```
                                .REM %
```

IDENTIFICATION

PRODUCT CODE:	AC-E625B-MC
PRODUCT NAME:	CZRXFB0 RX02 FCTN/LGC
PRODUCT DATE:	29-MAR-82
MAINTAINER:	S.S.S.T.A.
AUTHOR:	L. S. PRUCHA

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

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

1.2 SYSTEM REQUIREMENTS

1.2.1 HARDWARE REQUIREMENTS

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

1.2.2 SOFTWARE REQUIREMENTS

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

1.3 RELATED DOCUMENTS AND STANDARDS

XXDP+ USERS MANUAL

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

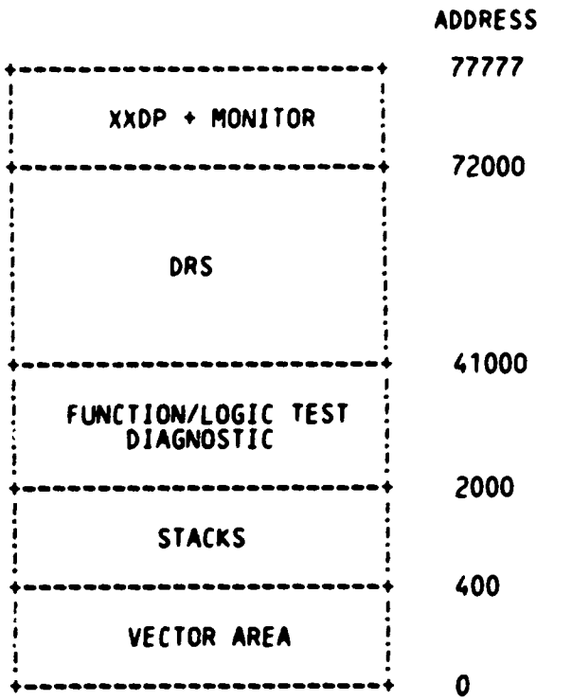
NONE

1.5 ASSUMPTIONS

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

1.6 MEMORY MAP

MEMORY LAYOUT ON 16K MACHINE - XXDP ENVIRONMENT



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

2.0 OPERATING INSTRUCTIONS

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

2.1 HARDWARE QUESTIONS

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

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

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

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

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

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

2.2 SOFTWARE QUESTIONS

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

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

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

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

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

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

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

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

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

3.0 ERROR INFORMATION

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

3.1 SYSTEM FATAL ERRORS

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

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

3.2 DEVICE FATAL ERRORS

DEVICE FATAL ERRORS ARE A RESULT OF:

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

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

3.3 HARD ERRORS

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

3.5 ERROR PRINTOUT FORMAT

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

3.5.1 FUNCTION TESTS

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

EXAMPLE ERROR PRINTOUT:

```
CZRXFB0 HRD ERR  00004 ON UNIT 01 TST 010 SUB 000 PC:003476
 POSITIONING - FNC TST
  CSR- ERROR
        REG ACTUAL=005520
        REG EXPECT=037566
```

3.5.2 LOGIC TESTS

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

EXAMPLE ERROR PRINTOUT:

```
CZRXFB0 DEV FTL ERR  00019 ON UNIT 01 TST 024 SUB 000 PC:003476
 WRD CNT INTEGRITY PRT:1 - LGC TST
  WORD COUNT ERROR
        REG ACTUAL=000020
        REG EXPECT=000000

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

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

4.0 PERFORMANCE AND PROGRESS REPORTS

NONE

5.0 DEVICE INFORMATION

5.1 DEVICE REGISTERS

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

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

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

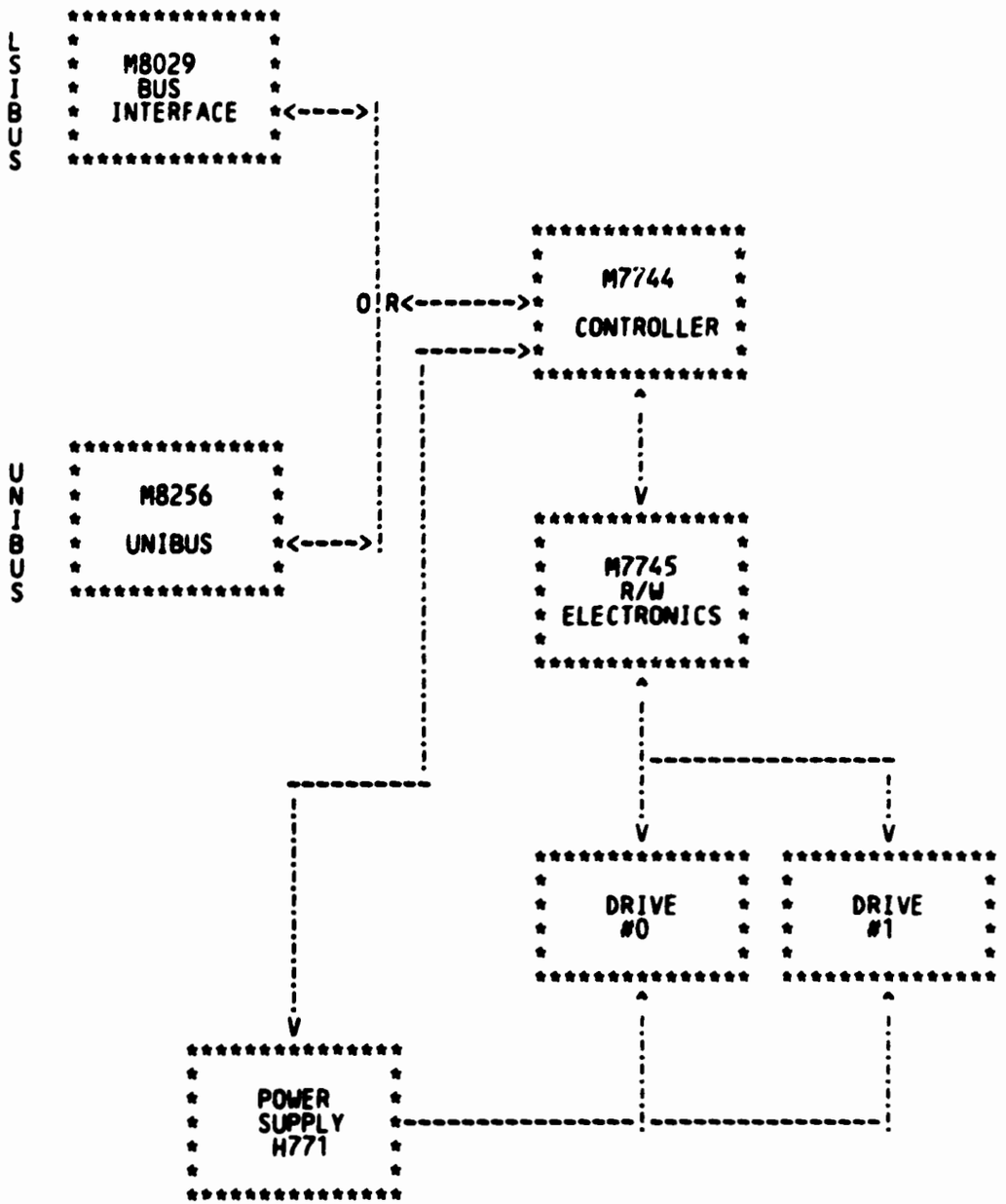
5.2 DEVICE PROTOCOL

RX02 FUNCTIONAL PROCESS

FUNCTION CODE BIT # 3 2 1	FUNCTION	PROCEDURE (PROTOCOL)
0 0 0	FILL BUFFER	FUNCTION WORD --->TR--->WC--->TR--->BA--->D
0 0 1	EMPTY BUFFER	FUNCTION WORD --->TR--->WC--->TR--->BA--->D
0 1 0	WRITE SECTOR	FUNCTION WORD --->TR--->SA--->TR--->TA--->D
0 1 1	READ SECTOR	FUNCTION WORD --->TR--->SA--->TR--->TA--->D
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--->D
1 1 1	READ ERROR CODE	FUNCTION WORD --->TR--->BA--->DONE

TR = WAIT FOR TR BIT
DONE = WAIT FOR DONE BIT
BA = BUS ADDRESS (OUTPUT TO RX)
VW = VERIFICATION WORD (OUTPUT TO RX)
WC = WORD COUNT (OUTPUT TO RX)
SA = SECTOR ADDRESS (OUTPUT TO RX)
TA = TRACK ADDRESS (OUTPUT TO RX)

5.3 DEVICE HARDWARE CONFIGURATION



6.0 TEST SUMMARIES

TEST 1 - INITIALIZE - FNC TST

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

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

TEST 2 - READ ERROR CODE - FNC TST

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

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

TEST 3 - FILL BUFFER - FNC TST

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

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

TEST 4 - EMPTY BUFFER - FNC TST

TEST TO VERIFY THE DEVICE BUFFER WILL EMPTY WITH[illegible] 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

```
570
571                                     TEST 6 -   FILL & EMPTY BUFFER - FNC TST
572
573                                             TEST TO VERIFY THE DEVICE BUFFER DATA IS VALID AFTER A FILL/EMPTY
574                                             BUFFER COMMAND SEQUENCE.
575
576                                             DESCRIPTION:
577                                                     1. SETUP RANDOM DATA PATTERN
578                                                     2. CALL FILL BUFFER
579                                                     3. IF RX ERR BIT IS SET REPORT ERROR
580                                                     4. CALL EMPTY BUFFER
581                                                     5. IF RX ERR BIT IS SET REPORT ERROR
582                                                     6. CALL DATA CHECK
583
584                                     TEST 7 -   READ & WRITE SECTOR - FNC TST
585
586                                             TEST TO VERIFY THE DEVICE WILL READ AND WRITE IN BOTH DENSITIES WITHOUT
587                                             AN ERROR.
588
589                                             DESRIPTION:
590                                                     1. SETUP TO DO TEST IN WRONG DENSITY
591                                                     2. CALL WRITE SECTOR
592                                                     3. IF RX ERR BIT IS NOT SET REPORT ERROR
593                                                     4. CALL READ SECTOR
594                                                     5. IF RX ERR BIT IS NOT SET REPORT ERROR
595                                                     6. SETUP CORRECT DENSITY
596                                                     7. CALL WRITE SECTOR
597                                                     8. IF RX ERR BIT IS SET REPORT ERROR
598                                                     9. CALL READ SECTOR
599                                                    10. IF RX ERR BIT IS SET REPORT ERROR
600
601
602                                     TEST 8 -   WRITE SECTOR DELETED DATA - FNC TST
603
604                                             TEST TO VERIFY THAT THE DEVICE WILL WRITE A DELETED DATA MARK ON THE
605                                             DISKETTE WITHOUT ERROR.
606
607                                             DESCRIPTION:
608                                                     1. SETUP TEST TO CORRECT DENSITY AND DELETED DATA MODE
609                                                     2. CALL WRITE SECTOR DELETED DATA
610                                                     3. IF RX ERR BIT IS SET REPORT ERROR
611                                                     4. CALL READ SECTOR
612                                                     5. IF RX ERR BIT IS SET REPORT ERROR
613                                                     6. CLEAR DELETED DATA MODE
614                                                     7. CALL WRITE SECTOR (CLEAR DETETED DATA MARK)
615                                                     8. IF RX ERR BIT IS SET REPORT ERROR
616
```

