003164 |   | INTRHD  | 012276 | LMECK   | 020114  | LSSPTP | 002024  | G      |   |
| IBT35  | 034070 | IER =  | 020000 | G | INTTBL  | 021742 | LOAD    | 012614  | LSSTA  | 002030  | G      |   |
| IBUWCH | 011704 | IESRC  | 014466 |   | IOECK   | 017762 | LOE =   | 040000  | LSW    | 002320  | G      |   |
| IBWRT  | 011014 | IETKE  | 017566 |   | IPECK   | 020124 | LOGICT= | 000001  | LSTEST | 002114  | G      |   |
| ICDDC  | 017464 | IET14  | 025422 |   | ISC =   | 001000 | LOT =   | 000010  | LSTIML | 002014  | G      |   |
| ICDSC  | 017160 | IET21  | 027706 |   | ISR =   | 000100 | G       | LRXCSR  | 002426 | L\$UNIT | 002012 | G |
| ICECK  | 020012 | IET32  | 033074 |   | ITK =   | 000400 |         | LRXESR  | 002430 | L10^00  | 002310 |   |
| ICEMB  | 010712 | IEUWCH | 011752 |   | IXE =   | 004000 | G       | LSIFLG= | 000400 | L10002  | 002350 |   |
| ICENC  | 020214 | IFDCK  | 013332 |   | ISAU =  | 000041 |         | LTSTUP  | 020736 | L10003  | 002532 |   |
| ICERR  | 003214 | IFENV  | 003420 |   | ISAUTO= | 000041 |         | LSACP   | 002110 | L10004  | 002540 |   |
| ICFLB  | 010574 | IFERR  | 003062 |   | ISCLN = | 000041 |         | LSAPT   | 002036 | L10005  | 002546 |   |
| ICGTK  | 012742 | IFFRU  | 005524 |   | ISDU =  | 000041 |         | LSAU    | 022062 | L10006  | 003532 |   |
| ICNAT  | 027046 | IFSRC  | 014346 |   | ISHRD = | 000041 |         | LSAUT   | 002070 | L10007  | 021212 |   |
| ICPCE  | 007130 | IFTKE  | 017612 |   | ISINIT= | 000041 |         | LSAUTO  | 022054 | L10010  | 021522 |   |
| ICREC  | 011434 | IFT21  | 027714 |   | ISMOD = | 000041 |         | LSCCP   | 002106 | L10011  | 021774 |   |
| ICRED  | 011144 | IFT31  | 032652 |   | ISMSG = | 000041 |         | LSCLEA  | 021764 | L10012  | 022010 |   |
| ICSRC  | 014432 | IFT32  | 033122 |   | ISPROT= | 000040 |         | LSCO    | 002032 | L10013  | 022060 |   |
| ICSTA  | 015276 | IGENV  | 003430 |   | ISPTAB= | 000041 |         | LSDEPO  | 002011 | L10014  | 022064 |   |
| ICTKE  | 017550 | IGERR  | 003200 |   | ISPW =  | 000041 |         | LSDESC  | 002122 | L10015  | 022454 |   |
| ICT11  | 024546 | IGFRU  | 005532 |   | ISRPT = | 000041 |         | LSDESP  | 002076 | L10016  | 022614 |   |
| ICT12  | 024756 | IGSRC  | 014304 |   | ISSEG = | 000041 |         | LSDEVP  | 002060 | L10017  | 022730 |   |
| ICT13  | 025210 | IGTKE  | 017622 |   | ISSETU= | 000041 |         | LSDISP  | 002164 | L10020  | 023046 |   |
| ICT14  | 025352 | IGT21  | 027724 |   | ISSFT = | 000041 |         | LSDLY   | 002116 | L10021  | 023164 |   |
| ICT16  | 025754 | IGT31  | 032660 |   | ISSRV = | 000041 |         | LSDTP   | 002040 | L10022  | 023350 |   |
| ICT18  | 026652 | IGT32  | 033132 |   | ISSUB = | 000041 |         | LSDTYP  | 002034 | L10023  | 023612 |   |
| ICT21  | 027640 | ICHENV | 003444 |   | ISTST = | 000041 |         | LSDU    | 021776 | L10024  | 024002 |   |
| ICT23  | 030372 | IHTKE  | 017654 |   | JSJMP = | 000167 |         | LSDUT   | 002072 | L10025  | 024220 |   |
| ICT24  | 030566 | IHT32  | 033156 |   | LACDC   | 020454 |         | LSDVTY  | 002154 | L10026  | 024362 |   |
| ICT29  | 032012 | IECK   | 020056 |   | LAI1    | 021644 |         | LSEF    | 002052 | L10027  | 024620 |   |
| ICT31  | 032510 | IEERR  | 003124 |   | LANAT   | 027036 |         | LSENV1  | 002044 | L10030  | 025030 |   |
| ICT35  | 034104 | IITKE  | 017662 |   | LAPCE   | 007076 |         | LSERRT  | 002516 | L10031  | 025260 |   |
| ICUWCH | 011712 | IIT32  | 033202 |   | LASDC   | 020524 |         | LSETP   | 002102 | L10032  | 025500 |   |
| ICWRT  | 011034 | IJERR  | 003114 |   | LATKP   | 010130 |         | LSEXP1  | 002046 | L10033  | 025630 |   |