```
618
619                         TEST 9 -   SET DENSITY - FNC TST
620
621                                 TEST TO VERIFY THE DEVICE WILL CHANGE DENSITIES WITHOUT INCURRING AN
622                                  ERROR.
623
624                                 DESCRIPTION:
625                                         1. SETUP DENSITY = DISK DENSITY
626                                         2. CALL SET DENSITY
627                                         3. IF RX ERR BIT IS SET REPORT ERROR
628                                         4. CALL READ SECTOR
629                                         5. IF RX ERR BIT IS SET OR DENSITY NOT CORRECT REPORT ERROR
630                                         6. SETUP DENSITY = OPPOSITE DISK DENSITY
631                                         7. CALL SET DENSITY
632                                         8. IF RX ERR BIT IS SET REPORT ERROR
633                                         9. CALL READ SECTOR
634                                        10. IF RX ERR BIT IS SET OR DENSITY NOT CORRECT REPORT ERROR
635                                        11. SETUP DENSITY = DISK DENSITY
636                                        12. CALL SET DENSITY
637                                        13. IF RX ERR BIT IS SET REPORT ERROR
638
639
640                         TEST 10 - POSITIONING - FNC TEST
641
642                                 TEST TO VERIFY THE DEVICE WILL CHANGE SECTORS AND TRACKS WITHOUT
643                                 INCURRING AN ERROR.
644
645                                 DESCRIPTION:
646                                         1. SETUP RANDOM TRACK PATTERN AND DENSITY = DISK DENSITY
647                                         2. CALL GET A TRACK & SECTOR
648                                         3. CALL READ SECTOR
649                                         4. IF RX ERR BIT IS SET REPORT ERROR
650                                         5. DO 2. -> 4. UNTIL 76. TRACKS DONE
651
652
653                         TEST 11 -  CSR BITS - LGC TST
654
655                                 TEST TO VERIFY THAT THE READ/WRITE BITS OF THE CONTROL AND STATUS REG-
656                                 ISTER CAN BE WRITTEN INTO AND READ AND OTHERWISE BEHAVE AS EXPECTED.
657
658                                 DESCRIPTION:
659                                         1. LOAD RX CSR WITH 1'S
660                                         2. CHECK & REPORT THAT ALL BITS THAT SHOULD SET, DO SET
661                                         3. LOAD RX CSR WITH 0'S
662                                         4. CHECK & REPORT THAT ALL BITS THAT SHOULD NOT BE SET,
663                                            ARE NOT SET
664
665
666                         TEST 12 -  DBR BITS - LGC TST
667
668                                 TEST TO VERIFY THAT THE READ/WRITE BITS OF THE DATA BUFFER REGISTER
669                                 CAN BE WRITTEN INTO AND READ AS EXPECTED.
670
671                                 DESCRIPTION:
672                                         1. WRITE RX DBR WITH ALL 1'S
673                                         2. CHECK & REPORT ALL BITS THAT SHOULD & SHOULD NOT BE SET
```

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

TEST 13 -  CSR-DBR COMMON BYTE - LGC TST

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

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


TEST 14 -  BUS INITIALIZE - LGC TST

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

        DESCRIPTION:
                1. ISSUE BUS INITIALIZE
                2. CHECK & REPORT IF ERROR BIT OR AC LOW BIT ARE SET OR IF DON'
                   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
```

```
711
712
713                     TEST 16 -  POWER FAIL - LGC TST
714
715                             TEST TO VERIFY THAT THE ACLOW CIRCUITS OPERATE AS EXPECTED.
716
717                             DESCRIPTION:
718                                     1. IF MANNUAL INTERVENTION ALLOWED ASK OPERATOR TO POWER DOWN RX
719                                     2. IF POWERED DOWN, THEN CHECK & REPORT IF AC LOW BIT NOT SET
720                                     3. ASK OPERATOR TO POWER UP RX
721                                     4. IF POWERED UP, THEN INITIALIZE, CHECK & REPORT IF AC LOW BIT
722
723
724                     TEST 17 -  CONTROLLER-INTERFACE - LGC TST
725
726                             TEST TO VERIFY THAT THE INTERFACE BOARD STATE SEQUENCER IS FUNCTIONAL.
727                             ALSO TO VERIFY THE CONTROLLER-INTERFACE HANDSHAKE BY TRYING FUNCTIONS
728                             WITH MINIMUM READ/WRITE BOARD INVOLVEMENT.
729
730                             DESCIRPTION:
731                                     1. CALL READ ERROR CODE
732                                     2. IF ERROR, THEN REPORT ERROR
733                                     3. CALL FILL BUFFER
734                                     4. IF ERROR, THEN REPORT ERROR
735                                     5. CALL EMPTY BUFFER
736                                     6. IF ERROR, THEN REPORT ERROR
737                                     7. CALL READ STATUS
738                                     8. IF ERROR, THEN REPORT ERROR
739
```

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741
742                                 TEST 18 -  NPR - LGC TST
743
744                                         TEST TO VERIFY THAT THE NPR LOGIC WILL STORE A WORD IN MEMORY.
745
746                                         DESCRIPTION:
747                                                 1. SETUP MEMORY LOCATION
748                                                 2. CALL READ ERROR CODE (TO WRITE OVER LOCATION)
749                                                 3. IF ERROR, THEN REPORT NPR ERROR
750                                                 4. SETUP BUFFER AREAS BEGIN, END & END+1
751                                                 5. CALL FILL BUFFER
752                                                 6. IF ERROR, THEN REPORT ERROR
753                                                 7. CALL EMPTY BUFFER
754                                                 8. IF ERROR, THEN REPORT ERROR
755                                                 9. CHECK BUFFER AREAS BEGIN & END SHOULD CHANGE & END+1 SHOULD
756                                                    NOT, REPORT AS NPR ERROR, IF CONDITIONS NOT MET
757
758
759                                 TEST 19 -  NPR NON-EXISTENT MEM - LGC TST
760
761                                         TEST TO VERIFY THAT THE NPR NON-EXISTEND MEMORY LOGIC WILL TIME OUT
762                                         WHEN GIVEN AN ILLEGAL ADDRESS.
763
764                                         DESCIRPTION:
765                                                 1. SETUP BUS TRAPS AND NONEXSISTANT MEMORY ADDRESS
766                                                 2. CALL READ ERROR CODE
767                                                 3. IF RX CSR ERROR BIT OR RX ESR NXM BIT NOT SET, THEN CALL ERRO
768                                                 4. CALL INITIALIZE (CLEAR RX ERROR)
769                                                 5. CLEAR BUS TRAP VECTOR
770
771
772                                 TEST 20 -  INTERRUPT - LGC TST
773
774                                         TEST TO VERIFY THAT THE INTERRUPTS CAN BE SET AND THAT THE DEVICE
775                                         RESPONDS AS EXPECTED.
776
777                                         DESCRIPTION:
778                                                 1. SET PROCESSOR PRIORTY = 7 (NO INTERRUPTS)
779                                                 2. SET RX INTERRUPT BIT & SETUP LOWER PRIORITY
780                                                 3. CALL WATCH TO LOWER PROCESSOR PRIORITY & WAIT FOR INTERRUPT
781                                                 4. CALL ERROR IF DID NOT INTERRUPT
782                                                 5. CLEAR RX INTERRUPT BIT
783
784
785                                 TEST 21 -  PRIORITY LVL - LGC TST
786
787                                         TEST TO VERIFY THAT THE DEVICE PRIORITY IS SET TO THE CORRECT LEVEL.
788
789                                         DESCRIPTION:
790                                                 1. SETUP PROCESSOR PRIORITY = 7 (NO INTERRUPTS)
791                                                 2. DO SET PROCESSOR PRIORITY
792                                                 3. SET RX INTERRUPT BIT
793                                                 4. IF INTERRUPT OCCURED, THEN CHECK LEVEL & REPORT IF PROCSSOR
794                                                    PRIORITY NOT LOWER THAN RX
795                                                 5. IF INTERRUPT DID NOT OCCUR, THEN SETUP NEXT LOWER PROCESSOR
796                                                    PRIORITY & START AT 2. AGAIN
```

```
797
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                        TEST 22 -  INITIALIZE CONTROL - LGC TST

                                TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE IN TIALIZE.

                                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 R
                                           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
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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 WIL 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

```
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```

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.

DESCIRPTION:

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

```
                        TEST 32 -  TRACK ADR - LGC TST

                                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 E
                                        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
```

```
1008
1009                    TEST 35 -  DELETED DATA WRITE PRT:2 - LGC TST
1010
1011                            TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISKETTE
1012                            HEADER AND RETRIEVE THIS DATA ON A KNOWN GOOD DISKETTE.  THIS IS DONE
1013                            IN OPPOSITE DENSITY OF PART: 1.
1014
1015                            DESCRIPTION:
1016                                    1. SETUP DENSITY = DISK DENSITY
1017                                    2. SETUP DELETED DATA MODE
1018                                    3. CALL WRITE SECTOR
1019                                    4. CALL READ ERROR CODE
1020                                    5. IF ERROR, THEN REPORT ERROR
1021                                    6. CALL READ SECTOR
1022                                    7. IF RX ESR DELETED DATA BIT NOT SET OR OTHER ERROR, THEN REPOR
1023
1024
1025
1026                    TEST 36 -  DISKETTE & DENSITY DATA CHECK - LGC TST
1027
1028                            TEST TO VERIFY WITH A KNOWN GOOD DISKETTE THAT THE DEVICE WILL READ
1029                            AND WRITE TO THE DISKETTE WITHOUT DATA ERRORS.  BOTH DENSITIES WILL
1030                            BE DONE.
1031
1032                            DESCRIPTION:
1033                                    1. SETUP DENSITY = DISK DENSITY
1034                                    2. SETUP RANDOM DATA PATTERN
1035                                    3. GET A TRACK & SECTOR
1036                                    4. CALL FILL BUFFER
1037                                    5. CALL WRITE SECTOR
1038                                    6. SETUP TO CLEAR RX INTERNAL BUFFER
1039                                    7. CALL FILL BUFFER
1040                                    8. CALL READ SECTOR
1041                                    9. CALL EMPTY BUFFER
1042                                   10. CALL DATA CHECK
1043                                   11. DO 3. -> 10. UNTIL AT LEAST ONE SECTOR OF EACH TRACK IS ACCES
1044                                   12. SETUP DENSITY = OPPOSITE DISK DENSITY
1045                                   13. CALL SET DENSITY
1046                                   14. DO 3. -> 13. UNTIL BOTH DENSITIES DONE
1047
1048
1049
1050
1051
1052
1053
1054
1055
1056
1057
1058
1059
1060
1061
1062
1063
```

```
1064
1065
1066                                    7.0     LISTING INDEX
1067                                            -------------
1068                                    .NLIST  SEQ,LD,BIN,CND
1069
1070                                                                                    .REPT 0
1071
1072                                    7.1     LISTING
1073                                            -------
1074
1075                                                                                    .ENDR
1076                                    %
1077                                    .NLIST  CND,MD,BEX,CND
1078                                    .LIST   SEQ,BIN
1093                                    .TITLE PROGRAM HEADER AND TABLES
1094                                    .SBTTL  PROGRAM HEADER
1120
1122                                            .ENABL  ABS,AMA
1123            002000                          .=2000
1124                                            .NLIST  BEX,MD
1126
1127    002000                                  BGNMOD
1128
1129                                    ;++
1130                                    ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
1131                                    ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
1132                                    ;--
1133
1134    002000                                  POINTER BGNSW,BGNSFT,BGNAU,BGNDU,ERRTBL,BGNSETUP
1135
1145
1146    002000                                  HEADER  CZRXFB0,0,0,170.0
1147    002122                                  DESCRIPT <RX02 FUNCTION-LOGIC TEST>
1148
1157    002154                                  DEVTYP <RX02>
1158
1159
1160
1161
1162
1163                                    .SBTTL  DISPATCH TABLE
1164
1165                                    ;++
1166                                    ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
1167                                    ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
1168                                    ;--
1169
1170    002162                                  DISPATCH 36
1171
```

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

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

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

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

002350                                          ENDMOD
```

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

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

                                                BGNMOD

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

                                                EQUALS
                                        ;
                                        ; BIT DIFINITIONS
                                        ;
                    100000              BIT15== 100000
                    040000              BIT14== 40000
                    020000              BIT13== 20000
                    010000              BIT12== 10000
                    004000              BIT11== 4000
                    002000              BIT10== 2000
                    001000              BIT09== 1000
                    000400              BIT08== 400
                    000200              BIT07== 200
                    000100              BIT06== 100
                    000040              BIT05== 40
                    000020              BIT04== 20
                    000010              BIT03== 10
                    000004              BIT02== 4
                    000002              BIT01== 2
                    000001              BIT00== 1
                                        ;
                    001000              BIT9==  BIT09
                    000400              BIT8==  BIT08
                    000200              BIT7==  BIT07
                    000100              BIT6==  BIT06
                    000040              BIT5==  BIT05
                    000020              BIT4==  BIT04
                    000010              BIT3==  BIT03
                    000004              BIT2==  BIT02
                    000002              BIT1==  BIT01
                    000001              BIT0==  BIT00
                                        ;
                                        ; EVENT FLAG DEFINITIONS
```

```
(1)                                     ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
(1)                                     ;
(1)          000040                     EF.START==      32.                     ; START COMMAND WAS ISSUED
(1)          000037                     EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
(1)          000036                     EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
(1)          000035                     EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
(1)          000034                     EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
(1)                                     ;
(1)                                     ;
(1)                                     ; PRIORITY LEVEL DEFINITIONS
(1)                                     ;
(1)          000340                     PRI07== 340
(1)          000300                     PRI06== 300
(1)          000240                     PRI05== 240
(1)          000200                     PRI04== 200
(1)          000140                     PRI03== 140
(1)          000100                     PRI02== 100
(1)          000040                     PRI01== 40
(1)          000000                     PRI00== 0
(1)                                     ;
(1)                                     ;OPERATOR FLAG BITS
(1)                                     ;
(1)          000004                     EVL==       4
(1)          000010                     LOT==      10
(1)          000020                     ADR==      20
(1)          000040                     IDU==      40
(1)          000100                     ISR==     100
(1)          000200                     UAM==     200
(1)          000400                     BOE==     400
(1)          001000                     PNT==    1000
(1)          002000                     PRI==    2000
(1)          004000                     IXE==    4000
(1)          010000                     IBE==   10000
(1)          020000                     IER==   20000
(1)          040000                     LOE==   40000
(1)          100000                     HOE==  100000
```