PARAMETER CODING  
SYMBOL TABLE

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L10034 026232  
L10035 026426  
L10036 026772  
L10037 027336  
L10041 030124  
L10042 030244  
L10043 030446  
L10044 030706  
L10045 031076  
L10046 031276  
L10047 031466  
L10050 031662  
L10051 032076  
L10052 032376  
L10053 032750  
L10054 033354  
L10055 033554  
L10056 033750  
L10057 034170  
L10060 034524  
L10061 034606  
L10062 035012  
L10063 037640  
L10064 037656  
L10065 037652  
L10067 037670  
MAXSEC 002342 G  
MINSEC 002340 G  
MOTOR = 000032  
MSG1 034606  
MSG10 035745  
MSG14 036014  
MSG15 036053  
MSG17 036124  
MSG2 034621  
MSG20 036150  
MSG3 034634  
MSG4 034647  
MSG4A 034662  
MSG5 035012  
MSG6 035044  
MSG7 035057  
MSG8 035677  
MSG9 035722  
NAT 026774  
NATADR 027102  
NATCTR 027100  
NCMD 011542  
NEGTST= 004000  
NEW 021352  
NEXT 021370  
NGTSER 002464  
NODNBT= 000060  
NOITDB= 000061  
NOITDP= 000062  
NOPWR = 000034

NOTRBT= 000057  
NPRERR= 000053  
NPRJPR= 000020  
NXMADR 002344 G  
NXMERR= 000052  
OD 002334 G  
ODCCMP 013032  
ODTNOT= 000001  
ONEFIL= 000000  
OSAPTS= 000000  
OSAU = 000001  
OSBGNR= 000000  
OSBGNS= 000001  
OSDU = 000001  
OSERRT= 000001  
OSGNSW= 000001  
OSPOIN= 000001  
OSSETU= 000001  
PAT 012660  
PATCH 037226  
PAT125 012532  
PAT333 012556  
PG 012434  
PHYDRV= 000006  
PLOC 021524  
PNT = 001000 G  
POWRSP= 000012  
PRESCK 013044  
PRI = 002000 G  
PRILEV= 000054  
PRMSG 030006  
PRIORT 002416  
PRITAB 021732  
PRI00 = 000000 G  
PRI01 = 000040 G  
PRI02 = 000100 G  
PRI03 = 000140 G  
PRI04 = 000200 G  
PRI05 = 000240 G  
PRI06 = 000300 G  
PRI07 = 000340 G  
PROPRT= 000010  
PROTCT 002472  
PRTB0 002526 G  
PRTB0S 002550  
PRTB1 002534 G  
PRTB1S 002570  
PRTB2 002542 G  
PRTB2S 002612  
PRTB3S 002636  
PRTB4S 002664  
PRTCDE 007040  
PRTDID 020600  
PRTECD 015744  
PRTFRU 005404  
PRTGMS 007620

PRTREG 007564  
PRTSEC 007674  
PRTSTA 015240  
PRTTRA 010002  
PRTX1S 002734  
PRTX2S 002756  
PRTX3S 003002  
PRTX4S 003030  
PRTERTY 003474  
PTUTMS 020560  
PWDNRY 026175  
PWRMS 026122  
PWUPRY 026214  
RANDAT 012566  
RANGEN 010344  
RANUM 010436  
RAN1 010432  
RAN2 010434  
RDERCD 011340  
RDERR = 000003  
RDSTAT 011266  
READ 011062  
READ1 011112  
RECADR 002364  
RECCMD= 000016  
RECERN 002462  
RECERR= 000021  
RECFLG= 000200  
RECTST= 000200  
REGACT 002440  
REGCK = 000001  
REGEXP 002436  
REGSCK 013664  
REGS1 = 015036  
REGS2 = 000000  
REGS3 = 000000  
REGS4 = 000000  
REGS5 = 000000  
REGS6 = 000000  
RESFLG= 040000  
RESTAR 021332  
REVC = 000000  
RGERNB 020166  
RGERTB 014706  
RGETPT 014670  
RGPRT = 000004  
RSC = 000000  
RSCMD = 000006  
RTBADR 014704  
RTK = 000000  
RWELEC= 000004  
RXCS 002350  
RXCSR 002432  
RXDB 002352  
RXESR 002434  
RXINIT= 040000

RXPRI 002356  
RX2BIT= 004000  
SCPRT = 000002  
SDCMD = 000010  
SDKYWD= 000036  
SDRDYE= 000024  
SECAER= 000042  
SECDON= 002000  
SECTOR 002376  
SEKERR= 000006  
SETDCD 011462  
SETDN 011172  
SETSCD 011502  
SETUP 021362  
SFPTBL 002320 G  
SFTSTS 002450  
SIDE 002410  
SIDE1 = 001000  
SIDFLG= 010000  
SIDPRT 002515  
SIDRDY= 000002  
SIDWRG= 000026  
SSC = 000002  
STAFLG= 100000  
START 021252  
START0 021262  
START1 021322  
STATER 017222  
STCMD = 000012  
STDATP 012306  
STDNER= 000035  
STK = 000001  
STTK76 021174  
SUDVCD 021014  
SUM 012654  
SURGCK 014276  
SUTSFG 020772  
SVCGBL= 000000  
SVCINS= 177777  
SVCSUB= 177777  
SVCTAG= 177777  
SVCTST= 177777  
SWREG 002332 G  
SYFERR= 002000  
SYSERR 002456  
SSLSYM= 010000  
TCMDCT 002470  
TFDCK 013342  
TGMS 010220  
TKERCK 017516  
TKPRT = 000001  
TKSCFG 002510  
TN = 000044  
TRACK 002374  
TRAP 022324  
TRBIT = 000200