```
1568                                    ;***** PROGRAM EQUIVALENTS *****
1569
1570    000010                          DLDCMD  =       BIT3            ;DEL. DATA CMD BIT------<CSR>
1571    100000                          ERRBIT  =       BIT15           ;ERROR BIT--------------<CSR>
1572    040000                          RXINIT  =       BIT14           ;RXINIT BIT-------------<CSR>
1573    004000                          RX2BIT  =       BIT11           ;RX02 BIT---------------<CSR>
1574    001000                          SIDE1   =       BIT9            ;SIDE #1 BIT------------<ESR> & <CSR>
1575    000400                          DENBIT  =       BIT8            ;DENSITY B.I.T----------<CSR>
1576    000200                          TRBIT   =       BIT7            ;TR BIT-----------------<CSR>
1577    000040                          DNBIT   =       BIT5            ;DONE BIT---------------<CSR>
1578    000020                          DRV1    =       BIT4            ;DRIVE 1----------------<CSR>
1579    004000                          NXMBIT  =       BIT11           ;NON-EXISTENT MEM-------<ESR>
1580    002000                          WCOVRF  =       BIT10           ;WORD COUNT OVERFLOW----<ESR>
1581    000400                          DRIVE1  =       BIT8            ;DRIVE #1 BIT-----------<ESR>
1582    000200                          DRVRDY  =       BIT7            ;DRIVE READY BIT--------<ESR>
1583    000100                          DLDBIT  =       BIT6            ;DEL. DATA BIT----------<ESR>
1584    000040                          DRVDEN  =       BIT5            ;DRIVE DENSITY----------<ESR>
1585    000020                          DENERR  =       BIT4            ;DENSITY ERROR----------<ESR>
1586    000010                          ACLOW   =       BIT3            ;AC LOW BIT-------------<ESR>
1587    000004                          INITDN  =       BIT2            ;INITIALIZE DONE BIT----<ESR>
1588    000002                          SIDRDY  =       BIT1            ;SIDE READY BIT---------<ESR>
1589    000001                          CRCERR  =       BIT0            ;CRC ERROR BIT----------<ESR>
1590    000004                          BTRP4   =       4               ;BUS TRAP LOC #4 - TRAP HANDLER
1591    000006                          BTRP6   =       6               ;BUS TRAP LOC #4 - PSW
1592    000001                          LOGICT  =       BIT0            ;LOGIC TEST BIT---------<SWREG>
1593    000002                          FUNCTT  =       BIT1            ;FUNCTION TEST BIT------<SWREG>
1594    010000                          SIDFLG  =       BIT12           ;SIDE FLAG SOFT-P TABLE-<SWREG>
1595    000400                          ITK     =       BIT8            ;INITIALIZE TRACKS FLAG         <TKSCFG>
1596    001000                          ISC     =       BIT9            ;INITIALIZE SECTORS FLAG        <TKSCFG>
1597    000001                          STK     =       BIT0            ;SEQUENCE TRACKS FLAG           <TKSCFG>
1598    000002                          SSC     =       BIT1            ;SEQUENCE SECTORS FLAG          <TKSCFG>
1599    000000                          RTK     =       0               ;RANDOM TRACKS FLAG             <TKSCFG>
1600    000000                          RSC     =       0               ;RANDOM SECTORS FLAG            <TKSCFG>
1601    000004                          ILTK    =       BIT2            ;ILLEGAL TRACKS FLAG            <TKSCFG>
1602
1603                                    ;***** DEVICE COMMANDS *****
1604
1605    000000                          FBCMD   =       0               ;FILL BUFFER CMD
1606    000002                          EBCMD   =       2               ;EMPTY BUFFER CMD
1607    000004                          WSCMD   =       4               ;WRITE SECTOR
1608    000006                          RSCMD   =       6               ;READ SECTOR
1609    000010                          SDCMD   =       10              ;SET DENSITY
1610    000012                          STCMD   =       12              ;STATUS
1611    000014                          WDDCMD  =       14              ;WRITE DELETED DATA CMD
1612    000016                          RECCMD  =       16              ;READ ERROR CODE CMD
```

```
                                ;***** ERROR NUMBER EQUIVALENTS *****
                                
000002                  WRTERR  =       2.              ;WRITE ERR                      -HRD
000003                  RDERR   =       3.              ;READ ERR                       -HRD
000004                  CRCERR  =       4.              ;CRC ERR                        -HRD
000005                  DATER   =       5.              ;DATA ERR                       -HRD
000006                  SEKERR  =       6.              ;SEEK ERR                       -HRD
000007                  DLDERR  =       7.              ;DELETED DATA ERR               -HRD
                        ;-----------------------------------------------------------------------

000012                  FILERR  =       10.             ;FILL BUFFER ERR                -HRD
000013                  EMPERR  =       11.             ;EMPTY BUFFER ERR               -HRD
000014                  INTNDN  =       12.             ;INTERRUPT, NO DONE ERR         -HRD
000015                  DNNINT  =       13.             ;DONE, NO INTERRUPT ERR         -HRD
000016                  ERRNST  =       14.             ;ERROR NOT SET ERR              -HRD
000017                  ILLERC  =       15.             ;ILLEGAL ERROR CODE             -HRD
000020                  DENDSK  =       16.             ;DENSITY OF DISK-NOT ERR        -HRD
000021                  RECERR  =       17.             ;READ ERROR CODE ERR            -HRD
                        ;-----------------------------------------------------------------------

000023                  WCERR   =       19.             ;WORD COUNT ERROR               -DVCFTL
000024                  SDRDYE  =       20.             ;SIDE READY                     -DVCFTL
000025                  DVRDYE  =       21.             ;DRIVE READY                    -DVCFTL
000026                  SIDWRG  =       22.             ;SIDE WRONG                     -DVCFTL
000027                  DRVWRG  =       23.             ;DRIVE WRONG                    -DVCFTL
000030                  DENERR  =       24.             ;DENSITY ERR                    -DVCFTL
000031                  DENMIX  =       25.             ;DENSITY MIXED ON DISK ERR      -DVCFTL
000032                  DLDTER  =       26.             ;DELETED DATA ERR               -DVCFTL
000033                  CSRERR  =       27.             ;RXCSR-ERR                      -DVCFTL
000034                  DBRERR  =       28.             ;RXESR-ERR                      -DVCFTL
000035                  STDNER  =       29.             ;SET DENSITY ERR                -DVCFTL
000036                  SDKYWD  =       30.             ;SET DENSITY KEYWORD (VARIFY)   -DVCFTL
000037                  ACLOWD  =       31.             ;AC LOW                         -DVCFTL
000040                  ALGO2E  =       32.             ;ALGO2 ERROR                    -DVCFTL
000041                  TRKAER  =       33.             ;TRACK ADDRESS                  -DVCFTL
000042                  SECAER  =       34.             ;SECTOR ADDRESS                 -DVCFTL
                        ;-----------------------------------------------------------------------

000050                  ACLOWF  =       40.             ;AC LOW FATAL ERR               -SYSFTL
000051                  WCOVFE  =       41.             ;WORD COUNT OVERFLOW ERR        -SYSFTL
000052                  NXMERR  =       42.             ;NON-EXISTENT MEMORY ERR        -SYSFTL
000053                  NPRERR  =       43.             ;NPR LOGIC ERR                  -SYSFTL
000054                  PRILEV  =       44.             ;PRIORITY LEVEL ERR             -SYSFTL
000055                  DATABF  =       45.             ;DATA BUFFER INTEG ERR          -SYSFTL
000056                  HDSFDG  =       46.             ;HARDWARE SELF DIAG ERR         -SYSFTL
000057                  NOTRBT  =       47.             ;"TR" BIT TIME OUT ERR          -SYSFTL
000060                  NODNBT  =       48.             ;"DONE" BIT TIBIT TIME OUT ERR  -SYSFTL
000061                  NOITDB  =       49.             ;NO "INIT DONE" BIT ERR         -SYSFTL
000062                  NOITDP  =       50.             ;NO PROG "INIT DONE" BIT ERR    -SYSFTL
000063                  DNNOTR  =       51.             ;"DONE" BIT, NO "TR" BIT        -SYSFTL
                        ;-----------------------------------------------------------------------
```

```
1668                                    ;***** FRU CALLOUT MESSAGE EQUIVALENTS *****
1669    000000                          INTERF  =       0               ;INTERFACE=0
1670    000002                          CONTRL  =       2*1.    ;FRUM1  ;CONTROLLER
1671    000004                          RWELEC  =       2*2.    ;FRUM2  ;R-W ELECTRONICS
1672    000006                          PHYDRV  =       2*3.    ;FRUM3  ;PHYSICAL DRIVE
1673    000010                          CABLES  =       2*4.    ;FRUM4  ;CABLES
1674    000012                          POWRSP  =       2*5.    ;FRUM5  ;POWER SUPPLY
1675    000014                          DISKET  =       2*6.    ;FRUM6  ;DISKETTE
1676    000016                          INTFSW  =       2*7.    ;FRUM7  ;INTERFACE SWITCHES
1677    000020                          NPRJPR  =       2*8.    ;FRUM8  ;NPR JUMPER
1678    000022                          CONTSW  =       2*9.    ;FRUM9  ;CONTROLLER SWITCHES
1679    000024                          INTFCB  =       2*10.   ;FRUM10 ;INTERFACE CABLE
1680    000026                          DOOROP  =       2*11.   ;FRUM11 ;DOOR OPEN
1681    000030                          DISKSP  =       2*12.   ;FRUM12 ;DISK SPINNING-DRIVE BELT
1682    000032                          MOTOR   =       2*13.   ;FRUM13 ;MOTOR AC POWER NOT ROTATING
1683    000034                          NOPWR   =       2*14.   ;FRUM14 ;POWER CORD, BLOWN FUSE, DRIVE POWER
1684                                                                    ;CONNECTOR POWER SUPPLY FAULT.
1685
1686                                    ;***** TEST FLAGS REGISTER EQUIVALENTS (FLAGST) *****
1687    000001                          REGCK   =       BIT0            ;REGISTER CHECK
1688    000002                          DDCFLG  =       BIT1            ;DOUBLE DENSITY CONTROL FLAG (DD=1)
1689    000004                          DATCK   =       BIT2            ;DATA CHECK
1690    000010                          DLPDN   =       BIT3            ;DO LOOP DONE
1691    000020                          EMBUFF  =       BIT4            ;EMPTY BUFFER-<USED BY DATA CHECK>
1692    000040                          FUNTST  =       BIT5            ;FUNCTION TEST FLAG
1693    000100                          HDRPRT  =       BIT6            ;ERROR CALL HEADER PRINT
1694    000200                          RECFLG  =       BIT7            ;READ ERROR CODE FLAG
1695    001000                          TRKDON  =       BIT9            ;TRACK DONE
1696    002000                          SECDON  =       BIT10           ;SECTOR DONE
1697    004000                          NEGTST  =       BIT11           ;NEGATIVE TEST FLAG
1698    010000                          ILLGAL  =       BIT12           ;ILLEGAL FLAG
1699    020000                          CKERR   =       BIT13           ;CHECK ERROR WORDS FLAG
1700    040000                          HRDERR  =       BIT14           ;HARD ERROR
1701    100000                          ERRFLG  =       BIT15           ;ERROR
1702
1703                                    ;***** PROGRAM/PRINT FLAGS REGISTER EQUIV (FLAGSP) *****
1704
1705    000001                          TKPRT   =       BIT0            ;TRACKS PRINT
1706    000002                          SCPRT   =       BIT1            ;SECTORS PRINT
1707    000004                          RGPRT   =       BIT2            ;REGISTERS PRINT
1708    000010                          PROPRT  =       BIT3            ;PROTOCAL LEVEL PRINT
1709    000100                          HDRPRT  =       BIT6            ;HEADER PRINT
1710    000200                          RECTST  =       BIT7            ;ERROR CODE TEST (INVOKE ERROR CODE)
1711    000400                          LSIFLG  =       BIT8            ;LSI FLAG
1712    010000                          FONZFG  =       BIT12           ;FONZ FLAG
1713    040000                          RESFLG  =       BIT14           ;RESTART FLAG
1714    100000                          STAFLG  =       BIT15           ;START FLAG
1715
1716                                    ;***** "SYS ERR" & "TYP ERR" REGISTER EQUIVALENTS *****
1717
1718    000020                          CMDERR  =       BIT4            ;COMMAND ERROR
1719    004000                          DVFERR  =       BIT11           ;DEVICE FATAL ERROR
1720    002000                          SYFERR  =       BIT10           ;SYSTEM FATAL ERROR
1721
```