TRKAER= 000041  
TRKCNT 013100  
TRKDON= 001000  
TRKSEQ 002330 G  
TSAVE1 002506  
TSDGMS 020306  
TSDGM1 020364  
TSEC 002447  
TSTDBG 020240  
TSTID 002466  
TSTMOD 002324 G  
TSTPAT 002326 G  
TTEMP1 002504  
TTRK 002446  
TYPERR 002460  
TSARGC= 000002  
TSCODE= 005130  
TSERRN= 000074  
TSEXCP= 000000  
TSFLAG= 000040  
TSFREE= 037670  
TSGMAN= 000000  
TSHILI= 000003  
TSLAST= 000001  
TSLOLI= 000000  
TSLSYM= 010000  
TSLTNO= 000044  
TSNEST= 177777  
TSNS0 = 000000  
TSNS1 = 000005  
TSPCNT= 000000  
TSPTAB= 010066  
TSPTHV= 000002  
TSPTMU= 000002  
TSSAVL= 177777  
TSSGL= 177777  
TSSIZE= 000016  
TSSUBN= 000000  
TSTAGL= 177777  
TSTAGN= 010070  
TSTEMP= 000000  
TSTEST= 000044  
TSTSTM= 177777  
TSTSTS= 000001  
TSSAU = 010014  
TSSAUT= 010013  
TSSCLE= 010011  
TSSDAT= 010067  
TSSDU = 010012  
TSSHAR= 010061  
TSSHW = 010000  
TSSINI= 010010  
TSSMSG= 010006  
TSSPC = 000002  
TSSPRO= 010001  
TSSPTA= 010066

PARAMETER CODING  
SYMBOL TABLE

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TSSRPT= 010007  
TSSSOE= 010062  
TSSSW = 010002  
TSSTES= 010060  
TOFTB 006660  
TOFT0 006640  
TOFT1 006736  
TOFT11 006763  
TOFT12 006770  
TOFT13 006776  
TOFT15 007002  
TOFT16 007006  
TOFT17 007012  
TOFT2 006742  
TOFT20 007016  
TOFT22 007022  
TOFT23 007025  
TOFT24 007030  
TOFT25 007035  
TOFT4 006746  
TOFT40 006644  
TOFT41 006646  
TOFT42 006651  
TOFT43 006654  
TOFT5 006751  
TOFT7 006755  
TOMSG 022172  
TORT1 015026  
TORT2 015036  
TORT3 015046  
TORT4 015056  
TORT5 015066  
TORT6 015076  
T1 022332 G  
T1MSG 022334  
T1RTB 022450  
T1TBL 022444  
T10 024222 G  
T10MSG 024224  
T10RTB 024356  
T10TBL 024352  
T11 024364 G  
T11FTB 024614  
T11MSG 024366  
T11RTB 024612  
T11TBL 024602  
T12 024622 G  
T12FTB 025024  
T12MSG 024624  
T12RTB 025022  
T12TBL 025012  
T13 025032 G  
T13FTB 025254  
T13MSG 025034  
T13RTB 025252  
T13TBL 025242  
T14 025262 G

T14FTB 025474  
T14MSG 025264  
T14RTB 025472  
T14TBL 025462  
T15 025502 G  
T15FTB 025624  
T15MSG 025504  
T15RTB 025620  
T15TBL 025610  
T16 025632 G  
T16FTB 026116  
T16MSG 025634  
T16RTB 026112  
T16TBL 026102  
T17 026234 G  
T17FTB 026422  
T17MSG 026236  
T17RTB 026414  
T17TBL 026404  
T18 026430 G  
T18FTB 026766  
T18MSG 026432  
T18RTB 026762  
T18TBL 026752  
T19 027104 G  
T19FTB 027332  
T19MSG 027106  
T19RTB 027326  
T19RT1 027306  
T19TBL 027316  
T2 022456 G  
T2MSG 022460  
T2RTB 022610  
T2TBL 022604  
T20 027340 G  
T20FTB 027474  
T20MSG 027342  
T20RTB 027472  
T20TBL 027462  
T21 027502 G  
T21FTB 030120  
T21MSG 027504  
T21RTB 030116  
T21TBL 030106  
T22 030126 G  
T22FTB 030240  
T22MSG 030130  
T22TBL 030224  
T23 030246 G  
T23FTB 030442  
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T23RTB 030440  
T23TBL 030430  
T24 030450 G  
T24FTB 030702  
T24MSG 030452