```
1735                                    .SBTTL  GLOBAL DATA SECTION
1736
1737                                    ;++
1738                                    ; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
1739                                    ; IN MORE THAN ONE TEST.
1740                                    ;--
1741                                    ; STORAGE FOR DEVICE REGISTERS
1742                                    ;
1747                                    ;-------------------------------------------------------------------------------
1748  002350  000000                    RXCS:    .WORD   0       ;UNIT BUS ADR-CSR                <UUT *>      ;
1749  002352  000000                    RXDB:    .WORD   0       ;UNIT BUS ADR-DBR                <UUT *>      ;
1750  002354  000000                    VECT:    .WORD   0       ;UNIT VECTOR                     <UUT *>      ;
1751  002356  000000                    RXPRI:   .WORD   0       ;PRIORITY FOR DEVICE INTERRUPTS  <UUT *>      ;  DEVIC
1752  002360  000000                    EMPADR:  .WORD   0       ;EMPTY BUFFER ADDRESS                         ;
1753  002362  000000                    FILADR:  .WORD   0       ;FILL BUFFER ADDRESS                          ;
1754  002364  000000                    RECADR:  .WORD   0       ;READ ERROR CODE ADDRESS                      ;  PARAM
1755  002366  000000                    EXTADR:  .WORD   0       ;EXTENDED ADDRESS (BIT  *12 & #13)            ;
1756  002370  000000                    WDCNT:   .WORD   0       ;WORD COUNT                                   ;
1757  002372  000000                    VARIFY:  .WORD   0       ;VARIFY WORD                                  ;
1758  002374  000000                    TRACK:   .WORD   0       ;TRACK ADR                                    ;
1759  002376  000000                    SECTOR:  .WORD   0       ;SECTOR ADR                                   ;
1760                                    ;-------------------------------------------------------------------------------
1761  002400  000000                    CMD:     .WORD   0       ;COMMAND WORD-TO DEVICE                       ;
1762  002402  000000                    DELDAT:  .WORD   0       ;DELETED DATA FLAG & WORD        <CMD>        ;  COMMA
1763  002404  000000                    INTERT:  .WORD   0       ;INTERRUPT WORD                  <CMD>        ;
1764  002406  000000                    DRIVE:   .WORD   0       ;DRIVE WORD                      <CMD*>       ;
1765  002410  000000                    SIDE:    .WORD   0       ;SIDE WORD                       <CMD*>       ;  PARAM
1766  002412  000000                    DENSTY:  .WORD   0       ;DENSITY CONTROL WORD            <CMD>        ;
1767  002414  000000                    DENSTA:  .WORD   0       ;DENSITY STATUS WORD-DRIVE DENSITY             ;
1768  002416  000000                    PRIORT:  .WORD   0       ;PRIORITY OF INTERRUPT HANDLER-WATCH DOG       ;
1769  002420  000000                    DRVOFF:  .WORD   0       ;DRIVE BYTE OFFSET                             ;
1770                                    ;-------------------------------------------------------------------------------
1771  002422  000000                    ERRCMD:  .WORD   0       ;ERROR COMMAND                                 ;  DEVIC
1772  002424  000000                    LCMD:    .WORD   0       ;LAST COMMAND                                  ;  ERROR
1773  002426  000000                    LRXCSR:  .WORD   0       ;LAST RX CSR STORAGE                           ;
1774  002430  000000                    LRXESR:  .WORD   0       ;LAST RX ESR STORAGE                           ;  &
1775  002432  000000                    RXCSR:   .WORD   0       ;RX CSR STORAGE                                ;
1776  002434  000000                    RXESR:   .WORD   0       ;RX ESR STORAGE                                ;  STATU
1777  002436  000000                    REGEXP:  .WORD   0       ;REGISTER EXPECTED                             ;  INFO
1778  002440  000000                    REGACT:  .WORD   0       ;REGISTER ACTUAL                               ;
1779                                    ;-------------------------------------------------------------------------------
1780                                    ;                                    * = INFO FROM HARDWARE P-TABLES
1781                                    ;-------------------------------------------------------------------------------
1782
1783
1784                                    .SBTTL -  READ ERROR CODE BUFFER
1785                                    ;-------------------------------------------------------------------------------
1786  002442  000                       XERUUT:  .BYTE   0       ;ERROR CODE UUT
1787  002443  000                       WC:      .BYTE   0       ;WORD COUNT UUT
1788  002444  000                       CTK0:    .BYTE   0       ;CUR TRK DRV#0
1789  002445  000                       CTK1:    .BYTE   0       ;CUR TRK DRV#1
1790  002446  000                       TTRK:    .BYTE   0       ;TARGET TRACK
1791  002447  000                       TSEC:    .BYTE   0       ;TARGET SECTOR
1792  002450  000                       SFTSTS:  .BYTE   0       ;MICRO CODE SOFT STATUS
1793  002451  000                       BTRK:    .BYTE   0       ;BAD TRACK ADR (ONLY APPLIES IF ERR CODE = 150
1794                                    ;-------------------------------------------------------------------------------
```

```
                                ;---------------------------------------------------------------------------
    002452  000000              ABORT:  .WORD   0       ;ABORT FLAG                                   ;  TEST
    002454  000000              FIN:    .WORD   0       ;FINI COMMAND FLAG                            ;  ERROR
    002456  000000              SYSERR: .WORD   0       ;SYSTEM ERROR                                 ;
    002460  000000              TYPERR: .WORD   0       ;TYPE ERROR                                   ;  &
    002462  000000              RECERN: .WORD   0       ;READ ERROR CODE-ERROR NUMBER                 ;  STATU
    002464  000000              NGTSER: .WORD   0       ;NEG TEST EXPECTED ERROR                      ;  INFO
                                ;---------------------------------------------------------------------------
    002466  000000              TSTID:  .WORD   0       ;TEST IDENT WORD                              ;  TEST
    002470  000000              TCMDCT: .WORD   0       ;TEST COMMAND COUNTER                         ;
    002472  000000              PROTCT: .WORD   0       ;PROTOCAL COUNT                               ;  INFO
    002474  000012              DNWTMT: .WORD   12      ;DONE WAIT MULTIPLIER                         ;
                                ;---------------------------------------------------------------------------
    002476  000000              FLAGST: .WORD   0       ;SOFTWARE TEST FLAGS -> SEE BELOW             ;  TEST
    002500  000000              FLAGSP: .WORD   0       ;SOFTWARE PROG/PRT FLAGS-->SEE BELOW          ;
    002502  000004              FLGDRS: .WORD   4       ;FLAGS FROM 'DRS"                             ;  CONTR
    002504  000000              TTEMP1: .WORD   0       ;TEST TEMP 1                                  ;
    002506  000000              TSAVE1: .WORD   0       ;TEST SAVE 1                                  ;  FLAGS
    002510  000000              TKSCFG: .WORD   0       ;TRACK & SECTORS FLAGS --> SEE BELOW          ;
                                ;---------------------------------------------------------------------------
    002512  000000              UNTPRT: .WORD   0       ;UNIT #-PRINT                                 ;  DEVIC
    002514     000              DRVPRT: .BYTE   0       ;DRIVE #-PRINT                                ;  PRINT
    002515     000              SIDPRT: .BYTE   0       ;SIDE #-PRINT                                 ;
                                ;---------------------------------------------------------------------------
    002516                      ERRTBL
(1) 002516  000000              ERRTYP::        .WORD   0
(1) 002520  000000              ERRNBR::        .WORD   0
(1) 002522  000000              ERRMSG::        .WORD   0
(1) 002524  000000              ERRBLK::        .WORD   0
                                ;-----------------------------------------------------------------------
                                ;       ***** SOFTWARE REGISTER DEFINITIONS *****
                                ;-----------------------------------------------------------------------
                                ;           !       !       !       !       !       !
                                ;       ! 15! 14! 13! 12! 11! 10! 09! 08! 07! 06! 05! 04! 03! 02! 01! 00!
                                ;       !---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---!
                                ;       !ERR!ERR!DON!ITR!WRT! RD!FIL!UNK!   ! DD! DD!   !   ! CK!   !   !
                                ;TYPERR:!BIT!NOT! NO! NO!ERR!ERR!EMP!ERR! - !MIS!UNX.CMD!DAT!SUM!SEK!CRC!
                                ;       !   !SET!ITR!DON'   !   !ERR!   !   !   !   !ERR!   !   !   !   !
                                ;=======!===+===+===+===+===+===+===+===+===+===+===+===+===+===+===+===!
                                ;       !   !   !   !   !   !   ! WRONG !TR !SID!DRV!NO DONE! FUNCTION  !
                                ;SYSERR:!UNR!   !DEN!   !DVF!SYF!-------!TO !RDY!RDY!-------!  CAUSING  !
                                ;       !ERR!   !ERR!   !ERR!ERR!SID!DRV!ERR!ERR!ERR!FUN!INT!   ERROR   !
                                ;=======+===+===+===+===+===+===+===+===+===+===+===+===+===+===+===+===!
                                ;FLAGST:!ERR!HRD! CK!ILL!NEG!SEC!TRK!RTY!REC!HDR!FUN!EMB!DLP!DAT!DDC!REG!
                                ;       !FLG!ERR!ERR!GAL!TST!DON!DON!ENB!FLG!PRT!TST'UFF!DN ! CK!FLG! CK!
                                ;=======================================================================!
                                ;FLAGSP:!STA!RES!                   !LSI!REC!HDR!   !   !PRO!RG !SC !TK !
                                ;       !FLG!FLG!                   !FLG!TST!PRT!   !   !PRT!PRT!PRT!PRT!
                                ;========================================================================
                                ;TKSCFG:!   !   !   !   !   !   ! I ! I !   !   !   !   !   !IL ! S ! S !
                                ;       !   !   !   !   !   !   !SC !TK !   !   !   !   !   !TK !SC !TK !
                                ;========================================================================
                                ;NOTE:  RXXX IS REFERENCE FOR FURTHER EXPANSION
```

```
1869                                    .SBTTL  GLOBAL TEXT SECTION
1870
1871                                    ;++
1872                                    ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
1873                                    ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
1874                                    ; MORE THAN ONE TEST.
1875                                    ;--
1876
1877                                    ;
1878                                    ; NAMES OF DEVICES SUPPORTED BY PROGRAM
1879                                    ;
1880
1886
1887                                    ;
1888                                    ; FORMAT STATEMENTS USED IN PRINT CALLS
1889                                    ;
1890
1897
1898
```

```
1908                                    .SBTTL  GLOBAL ERROR REPORT SECTION
1909
1910                                    ;++
1911                                    ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX CALLS
1912                                    ; THAT ARE USED IN MORE THAN ONE TEST.  IT ALSO INCLUDES THE ASCII MESSAGES
1913                                    ; THAT ARE USED BY THE PRINTB AND PRINTX CALLS..
1914                                    ;--
1915
1916
1917                                    ;-------------------------------------------------------------------------
1918  002526                                    BGNMSG  PRTB0
1919  002526  004737  002550                   CALL    PRTB0S
1920  002532                                    ENDMSG
1921                                    ;-------------------------------------------------------------------------
1922  002534                                    BGNMSG  PRTB1
1923  002534  004737  002570                   CALL    PRTB1S
1924  002540                                    ENDMSG
1925                                    ;-------------------------------------------------------------------------
1926  002542                                    BGNMSG  PRTB2
1927  002542  004737  002612                   CALL    PRTB2S
1928  002546                                    ENDMSG
1929                                    ;-------------------------------------------------------------------------
1930  002550                            PRTB0S: PRINTB  R1
1931  002566  000207                           RETURN                  ;RETURN
1932                                    ;-------------------------------------------------------------------------
1933  002570                            PRTB1S: PRINTB  R1,R2
1934  002610  000207                           RETURN                  ;RETURN
1935                                    ;-------------------------------------------------------------------------
1936  002612                            PRTB2S: PRINTB  R1,R2,R3
1937  002634  000207                           RETURN                  ;RETURN
1938                                    ;-------------------------------------------------------------------------
1939  002636                            PRTB3S: PRINTB  R1,R2,R3,R4
1940  002662  000207                           RETURN                  ;RETURN
1941                                    ;-------------------------------------------------------------------------
1942  002664                            PRTB4S: PRINTB  R1,R2,R3,R4,R5
1943  002712  000207                           RETURN                  ;RETURN
1944                                    ;-------------------------------------------------------------------------
1945  002714                            PRTX0S: PRINTX  R1
1946  002732  000207                           RETURN
1947                                    ;-------------------------------------------------------------------------
1948  002734                            PRTX1S: PRINTX  R1,R2
1949  002754  000207                           RETURN
1950                                    ;-------------------------------------------------------------------------
1951  002756                            PRTX2S: PRINTX  R1,R2,R3
1952  003000  000207                           RETURN
1953                                    ;-------------------------------------------------------------------------
1954  003002                            PRTX3S: PRINTX  R1,R2,R3,R4
1955  003026  000207                           RETURN
1956                                    ;-------------------------------------------------------------------------
1957  003030                            PRTX4S: PRINTX  R1,R2,R3,R4,R5
1958  003056  000207                           RETURN
1959                                    ;-------------------------------------------------------------------------
```

```
1962                    .SBTTL -  MOD U.ERR.ERR - ERROR
1963                    ;------ ------------------------------------------------------------------
1964                    ; BGNSUB        ERR
1965                    ;       IF ERR NBR NOT=0                                                [F]
1966                    ;       :  THEN-SET ERR SAVE = ERR NUMBER
1967                    ;       :       CALL ERROR NUMBER EVALUATION
1968                    ;       :       SETUP ERROR BLOCK CODE ADDRESS
1969                    ;       :       CALL PRINT ERROR TYPE
1970                    ;       :       IF PROGRAM FLAGS-PRT REGS ???? SET                      [J]
1971                    ;       :       THEN-IF ERRNBR=CSR ERROR                                [I]
1972                    ;       :       :     :  THEN-CALL PRINT REGS
1973                    ;       :       :    ENDIF
1974                    ;       :       ENDIF
1975                    ;       :       IF COMMAND ERROR SET IN TYPERR                          [B]
1976                    ;       :       :  THEN-CALL PRINT COMMAND ERROR
1977                    ;       :       ENDIF
1978                    ;       :       IF FUNCTION TEST NOT SET                                [A]
1979                    ;       :       :  THEN-IF PRINT FLAGS=REGS PRINT                       [E]
1980                    ;       :       :         :  THEN-CALL REGISTERS PRINT
1981                    ;       :       :        ENDIF
1982                    ;       :       :        IF PRINT FLAG=SECTOR PRINT                     [G]
1983                    ;       :       :        :  THEN-CALL SECTOR PRINT
1984                    ;       :       :        ENDIF
1985                    ;       :       :        IF PRINT FLAG=TRACK PRINT                      [C]
1986                    ;       :       :        :  THEN-CALL TRACKS PRINT
1987                    ;       :       :        ENDIF
1988                    ;       :       :        CALL PRINT FRU
1989                    ;       :       :        CALL PRINT UNIT STATUS
1990                    ;       :       :  ELSE-IF SWITCH REGISTER BIT #14 SET                  [D]
1991                    ;       :       :         :  THEN-CALL PRINT UNIT STATUS
1992                    ;       :       :        ENDIF
1993                    ;       :       ENDIF
1994                    ;       :       IF ERR SAVE = ERR OLD                                   [K]
1995                    ;       :       :  THEN - INCREMENT ERROR CTR
1996                    ;       :       :        IF ERROR CTR = 10 ERRORS                       [L]
1997                    ;       :       :        :  THEN - SET ABORT = 20
1998                    ;       :       :        ENDIF
1999                    ;       :       :  ELSE - SET ERR OLD = ERR SAVE
2000                    ;       :       :        CLEAR ERR SAVE
2001                    ;       :       :        CLEAR ERR CTR
2002                    ;       :       ENDIF
2003                    ;       :       CALL CLEAR ERRORS
2004                    ;       ENDIF
2005                    ; ENDSUB
2006                    ;------ ------------------------------------------------------------------
```

```
2009  003060  000240                    ERROR:  NOP                     ;
2010  003062  005737  002520            IFERR:  TST     ERRNBR          ;IF ERR NBR,
2011  003066  001520                            BEQ     EFERR           ;NOT=0, THEN
2012  003070  013737  002520  003336            MOV     ERRNBR,ERRSAV   ;SAVE ERROR NUMBER
2013  003076  004737  003344                    CALL    ERNBEV          ;CALL ERROR NUMBER EVALUATION
2014  003102  012737  003502  002524            MOV     #ERIDNT,ERRBLK  ;SETUP ERROR BLOCK CODE ADDRESS
2015  003110  004737  003474                    CALL    PTERTY          ;CALL PRINT ERROR TYPE
2016  003114  032737  000004  002500    IJERR:  BIT     #RGPRT,FLAGSP   ;IF PROGRAM FLAG-PRT FLAG
2017  003122  001006                            BNE     IBERR           ;NOT SET, THEN
2018  003124  022737  000033  002520    IIERR:  CMP     #CSRERR,ERRNBR  ;IF CSR ERR
2019  003132  001002                            BNE     IBERR           ;THEN,
2020  003134  004737  007564                    CALL    PRTREG          ;CALL PRINT REGS
2021  003140  032737  000020  002460    IBERR:  BIT     #CMDERR,TYPERR  ;IF TYPERR-COMMAND ERROR
2022  003146  001402                            BEQ     IAERR           ;SET, THEN
2023  003150  004737  007040                    CALL    PRTCDE          ;CALL PRINT COMMAND ERRORS
2024  003154  032737  000040  002476    IAERR:  BIT     #FUNTST,FLAGST  ;IF FLAGS-FUNCTION TEST
2025  003162  001027                            BNE     IDERR           ;NOT SET, THEN
2026  003164  032737  000004  002500    IEERR:  BIT     #RGPRT,FLAGSP   ;IF PROGRAM FLAGS=REGS PRINT
2027  003172  001402                            BEQ     IGERR           ;THEN
2028  003174  004737  007564                    CALL    PRTREG          ;CALL PRINT REGS
2029  003200  032737  000002  002500    IGERR:  BIT     #SCPRT,FLAGSP   ;IF PROGRAM FLAG=SECTOR
2030  003206  001402                            BEQ     ICERR           ;BIT SET, THEN
2031  003210  004737  007674                    CALL    PRTSEC          ;
2032  003214  032737  000001  002500    ICERR:  BIT     #TKPRT,FLAGSP   ;IF PROGRAM FLAGS=TRK PRINT
2033  003222  001402                            BEQ     ECERR           ;BIT SET, THEN
2034  003224  004737  010002                    CALL    PRTTRK          ;CALL PRINT TRACKS
2035  003230  004737  005404            ECERR:  CALL    PRTFRU          ;CALL PRINT FRU
2036  003234  004737  015240                    CALL    PRTSTA          ;CALL PRINT UNIT STATUS
2037  003240  000406                            BR      EAERR           ;BR TO END 'A'
2038  003242  032737  040000  002332    IDERR:  BIT     #BIT14,SWREG    ;IF SWITCH REG BIT 14
2039  003250  001402                            BEQ     EAERR           ;SET, THEN
2040  003252  004737  015240                    CALL    PRTSTA          ;CALL PRINT UNIT STATUS
2041  003256  000240                    EAERR:  NOP                     ;
2042  003260  023737  003336  003340    IKERR:  CMP     ERRSAV,ERROLD   ;IF SAVED ERR & OLD ERR
2043  003266  001011                            BNE     LKERR           ;EQUAL, THEN
2044  003270  005237  003342                    INC     ERRCTR          ;INCREMENT ERR CTR
2045  003274  022737  000012  003342    ILERR:  CMP     #10.,ERRCTR     ;IF 10 ERRS OF SAME KIND
2046  003302  012737  000020  002452            MOV     #20,ABORT       ;SET ABORT FLAG
2047  003310  000407                            BR      EFERR           ;BR TO END 'F'
2048  003312  013737  003336  003340    LKERR:  MOV     ERRSAV,ERROLD   ;SETUP OLD ERR FOR NEXT CK
2049  003320  005037  003336                    CLR     ERRSAV          ;CLEAR OUT SAVED ERR
2050  003324  005037  003342                    CLR     ERRCTR          ;CLEAR ERR CTR
2051  003330  004737  010300            EFERR:  CALL    CLRERR          ;CALL CLEAR ERRORS
2052  003334  000207                    XERROR: RETURN                  ;RETURN
2053                                    ;-----------------------------------------------------------------------
2054  003336  000000                    ERRSAV: 0                       ;SAVED ERR
2055  003340  000000                    ERROLD: 0                       ;OLD ERR
2056  003342  000000                    ERRCTR: 0                       ;ERR CTR
2057                                    ;-----------------------------------------------------------------------
```

```
2065                                        .SBTTL -  MOD U.SFT.ENV - ERROR NUMBER EVALUATION
2066                                        ;-----------------------------------------------------------------
2067                                        ; BGNSUB
2068                                        ;       IF ERR NBR > 39.                                        [A]
2069                                        ;       :  THEN-SET SYSTEM FATAL ERR->ERRTYP
2070                                        ;       :  ELSE
2071                                        ;       :    IF ERR NBR > 19.                                   [B]
2072                                        ;       :    :  THEN-SET DEVICE FATAL ERR->ERRTYP
2073                                        ;       :    :  ELSE
2074                                        ;       :    :    IF ERR NBR > 0.                               [D]
2075                                        ;       :    :    :  THEN-SET HARD ERR->ERRTYP
2076                                        ;       :    :    :    ENDIF
2077                                        ;       :    :  ENDIF
2078                                        ;       :    ENDIF
2079                                        ;       ENDIF
2080                                        ;       IF ERRTYP=HARD ERROR                                    [F]
2081                                        ;       :  THEN-
2082                                        ;       :    IF EVAL SET IN DRS FLAGS                           [G]
2083                                        ;       :    :  THEN-INCREMENT HARD ERR THRESHOLD LEVEL
2084                                        ;       :    :    IF HARD ERR THRESHOLD LEVEL=SET LEVEL         [H]
2085                                        ;       :    :    :  THEN-SET DEV FATAL ERR->ERRTYP
2086                                        ;       :    :  ENDIF
2087                                        ;       :    ENDIF
2088                                        ;       ENDIF
2089                                        ; ENDSUB
2090                                        ;-----------------------------------------------------------------
2091  003344  000240                       ERRNBEV: NOP                    ;
2092  003346  022737  000047  002520       IAENV:   CMP     #39.,ERRNBR    ;IF ERR NBR > 39.
2093  003354  101003                                BHI     IBENV          ;THEN
2094  003356  005037  002516                        CLR     ERRTYP         ;SET ERRTYP=SYS FTL
2095  003362  000416                                BR      IFENV          ;BR TO IF 'F'
2096  003364  022737  000023  002520       IBENV:   CMP     #19.,ERRNBR    ;IF ERR NBR > 19.
2097  003372  101004                                BHI     IDENV          ;THEN
2098  003374  012737  000001  002516                MOV     #1,ERRTYP      ;SET ERRTYP=DVC FTL
2099  003402  000406                                BR      IFENV          ;BR TO IF 'F'
2100  003404  005737  002520       IDENV:   TST     ERRNBR         ;IF ERR NBR > 0
2101  003410  001403                                BEQ     IFENV          ;THEN
2102  003412  012737  000002  002516                MOV     #2,ERRTYP      ;SET ERRTYP=HARD ERR
2103  003420  022737  000002  002516       IFENV:   CMP     #2,ERRTYP      ;IF ERRTYP = HARD ERR
2104  003426  001017                                BNE     EFENV          ;THEN
2105  003430  032737  000004  002502       IGENV:   BIT     #BIT2,FLGDRS   ;IF EVAL IN DRS FLAGS
2106  003436  001413                                BEQ     EFENV          ;SET, THEN
2107  003440  005237  003472                        INC     HETLCT         ;INCREMENT HARD ERR THRESHOLD LEVEL CTR
2108  003444  023737  002320  003472       IHENV:   CMP     DVTL,HETLCT    ;IF DEVICE FTL THRES LVL=SFT LEV
2109  003452  101005                                BHI     EFENV          ;THEN
2110  003454  012737  000001  002516                MOV     #1,ERRTYP      ;SET ERRTYP=DEV FTL ERR
2111  003462  005037  003472                        CLR     HETLCT         ;CLEAR HARD ERR THRES LVL CTR
2112  003466  000240                       EFENV:   NOP                    ;
2113  003470  000207                       XERNBE:  RETURN                 ;RETURN
2114                                        ;-----------------------------------------------------------------
2115  003472  000000                       HETLCT:  0                      ;HARD ERROR THRESHOLD LEVEL CTR
2116                                        ;-----------------------------------------------------------------
```

```
2119                                    .SBTTL -  MOD U.PRT.PET - PRINT ERROR TYPE
2122                                    ;-------------------------------------------------------------------------
2123                                    ; BGNSUB
2124                                    ;       CALL ERROR - REVC
2125                                    ; ENDSUB
2126                                    ;-------------------------------------------------------------------------
2127
2128  003474  000240                    PTERTY: NOP                     ;
2129  003476                                    ERROR                   ;
2130  003500  000207                            RETURN                  ;RETURN
2131                                    ;-------------------------------------------------------------------------
2191
2192                                    .SBTTL -  MOD U.ERR.IDT - GET & PRINT ERROR IDENTIFICATION MESSAGE
2193                                    ;-------------------------------------------------------------------------
2194                                    ;
2195                                    ; BGNMSG        ERIDENT
2196                                    ;       LET R1=ERROR #
2197                                    ;       DOUBLE R1 FOR ADDRESSING - MESSAGE OFFSET
2198                                    ;       LET R1=ERR MSG TABLE ADD + MESSAGE OFFSET
2199                                    ;       PRINT BASIC R1
2200                                    ;       PUT MESSAGE TABLE ADDRESS IN R1
2201                                    ;       PRINT BASIC R1
2202                                    ; ENDMSG
2203                                    ;-------------------------------------------------------------------------
2204
2205  003502                                    BGNMSG  ERIDNT
2206  003502  013701  002520                    MOV     ERRNBR,R1       ;GET ERR #
2207  003506  006301                            ASL     R1              ;DOUBLE IT FOR ADDRESSING
2208  003510  000240                            NOP                     ;
2209  003512  016101  003534                    MOV     ERMSTB(R1),R1   ;GET ERR MSG ADR FROM TABLE
2210  003516  004737  002550                    CALL    PRTBOS          ;CALL PRINT BASIC NO ARG
2211  003522  013701  003534                    MOV     ERMSTB,R1       ;GET REST OF ERR MSG FROM TABLE
2212  003526  004737  002550                    CALL    PRTBOS          ;CALL PRINT BASIC NO ARG
2213  003532                                    ENDMSG
2214                                    ;-------------------------------------------------------------------------
```

```
2217
2218
2219  003534  003706
2220  003536  003706
2221  003540  003717
2222  003542  003731
2223  003544  003742
2224  003546  003752
2225  003550  003763
2226  003552  003774
2227  003554  003706
2228  003556  003706
2229  003560  004015
2230  003562  004035
2231  003564  004056
2232  003566  004112
2233  003570  004146
2234  003572  004177
2235  003574  004226
2236  003576  004264
2237  003600  003706
2238  003602  004314
2239  003604  004333
2240  003606  004356
2241  003610  004402
2242  003612  004434
2243  003614  004467
2244  003616  004503
2245  003620  004532
2246  003622  004553
2247  003624  004564
2248  003626  003706
2249  003630  004625
2250  003632  004655
2251  003634  004670
2252  003636  004711
2253  003640  004733
2254  003642  003706
2255  003644  003706
2256  003646  003706
2257  003650  003706
2258  003652  003706
2259  003654  004756
2260  003656  004777
2261  003660  005027
2262  003662  005054
2263  003664  005102
2264  003666  005125
2265  003670  005153
2266  003672  005202
2267  003674  005230
2268  003676  005260
2269  003700  005307
2270  003702  005337
2271  003704  003706
2272