T24RTB 030700  
T24TBL 030670  
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T25FTB 031072  
T25MSG 030712  
T25RTB 031064  
T25TBL 031054  
T26 031100 G  
T26FTB 031272  
T26MSG 031102  
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T26TBL 031256  
T27 031300 G  
T27FTB 031462  
T27MSG 031302  
T27RTB 031456  
T27TBL 031446  
T28 031470 G  
T28FTB 031656  
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T29TBL 032056  
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T3MSG 022620  
T3RTB 022724  
T3TBL 022720  
T30 032100 G  
T30FTB 032372  
T30MSG 032102  
T30RTB 032366  
T30TBL 032356  
T31 032400 G  
T31FTB 032744  
T31MSG 032402  
T31RTB 032740  
T31TBL 032730  
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T32RTB 033346  
T32TBL 033336  
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T33RTB 033544  
T33TBL 033534  
T34 033556 G  
T34FTB 033744  
T34MSG 033560  
T34RTB 033740  
T34TBL 033730  
T35 033752 G

T35FTB 034164  
T35MSG 033754  
T35RTB 034160  
T35TBL 034150  
T36 034172 G  
T36FTB 034520  
T36MSG 034174  
T36RTB 034514  
T36TBL 034504  
T4 022732 G  
T4MSG 022734  
T4RTB 023042  
T4TBL 023036  
T5 023050 G  
T5MSG 023052  
T5RTB 023160  
T5TBL 023154  
T6 023166 G  
T6MSG 023170  
T6RTB 023344  
T6TBL 023340  
T7 023352 G  
T7MSG 023354  
T7RTB 023606  
T7TBL 023602  
T8 023614 G  
T8MSG 023616  
T8RTB 023776  
T8TBL 023772  
T9 024004 G  
T9MSG 024006  
T9RTB 024214  
T9TBL 024210  
UACDB 013660  
UADCK 013500  
UAM = 000200 G  
UAUWCH 011750  
UBRCR 013710  
UBT10 024334  
UBT21 027670  
UBT23 030410  
UBT24 030654  
UBT27 031432  
UBT31 032566  
UBT32 033324  
UBT36 034462  
UBT7 023570  
UCGSC 013214  
UCT32 033240  
UCT36 034410  
UDUWCH 011744  
UNIT 021526  
UNPKHP 021572  
UNTPRT 002512  
UN1 021314  
VARIFY 002372  
VECT 002354

WAIT 011610  
WATCH 011662  
WC 002443  
WCERR = 000023  
WCFRU 005462  
WCOVFE = 000051  
WCOVRF = 002000  
WDCNT 002370  
WDDCMD = 000014  
WDFRU 005466  
WEECK 020040  
WEFRU 005516  
WRITE 010744  
WRITE1 011002  
WRERR = 000002  
WSCMD = 000004  
XADBIT 002346 G  
XCDENC 020470  
XCEC 011606  
XCRBIT 014666  
XCSRCK 014106  
XDVRCK 011660  
XEMPBF 010732  
XENTCK 020236  
XERNBE 003470  
XERRCK 020162  
XERROR 003334  
XERUUT 002442  
XER1 016014  
XER2 015531  
XER3 015627  
XESRCK 014234  
XFILBF 010614  
XGSC 013244  
XGTECN 015162  
XGTK 013076  
XINIT 021512  
XINT 010460  
XPCE 007162  
XPG 012464  
XPTDID 020640  
XPTFRU 005606  
XPTSTA 015436  
XRDERC 011454  
XRSTA 011336  
XREAD 011164  
XREGCK 014256  
XSCP 007756  
XSDC 020540  
XSETDN 011254  
XSRC 014520  
XTKECK 017722  
XTKPRT 010154  
XT1 022440  
XT10 024346  
XT11 024576  
XT12 025006

PARAMETER CODING  
SYMBOL TABLE

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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: 31264 WORDS ( 123 PAGES)

DYNAMIC MEMORY: 19748 WORDS ( 75 PAGES)

ELAPSED TIME: 00:05:01

CNRXFA.BIN/DS:GBL/EN:AMA:ABS,CNRXFA.LST/CR/-SP/NL:CND:MD:BEX=SVC34/MLB,CNRXFA.MAC