;    ERROR MESSAGE TABLE        ERROR DESCRIPTION                          -CLASS
;-------------------------------------------------------------------------------
ERMSTB: .WORD   ERMS0   ;ERROR  ;
        .WORD   ERMS0   ;ERR#0  ;
        .WORD   ERMS2   ;ERR#2  ;WRITE                                     -HARD
        .WORD   ERMS3   ;ERR#3  ;READ                                      -HARD
        .WORD   ERMS4   ;ERR#4  ;CRC                                       -HARD
        .WORD   ERMS5   ;ERR#5  ;DATA ERR                                  -HARD
        .WORD   ERMS6   ;ERR#6  ;SEEK                                      -HARD
        .WORD   ERMS7   ;ERR#7  ;DEL DATA                                  -HARD
        .WORD   ERMS0   ;ERR#8  ;                                          -HARD
        .WORD   ERMS0   ;ERR#9  ;                                          -HARD
        .WORD   ERMS10  ;ERR#10 ;FILL BUFFER                               -HARD
        .WORD   ERMS11  ;ERR#11 ;EMPTY BUFFER                              -HARD
        .WORD   ERMS12  ;ERR#12 ;INTR-NO DONE                              -HARD
        .WORD   ERMS13  ;ERR#13 ;DONE-NO INTR                              -HARD
        .WORD   ERMS14  ;ERR#14 ;ERR-NOT SET                               -HARD
        .WORD   ERMS15  ;ERR#15 ;ILLEG ERR CODE                            -HARD
        .WORD   ERMS16  ;ERR#16 ;DISK DENSITY MIXED OR WRG                 -HARD
        .WORD   ERMS17  ;ERR#17 ;READ ERROR CODE-ERROR WRG                 -HARD
        .WORD   ERMS0   ;ERR#18 ;
        .WORD   ERMS19  ;ERR#19 ;WORD COUNT
        .WORD   ERMS20  ;ERR#20 ;SIDE NOT RDY                              -DEVFTL
        .WORD   ERMS21  ;ERR#21 ;DRIVE NOT RDY                             -DEVFTL
        .WORD   ERMS22  ;ERR#22 ;SIDE RESPONDING WRG                       -DEVFTL
        .WORD   ERMS23  ;ERR#23 ;DRIVE RESPONDING WRG                      -DEVFTL
        .WORD   ERMS24  ;ERR#24 ;DENSITY                                   -DEVFTL
        .WORD   ERMS25  ;ERR#25 ;DENSITY DISK                              -DEVFTL
        .WORD   ERMS26  ;ERR#26 ;DEL DATA                                  -DEVFTL
        .WORD   ERMS27  ;ERR#27 ;CSR                                       -DEVFTL
        .WORD   ERMS28  ;ERR#28 ;DBR                                       -DEVFTL
        .WORD   ERMS0   ;ERR#29 ;                                          -DEVFTL
        .WORD   ERMS30  ;ERR#30 ;SET DENSITY KEYWORD                       -DEVFTL
        .WORD   ERMS31  ;ERR#31 ;AC LOW                                    -DEVFTL
        .WORD   ERMS32  ;ERR#32 ;ALG02                                     -DEVFTL
        .WORD   ERMS33  ;ERR#33 ;TRACK ADDRESS                             -DEVFTL
        .WORD   ERMS34  ;ERR#34 ;SECTOR ADDRESS                            -DEVFTL
        .WORD   ERMS0   ;ERR#35 ;
        .WORD   ERMS0   ;ERR#36 ;
        .WORD   ERMS0   ;ERR#37 ;
        .WORD   ERMS0   ;ERR#38 ;
        .WORD   ERMS0   ;ERR#39 ;
        .WORD   ERMS40  ;ERR#40 ;AC LOW FATAL                              -SYSFTL
        .WORD   ERMS41  ;ERR#41 ;WORD COUNT OVERFLOW                       -SYSFTL
        .WORD   ERMS42  ;ERR#42 ;NON-EXISTENT MEM                          -SYSFTL
        .WORD   ERMS43  ;ERR#43 ;NON PROCESSOR REQUEST                     -SYSFTL
        .WORD   ERMS44  ;ERR#44 ;PRIORITY LEVEL                            -SYSFTL
        .WORD   ERMS45  ;ERR#45 ;DATA BUFFER INTEG                         -SYSFTL
        .WORD   ERMS46  ;ERR#46 ;HARDWARE SELF DIAG                        -SYSFTL
        .WORD   ERMS47  ;ERR#47 ;"TR" BIT TIME OUT                         -SYSFTL
        .WORD   ERMS48  ;ERR#48 ;"DONE" BIT TIME OUT                       -SYSFTL
        .WORD   ERMS49  ;ERR#49 ;NO BUS "INIT DONE"                        -SYSFTL
        .WORD   ERMS50  ;ERR#50 ;NO PROG "INIT DONE"                       -SYSFTL
        .WORD   ERMS51  ;ERR#51 ;"DONE" SET->WAITING FOR "TR" BIT-SYSFTL
        .WORD   ERMS0   ;ERR#52 ;                                          -SYSFTL
;-------------------------------------------------------------------------------
```

```
2275
2276
2277  003706  040445  042440  051122          .SBTTL -    ERROR MESSAGES
2278                                          ;-----------------------------------------------------------
2279  003717     045  020101  053440          ERMS0:  .ASCIZ  /%A ERROR/
2280  003731     045  020101  051040          ;ERMS1: .ASCIZ  /%A  1 ?/
2281  003742  040445  020040  051103          ERMS2:  .ASCIZ  /%A  WRITE/
2282  003752  040445  020040  040504          ERMS3:  .ASCIZ  /%A  READ/
2283  003763     045  020101  051440          ERMS4:  .ASCIZ  /%A  CRC/
2284  003774  040445  020040  042504          ERMS5:  .ASCIZ  /%A  DATA/
2285                                          ERMS6:  .ASCIZ  /%A  SEEK/
2286                                          ERMS7:  .ASCIZ  /%A  DELETED DATA/
2287  004015     045  020101  043040          ;ERMS8: .ASCIZ  /%A  8 ?/
2288  004035     045  020101  042440          ;ERMS9: .ASCIZ  /%A  9 ?/
2289  004056  040445  020040  047111          ERMS10: .ASCIZ  /%A  FILL BUFFER/
2290  004112  040445  020040  042042          ERMS11: .ASCIZ  /%A  EMPTY BUFFER/
2291  004146  040445  020040  051105          ERMS12: .ASCIZ  /%A  INTERRUPT-NO "DONE" BIT/
2292  004177     045  020101  044440          ERMS13: .ASCIZ  /%A  "DONE" BIT-NO INTERRUPT/
2293  004226  040445  020040  044504          ERMS14: .ASCIZ  /%A  ERROR BIT NOT SET-ON/
2294  004264  040445  020040  042122          ERMS15: .ASCIZ  /%A  ILLEGAL ERROR CODE/
2295                                          ERMS16: .ASCIZ  /%A  DISK DENSITY MIXED OR WRG/
2296  004314  040445  020040  047527          ERMS17: .ASCIZ  /%A  RD ERR CODE-ERR WRG/
2297  004333     045  020101  051440          ;ERMS18: .ASCIZ /%A  18 ?/
2298  004356  040445  020040  051104          ERMS19: .ASCIZ  /%A  WORD COUNT/
2299  004402  040445  020040  051127          ERMS20: .ASCIZ  /%A  SIDE NOT READY/
2300  004434  040445  020040  051127          ERMS21: .ASCIZ  /%A  DRIVE NOT READY/
2301  004467     045  020101  042040          ERMS22: .ASCIZ  /%A  WRONG SIDE RESPONDING/
2302  004503     045  020101  042040          ERMS23: .ASCIZ  /%A  WRONG DRIVE RESPONDING/
2303  004532  040445  020040  042504          ERMS24: .ASCIZ  /%A  DENSITY/
2304  004553     045  020101  041440          ERMS25: .ASCIZ  /%A  DISK-MIXED DENSITY/
2305  004564  040445  020040  041104          ERMS26: .ASCIZ  /%A  DELETED DATA/
2306  004575     045  020101  042040          ERMS27: .ASCIZ  /%A  CSR-/
2307  004625     045  020101  051440          ERMS28: .ASCIZ  /%A  DBR-/
2308  004655     045  020101  040440          ERMS29: .ASCIZ  /%A  DENSITY DID NOT SET/
2309  004670  040445  020040  046101          ERMS30: .ASCIZ  /%A  SET DENSITY KEYWORD/
2310  004711     045  020101  052040          ERMS31: .ASCIZ  /%A  AC LOW/
2311  004733     045  020101  051440          ERMS32: .ASCIZ  /%A  ALG02 FAILED/
2312                                          ERMS33: .ASCIZ  /%A  TRACK ADDRESS/
2313                                          ERMS34: .ASCIZ  /%A  SECTOR ADDRESS/
2314                                          ;ERMS35: .ASCIZ /%A  35 ?/
2315                                          ;ERMS36: .ASCIZ /%A  36 ?/
2316                                          ;ERMS37: .ASCIZ /%A  37 ?/
2317  004756  040445  020040  041501          ;ERMS38: .ASCIZ /%A  38 ?/
2318  004777     045  020101  053440          ;ERMS39: .ASCIZ /%A  39 ?/
2319  005027     045  020101  047040          ERMS40: .ASCIZ  /%A  AC LOW FATAL/
2320  005054  040445  020040  047516          ERMS41: .ASCIZ  /%A  WORD COUNT OVERFLOW/
2321  005102  040445  020040  051120          ERMS42: .ASCIZ  /%A  NON-EXISTENT MEM/
2322  005125     045  020101  042040          ERMS43: .ASCIZ  /%A  NON-PROCESSOR REQ/
2323  005153     045  020101  044040          ERMS44: .ASCIZ  /%A  PRIORITY LEVEL/
2324  005202  040445  020040  052042          ERMS45: .ASCIZ  /%A  DATA BUFFER INTEG/
2325  005230  040445  020040  042042          ERMS46: .ASCIZ  /%A  HARDWARE SELF DIAG/
2326  005260  040445  020040  047516          ERMS47: .ASCIZ  /%A  "TR" BIT TIME OUT/
2327  005307     045  020101  047040          ERMS48: .ASCIZ  /%A  "DONE" BIT TIME OUT/
2328  005337     045  020101  021040          ERMS49: .ASCIZ  /%A  NO BUS "INIT DONE"/
2329                                          ERMS50: .ASCIZ  /%A  NO PROG "INIT DONE"/
2330                                          ERMS51: .ASCIZ  /%A  "DONE" SET->WAITING FOR "TR" BIT/
                                              ;ERMS52: .ASCIZ /%A  52 ?/
                                                      .EVEN   ;800. BYTES-->680.
```

```
2331
2332                                    ;
2333                                    ; BIT-NAMES FOR THE DEVICE REGISTERS
2334                                    ;
2335
2336                                    .SBTTL -  MOD U.SFT.FRU - GET & PRINT FRU'S IDENT
2337                                    ;-----------------------------------------------------------------------
2338                                    ; BGNSUB - GET/PRINT FRU-<GPFRU>
2339                                    ;       IF FINI FLAG SET                                        [A]
2340                                    ;       :  THEN-GET FINI FRU TABLE ADDRESS
2341                                    ;       :  ELSE-IF ERR CODE NOT=0 & FLAGS=PRINT ERROR CODE SET  [B]
2342                                    ;       :       :  THEN-GET ERROR CODE
2343                                    ;       :       :       CLEAR TOP BYTE & SHIFT RT 2 FOR ADDRESSING
2344                                    ;       :       :       GET ERROR CODE FRU TABLE ADDRESS
2345                                    ;       :       :       FIND ERROR CODE FRU TABLE ADDRESS FROM TABLE
2346                                    ;       :       :       SET TABLE ADDRESS
2347                                    ;       :       :  ELSE-GET TEST TABLE ADDRESS
2348                                    ;       :       :       DOWHILE TABLE ENTRY NOT=-1              [C]
2349                                    ;       :       :       :  ADVANCE TABLE ADDRESS POINTER
2350                                    ;       :       :       ENDDO
2351                                    ;       :       :       DOWHILE TABLE ENTRY NOT=-1              [D]
2352                                    ;       :       :       :  ADVANCE TABLE ADDRESS POINTER
2353                                    ;       :       :       ENDDO
2354                                    ;       :       :       ADVANCE TABLE ADDRESS POINTER
2355                                    ;       :       :       DOUBLE TEST SEQ POINTER
2356                                    ;       :       :       FRU TABLE ADDRESS THIS TEST SEQ=TABLE ADR PTR+TEST SEQ P
2357                                    ;       :       ENDIF
2358                                    ;       ENDIF
2359                                    ;       SETUP & PRINT FRU HEADER
2360                                    ;       DOWHILE TABLE ENTRY NOT=-1                              [E]
2361                                    ;       :  IF FRU TABLE ENTRY=0                                 [F]
2362                                    ;       :  :  THEN-IF LSI PROCESSOR                             [G]
2363                                    ;       :  :       :  THEN-SET FRU PRINT=INTERFACE-M8029  (LSI)
2364                                    ;       :  :       :  ELSE-SET FRU PRINT=INTERFACE-M8256 (UNIBUS)
2365                                    ;       :  :       ENDIF
2366                                    ;       :  :       CALL FRU PRINT
2367                                    ;       :  :  ELSE-SET FRU PRINT=TABLE ENTRY
2368                                    ;       :  :       CALL FRU PRINT
2369                                    ;       :  ENDIF
2370                                    ;       :  ADVANCE TABLE ADDRESS
2371                                    ;       ENDDO
2372                                    ;       NOP
2373                                    ; ENDSUB
2374                                    ;-----------------------------------------------------------------------
```

```
2377  005404  000240                    PRTFRU: NOP                     ;
2378  005406  005737  002454            IAFRU:  TST     FIN             ;IF FINI FLAG
2379  005412  001404                            BEQ     IBFRU           ;SET, THEN
2380  005414  012737  006640  005610            MOV     #TOFTO,FRUTAD   ;SET FRU TBL ADR=FINI FRU TBL ADR
2381  005422  000431                            BR      EAFRU           ;BR TO WHILE 'E'
2382  005424  105737  002442            IBFRU:  TSTB    XERUUT          ;IF ERROR CODE
2383  005430  001412                            BEQ     LBFRU           ;NOT=0, AND
2384  005432  032737  000200  002476            BIT     #RECFLG,FLAGST  ;FLAGS-READ ERROR CODE BIT
2385  005440  001406                            BEQ     LBFRU           ;SET, THEN
2386  005442  004737  017106                    CALL    GTECOF          ;CALL GET ERROR CODE OFFSET
2387  005446  016137  006660  005610            MOV     TOFTB(R1),FRUTAD  ;GET ERROR CODE FRU TABLE ADDRESS
2388  005454  000414                            BR      EAFRU           ;BR TO WHILE 'E'
2389  005456  013701  002466            LBFRU:  MOV     TSTID,R1        ;GET TEST TABLE ADDRESS
2390  005462  005721                    WCFRU:  TST     (R1)+           ;DO WHILE TABLE ENTRY NOT=-1
2391  005464  100376                            BPL     WCFRU           ;ADVANCE TABLE ADDRESS
2392  005466  005721                    WDFRU:  TST     (R1)+           ;DO WHILE TABLE ENTRY NOT=-1
2393  005470  100376                            BPL     WDFRU           ;ADVANCE TABLE ADDRESS
2394  005472  013702  002470                    MOV     TCMDCT,R2       ;GET TEST COMMAND CTR
2395  005476  006302                            ASL     R2              ;DOUBLE IT
2396  005500  060201                            ADD     R2,R1           ;SETUP FRU TABLE ADDRESS
2397  005502  011137  005610                    MOV     (R1),FRUTAD     ;SET FRU TABLE ADR=ABOVE ADDRESS
2398  005506  012701  005650            EAFRU:  MOV     #FRUM00,R1      ;SET FRU MSG HEADER
2399  005512  004737  002550                    CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
2400  005516  105777  000066            WEFRU:  TSTB    @FRUTAD         ;DO WHILE TABLE ENTRY
2401  005522  100430                            BMI     EEFRU           ;NOT=-1
2402  005524  105777  000060            IFFRU:  TSTB    @FRUTAD         ;IF TABLE ENTRY
2403  005530  001014                            BNE     LFFRU           ;EQUALS 0, THEN
2404  005532  032737  000400  002500    IGFRU:  BIT     #LSIFLG,FLAGSP  ;IF LSI FLAG BIT-PROGRAM FLAGS
2405  005540  001403                            BEQ     LGFRU           ;SET, THEN
2406  005542  012701  005713                    MOV     #FRUM0A,R1      ;SET LSI INTERFACE MSG
2407  005546  000402                            BR      EGFRU           ;BR TO END 'G'
2408  005550  012701  005746            LGFRU:  MOV     #FRUM0B,R1      ;SET UNIBUS INTERFACE MSG
2409  005554  004737  002550            EGFRU:  CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
2410  005560  000406                            BR      EFFRU           ;BR TO END 'G'
2411  005562  117701  000022            LFFRU:  MOVB    @FRUTAD,R1      ;SETUP PRINT FRU MSG OFFSET FROM TABLE
2412  005566  016101  005612                    MOV     FRUTBM(R1),R1   ;SET FRU MSG ADR FROM TABLE
2413  005572  004737  002550                    CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
2414  005576  005237  005610            EFFRU:  INC     FRUTAD          ;INCREMENT FRU TABLE ADDRESS
2415  005602  000745                            BR      WEFRU           ;END DO 'E'
2416  005604  000240                    EEFRU:  NOP                     ;
2417  005606  000207                    XPTFRU: RETURN                  ;RETURN
2418                                    ;-------------------------------------------------------------------------
2419  005610  000000                    FRUTAD: 0                       ;FRU TABLE ADDRESS
2420                                    ;-------------------------------------------------------------------------
```

```
2423  005612  000000                    FRUTBM: .WORD   0
2424  005614  006001                            .WORD   FRUM1
2425  005616  006035                            .WORD   FRUM2
2426  005620  006070                            .WORD   FRUM3
2427  005622  006120                            .WORD   FRUM4
2428  005624  006140                            .WORD   FRUM5
2429  005626  006173                            .WORD   FRUM6
2430  005630  006221                            .WORD   FRUM7
2431  005632  006255                            .WORD   FRUM8
2432  005634  006324                            .WORD   FRUM9
2433  005636  006361                            .WORD   FRUM10
2434  005640  006426                            .WORD   FRUM11
2435  005642  006451                            .WORD   FRUM12
2436  005644  006504                            .WORD   FRUM13
2437  005646  006544                            .WORD   FRUM14
2438                                    ;-----------------------------------------------------------------
2439
2440                                    .SBTTL -    FRU MESSAGES
2441                                    ;-----------------------------------------------------------------
2442  005650  047045  040445  020040  FRUM00: .ASCIZ  /%N%A  POSSIBLE FAILING 'FRU'S'': %N/
2443  005713     045  030523  022461  FRUM0A: .ASCIZ  /%S11%A INTERFACE - MB029%N/
2444  005746  051445  030461  040445  FRUM0B: .ASCIZ  /%S11%A INTERFACE - MB256%N/
2445  006001     045  030523  022461  FRUM1:  .ASCIZ  /%S11%A CONTROLLER - M7744%N/
2446  006035     045  030523  022461  FRUM2:  .ASCIZ  /%S11%A R-W ELECT - M7745%N/
2447  006070  051445  030461  040445  FRUM3:  .ASCIZ  /%S11%A PHYSICAL DRIVE%N/
2448  006120  051445  030461  040445  FRUM4:  .ASCIZ  /%S11%A CABLES%N/
2449  006140  051445  030461  040445  FRUM5:  .ASCIZ  /%S11%A POWER SUPPLY-H771%N/
2450  006173     045  030523  022461  FRUM6:  .ASCIZ  /%S11%A BAD DISKETTE%N/
2451  006221     045  030523  022461  FRUM7:  .ASCIZ  /%S11%A INTERFACE SWITCHES%N/
2452  006255     045  030523  022461  FRUM8:  .ASCIZ  /%S11%A NPR JUMPER - PDP-11 BACKPLANE%N/
2453  006324  051445  030461  040445  FRUM9:  .ASCIZ  /%S11%A CONTROLLER SWITCHES%N/
2454  006361     045  030523  022461  FRUM10: .ASCIZ  /%S11%A INTERFACE->CONTROLLER CABLE%N/
2455  006426  051445  030461  040445  FRUM11: .ASCIZ  /%S11%A DOOR OPEN%N/
2456  006451     045  030523  022461  FRUM12: .ASCIZ  /%S11%A BROKEN DRIVE BELT%N/
2457  006504  051445  030461  040445  FRUM13: .ASCIZ  /%S11%A DRIVE MOTOR - AC POWER%N/
2458  006544  051445  030461  040445  FRUM14: .ASCIZ  /%S11%A POWER CORD, BLOWN FUSE, DRIVE POWER, POWER SUPPLY %N/
2459                                    ;-----------------------------------------------------------------
2471                                            .EVEN   ;506. BYTES
```

```
2474                                    .SBTTL -    FRU CALLOUT - PRESETUP FOR TESTS
2475                                    ;-------------------------------------------------------------------
2476            000000                  TN=0
2477            006640                          INFCTL=TOFTO            ;INTERFACE & CONTROLLER
2478  006640                                    FRUTB   0,INTERF,CONTRL,INTFCB
 (2)  006640      000                                    TOFTO: .BYTE    INTERF
 (2)  006641      002                                           .BYTE    CONTRL
 (2)  006642      024                                           .BYTE    INTFCB
 (2)  006643      377                                           .BYTE    -1
2479                                    ;-------------------------------------------------------------------
2480            006644                          INTONL=TOFT40           ;INTERFACE ONLY
2481  006644                                    FRUTB   40,INTERF
 (2)  006644      000                                    TOFT40: .BYTE    INTERF
 (2)  006645      377                                           .BYTE    -1
2482                                    ;-------------------------------------------------------------------
2483            006646                          CTLINF=TOFT41           ;CONTROLLER & INTERFACE
2484  006646                                    FRUTB   41,CONTRL,INTERF
 (2)  006646      002                                    TOFT41: .BYTE    CONTRL
 (2)  006647      000                                           .BYTE    INTERF
 (2)  006650      377                                           .BYTE    -1
2485                                    ;-------------------------------------------------------------------
2486            006651                          CTLRWE=TOFT42
2487  006651                                    FRUTB   42,CONTRL,RWELEC
 (2)  006651      002                                    TOFT42: .BYTE    CONTRL
 (2)  006652      004                                           .BYTE    RWELEC
 (2)  006653      377                                           .BYTE    -1
2488                                    ;-------------------------------------------------------------------
2489            006654                          CTLONL=TOFT43
2490  006654                                    FRUTB   43,CONTRL,INTFCB
 (2)  006654      002                                    TOFT43: .BYTE    CONTRL
 (2)  006655      024                                           .BYTE    INTFCB
 (2)  006656      377                                           .BYTE    -1
2491                                    ;-------------------------------------------------------------------
2492            006660                          .EVEN
```

```
2495
2496
2497  006660  000000
2498  006662  006736
2499  006664  006742
2500  006666  000000
2501  006670  006746
2502  006672  006751
2503  006674  000000
2504  006676  006755
2505  006700  000000
2506  006702  006763
2507  006704  006770
2508  006706  006776
2509  006710  000000
2510  006712  007002
2511  006714  007006
2512  006716  007012
2513  006720  007016
2514  006722  000000
2515  006724  007022
2516  006726  007025
2517  006730  007030
2518  006732  007035
2519  006734  177777
2520
2521
2522
2523
2524          000000
2525  006736
 (2)  006736     006
 (2)  006737     002
 (2)  006740     004
 (2)  006741     377
2526  006742
 (2)  006742     006
 (2)  006743     002
 (2)  006744     004
 (2)  006745     377
2527  006746
 (2)  006746     000
 (2)  006747     002
 (2)  006750     377
2528  006751
 (2)  006751     004
 (2)  006752     006
 (2)  006753     002
 (2)  006754     377
2529  006755
 (2)  006755     014
 (2)  006756     004
 (2)  006757     006
 (2)  006760     002
 (2)  006761     000
 (2)  006762     377
```

```
;                       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
;-------------------------------------------------------------------------

.SBTTL -    FRU CALLOUT - PRESETUP FOR ERROR CODE
;-------------------------------------------------------------------------
TN=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
```

```
2530  006763                          FRUTB   11,DISKET,RWELEC,PHYDRV,CONTRL
 (2)  006763  014                     TOFT11: .BYTE   DISKET
 (2)  006764  004                             .BYTE   RWELEC
 (2)  006765  006                             .BYTE   PHYDRV
 (2)  006766  002                             .BYTE   CONTRL
 (2)  006767  377                             .BYTE   -1
2531  006770                          FRUTB   12,DISKET,RWELEC,PHYDRV,CONTRL,POWRSP
 (2)  006770  014                     TOFT12: .BYTE   DISKET
 (2)  006771  004                             .BYTE   RWELEC
 (2)  006772  006                             .BYTE   PHYDRV
 (2)  006773  002                             .BYTE   CONTRL
 (2)  006774  012                             .BYTE   POWRSP
 (2)  006775  377                             .BYTE   -1
2532  006776                          FRUTB   13,DISKET,RWELEC,CONTRL
 (2)  006776  014                     TOFT13: .BYTE   DISKET
 (2)  006777  004                             .BYTE   RWELEC
 (2)  007000  002                             .BYTE   CONTRL
 (2)  007001  377                             .BYTE   -1
2533  007002                          FRUTB   15,RWELEC,PHYDRV,CONTRL
 (2)  007002  004                     TOFT15: .BYTE   RWELEC
 (2)  007003  006                             .BYTE   PHYDRV
 (2)  007004  002                             .BYTE   CONTRL
 (2)  007005  377                             .BYTE   -1
2534  007006                          FRUTB   16,RWELEC,PHYDRV,CONTRL
 (2)  007006  004                     TOFT16: .BYTE   RWELEC
 (2)  007007  006                             .BYTE   PHYDRV
 (2)  007010  002                             .BYTE   CONTRL
 (2)  007011  377                             .BYTE   -1
2535  007012                          FRUTB   17,DISKET,RWELEC,CONTRL
 (2)  007012  014                     TOFT17: .BYTE   DISKET
 (2)  007013  004                             .BYTE   RWELEC
 (2)  007014  002                             .BYTE   CONTRL
 (2)  007015  377                             .BYTE   -1
2536  007016                          FRUTB   20,DISKET,RWELEC,CONTRL
 (2)  007016  014                     TOFT20: .BYTE   DISKET
 (2)  007017  004                             .BYTE   RWELEC
 (2)  007020  002                             .BYTE   CONTRL
 (2)  007021  377                             .BYTE   -1
2537  007022                          FRUTB   22,RWELEC,CONTRL
 (2)  007022  004                     TOFT22: .BYTE   RWELEC
 (2)  007023  002                             .BYTE   CONTRL
 (2)  007024  377                             .BYTE   -1
2538  007025                          FRUTB   23,INTERF,CONTRL
 (2)  007025  000                     TOFT23: .BYTE   INTERF
 (2)  007026  002                             .BYTE   CONTRL
 (2)  007027  377                             .BYTE   -1
2539  007030                          FRUTB   24,DISKET,CONTRL,INTERF,RWELEC
 (2)  007030  014                     TOFT24: .BYTE   DISKET
 (2)  007031  002                             .BYTE   CONTRL
 (2)  007032  000                             .BYTE   INTERF
 (2)  007033  004                             .BYTE   RWELEC
 (2)  007034  377                             .BYTE   -1
2540  007035                          FRUTB   25,INTERF,CONTRL
 (2)  007035  000                     TOFT25: .BYTE   INTERF
 (2)  007036  002                             .BYTE   CONTRL
 (2)  007037  377                             .BYTE   -1
```

```
2541                                    ;-----------------------------------------------------------------------
2542                                            .EVEN
```

```
2545                                        .SBTTL -  MOD U.ERR.PCE - PRINT COMMAND ERROR
2546                                        ;-----------------------------------------------------------------
2547                                        ; BGNSUB
2548                                        ;       SETUP & PRINT COMMAND FORMAT MESSAGE
2549                                        ;       GET COMMAND
2550                                        ;       IF INITIALIZE COMMAND
2551                                        ;       :  THEN-SETUP INIT COMMAND MSG
2552                                        ;       :  ELSE-CLEAR TOP BITS & GO BIT
2553                                        ;       :       CLEAR TOP BITS & GO BIT
2554                                        ;       :       GET COMMAND MSG ADDRESS FROM TABLE (INDEXED BY COMMAND)
2555                                        ;       ENDIF
2556                                        ;       CALL PRINT
2557                                        ;       SETUP & PRINT END OF COMMAND ERROR
2558                                        ;       IF PROTOCOL TYPE COMMAND
2559                                        ;       :  THEN-IF PRINT FLAGS=PRINT PROTOCAL SET
2560                                        ;       :       :  THEN-SETUP & PRINT PROTOCOL ERR
2561                                        ;       :       ENDIF
2562                                        ;       ENDIF
2563                                        ; ENDSUB
2564                                        ;-----------------------------------------------------------------
2565
2566  007040  000240                        PRTCDE: NOP                     ;
2567  007042  012701  007204                        MOV     #CMFTMS,R1      ;SETUP COMMAND FORMAT MESSAGE
2568  007046  004737  002550                        CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
2569  007052  013702  002422                        MOV     ERRCMD,R2       ;GET COMMAND
2570  007056  032702  040000                IAPCE:  BIT     #BIT14,R2       ;IF INITIALIZE BIT
2571  007062  001405                                BEQ     LAPCE           ;SET, THEN
2572  007064  012701  007452                        MOV     #CMDM8,R1       ;SET PROGRAMMED INIT MSG
2573  007070  012702  000012                        MOV     #12,R2          ;SET R2 TO SHOW COMMAND WITH NO PROTOCOL
2574  007074  000404                                BR      EAPCE           ;BR TO END 'A'
2575  007076  042702  177761                LAPCE:  BIC     #177761,R2      ;CLEAR TOP BITS & GO BIT
2576  007102  016201  007164                        MOV     CMDMSG(R2),R1   ;GET COMMAND MSG ADR FROM TABLE
2577  007106  004737  002550                EAPCE:  CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
2578  007112  012701  007216                        MOV     #CMERMS,R1      ;SETUP "COMMAND ERR" MSG
2579  007116  004737  002550                        CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
2580  007122  022702  000012                IBPCE:  CMP     #12,R2          ;IF R2 CONTAINS PROTOCOL TYPE COMMAND
2581  007126  001415                                BEQ     XPCE            ;THEN
2582  007130  032737  000010  002500        ICPCE:  BIT     #PROPRT,FLAGSP  ;IF PRINT PROTOCOL FLAG=FLAGSP
2583  007136  001411                                BEQ     XPCE            ;SET, THEN
2584  007140  013702  002472                        MOV     PROTCT,R2       ;SETUP PRINT PROTOCOL CNT
2585  007144  012701  007502                        MOV     #CMDPE,R1       ;SETUP PRINT PROTOCOL ERR MSG
2586  007150  004737  002734                        CALL    PRTX1S          ;PRINT MSG
2587  007154  042737  000020  002460                BIC     #CMDERR,TYPERR  ;CLEAR TYPE, COMMAND ERROR
2588  007162  000207                        XPCE:   RETURN                  ;RETURN
2589                                        ;-----------------------------------------------------------------
```

```
2592                                        .SBTTL -    COMMAND ERROR MESSAGE TABLE
2593                                        ;-------------------------------------------------------------------
2594  007164  007237                        CMDMSG: .WORD   CMDM0
2595  007166  007255                                .WORD   CMDM1
2596  007170  007274                                .WORD   CMDM2
2597  007172  007313                                .WORD   CMDM3
2598  007174  007331                                .WORD   CMDM4
2599  007176  007347                                .WORD   CMDM5
2600  007200  007374                                .WORD   CMDM6
2601  007202  007430                                .WORD   CMDM7
2602  007204  047045  051445  022466          CMFTMS: .ASCIZ  /%N%S6%A->/
2603  007216  040445  041440  046517          CMERMS: .ASCIZ  /%A COMMAND ERROR/
2604  007237     045  043101  046111          CMDM0:  .ASCIZ  /%AFILL BUFFER/
2605  007255     045  042501  050115          CMDM1:  .ASCIZ  /%AEMPTY BUFFER/
2606  007274  040445  051127  052111          CMDM2:  .ASCIZ  /%AWRITE SECTOR/
2607  007313     045  051101  040505          CMDM3:  .ASCIZ  /%AREAD SECTOR/
2608  007331     045  051501  052105          CMDM4:  .ASCIZ  /%ASET DENSITY/
2609  007347     045  051101  040505          CMDM5:  .ASCIZ  /%AREAD MAINT. STATUS/
2610  007374  040445  051127  052111          CMDM6:  .ASCIZ  /%AWRITE SECTOR-DELETED DATA/
2611  007430  040445  042522  042101          CMDM7:  .ASCIZ  /%AREAD ERROR CODE/
2612  007452  040445  051120  043517          CMDM8:  .ASCIZ  /%APROGRAMMED INITIALIZE/
2613  007502  047045  051445  022470          CMDPE:  .ASCIZ  /%N%S8%APROTOCOL FAILED-WAITING TO PASS WORD #%O1/
2614          007564                                .EVEN
2615                                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.ERR.PRE - PRINT REGISTER ERROR
                                        ;-------------------------------------------------------------------
                                        PRTREG: NOP                     ;
007564  000240                                  MOV     #PRTGMS,R1      ;SETUP REGISTER MESSAGE
007566  012701  007620                          MOV     REGACT,R2       ;SETUP REG ACTUAL
007572  013702  002440                          MOV     REGEXP,R3       ;SETUP REG EXPECTED
007576  013703  002436                          CALL    PRTB2S          ;CALL PRINT BASIC-2 ARG
007602  004737  002612                          CLR     REGACT          ;CLEAR OLD RESULTS
007606  005037  002440                          CLR     REGEXP          ;CLEAR OLD RESULTS
007612  005037  002436                          RETURN                  ;RETURN
007616  000207
                                        ;-------------------------------------------------------------------
007620  047045  051445  022466          PRTGMS: .ASCII  /%N%S6%AREG ACTUAL=%O%N/
007646  051445  022466  051101                  .ASCIZ  /%S6%AREG EXPECT=%O%N/
        007674                                  .EVEN
                                        ;-------------------------------------------------------------------

                                        .SBTTL -  MOD U.PRT.SCP - PRINT SECTORS
                                        ;-------------------------------------------------------------------
                                        ; BGNSUB
                                        ;       IF READ ERROR CODE FLAG SET
                                        ;       :  THEN-SETUP PRINT EXPECTED SECTOR
                                        ;       :       SETUP PRINT DEVICE SECTOR
                                        ;       :       CALL PRINT
                                        ;       ENDIF
                                        ; ENDSUB
                                        ;-------------------------------------------------------------------

007674  000240                          PRTSEC: NOP                     ;
007676  032737  000200  002476          IASCP:  BIT     #RECFLG,FLAGST  ;IF READ ERROR CODE FLAG
007704  001424                                  BEQ     XSCP            ;SET, THEN
007706  013702  002376                          MOV     SECTOR,R2       ;SETUP EXPECTED SECTOR
007712  012701  010156                          MOV     #EXMS,R1        ;SETUP EXPECTED MSG
007716  004737  002550                          CALL    PRTB0S          ;CALL PRINT BASIC-0 ARG
007722  012701  007760                          MOV     #ADSCMS,R1      ;SETUP SECTOR MSG
007726  004737  002570                          CALL    PRTB1S          ;CALL PRINT BASIC-1 ARG
007732  113702  002447                          MOVB    TSEC,R2         ;SETUP DEVICE SECTOR
007736  012701  010220                          MOV     #TGMS,R1        ;SETUP TARGET MSG
007742  004737  002550                          CALL    PRTB0S          ;CALL PRINT BASIC-0 ARG
007746  012701  007760                          MOV     #ADSCMS,R1      ;SETUP SECTOR MSG
007752  004737  002570                          CALL    PRTB1S          ;CALL PRINT BASIC-1 ARG
007756  000207                          XSCP:   RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------
007760  040445  051440  041505          ADSCMS: .ASCIZ  /%A SECTOR=%D2%A./
        010002                                  .EVEN
                                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.PRT.TKP - PRINT TRACKS
                                        ;-------------------------------------------------------------------
                                        ; BGNSUB
                                        ;       CALL PRINT UNIT IDENT
                                        ;       IF READ ERROR CODE FLAG SET
                                        ;       :  THEN-SETUP PRINT EXPECTED TRACK
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       :       IF DRIVE #1 SELECTED
                                        ;       :       :  THEN-SETUP CURRENT TRACK DRV1-PRINT
                                        ;       :       :  ELSE-SETUP CURRENT TRACK DRV0-PRINT
                                        ;       :       ENDIF
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       :       SETUP PRINT DRIVE TARGET TRACK
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       :  ELSE-SETUP PRINT ERROR ON TRACK
                                        ;       :       CALL PRINT 1 PARAMETER
                                        ;       ENDIF
                                        ; ENDSUB
                                        ;-------------------------------------------------------------------
010002  004737  020600          PRTTRK: CALL    PRTDID          ;CALL PRINT DRIVE IDENT
010006  032737  000200  002476  IATKP:  BIT     #RECFLG,FLAGST  ;IF READ ERROR CODE FLAG
010014  001445                          BEQ     LATKP           ;FLAG SET, THEN
010016  013702  002374                  MOV     TRACK,R2        ;SETUP EXPECTED TRACK
010022  012701  010156                  MOV     #EXMS,R1        ;SETUP EXPECTED MSG
010026  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010032  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010036  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010042  005737  002406          IBTKP:  TST     DRIVE           ;IF DRIVE #1
010046  001403                          BEQ     LBTKP           ;SELECTED, THEN
010050  113702  002445                  MOVB    CTK1,R2         ;SETUP CUR TRK D1-PRT
010054  000402                          BR      EBTKP           ;BR TO END 'B'
010056  113702  002444          LBTKP:  MOVB    CTK0,R2         ;SETUP CUR TRK D0-PRT
010062  012701  010177          EBTKP:  MOV     #CDMS,R1        ;SETUP DRIVE CURRENT MSG
010066  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010072  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010076  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010102  113702  002446                  MOVB    TTRK,R2         ;SETUP TARGET TRACK
010106  012701  010220                  MOV     #TGMS,R1        ;SETUP TARGET MSG
010112  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010116  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010122  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010126  000412                          BR      XTKPRT          ;BR TO EXIT
010130  013702  002374          LATKP:  MOV     TRACK,R2        ;SETUP ERROR TRACK
010134  012701  010241                  MOV     #ERTKMS,R1      ;SETUP ERROR TRACK MSG
010140  004737  002550                  CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
010144  012701  010257                  MOV     #ADTKMS,R1      ;SETUP PRINT TRACK
010150  004737  002570                  CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
010154  000207                  XTKPRT: RETURN                  ;
                                        ;-------------------------------------------------------------------
010156  047045  051445  022466  EXMS:   .ASCIZ  /%N%S6%A EXPECTED/
010177     045  022516  033123  CDMS:   .ASCIZ  /%N%S6%A  CUR DRV/
010220  047045  051445  022466  TGMS:   .ASCIZ  /%N%S6%A   TARGET/
010241     045  022516  020101  ERTKMS: .ASCIZ  /%N%A ERROR ->/
010257     045  020101  051124  ADTKMS: .ASCIZ  /%A TRACK=%D2%A./
        010300                          .EVEN
                                        ;-------------------------------------------------------------------
```

```
2724                                        .SBTTL -  MOD U.ERR.CLE - CLEAR ERRORS
2725                                        ;-------------------------------------------------------------------
2726                                        ; BGNSUB
2727                                        ;       CLEAR ERROR NUMBER
2728                                        ;       CLEAR ERROR TYPE
2729                                        ;       CLEAR ERROR BLOCK
2730                                        ;       CLEAR FIN
2731                                        ;       CLEAR ABORT
2732                                        ; ENDSUB
2733                                        ;-------------------------------------------------------------------
2734
2735  010300  000240                        CLRERR: NOP                     ;
2736  010302  005037  002442                        CLR     XERUUT          ;CLEAR READ ERR CODE WORD
2737  010306  005037  002520                        CLR     ERRNBR          ;CLEAR ERROR NUMBER
2738  010312  005037  002516                        CLR     ERRTYP          ;CLEAR ERROR TYPE
2739  010316  012737  003502  002524              MOV     #ERIDNT,ERRBLK  ;CLEAR ERROR BLOCK
2740  010324  005037  002454                        CLR     FIN             ;CLEAR FINI
2741  010330  005037  002452                        CLR     ABORT           ;CLEAR ABORT
2742  010334  042737  100000  002476              BIC     #ERRFLG,FLAGST  ;CLEAR FLAGST ERR FLAG
2743  010342  000207                        RETURN                          ;RETURN
2744                                        ;-------------------------------------------------------------------
```

```
 2747                                           .SBTTL  GLOBAL SUBROUTINES SECTION
 2748
 2749                                           ;++
 2750                                           ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
 2751                                           ; THAT ARE USED IN MORE THAN ONE TEST.
 2752                                           ;--
 2753
 2813                                           .SBTTL -  MOD U.1.0 - RANDOM GENERATOR
 2814                                           ;++
 2815                                           ; FUNCTIONAL DESCRIPTION:
 2816                                           ;    SUBROUTINE TO GENERATE A RANDOM NUMBER
 2823                                           ; INPUTS:  NONE
 2829                                           ; IMPLICIT INPUTS:  NONE
 2836                                           ; OUTPUTS:  RANUM
 2842                                           ; IMPLICIT OUTPUTS:  NONE
 2849                                           ; SUBORDINATE ROUTINES USED:  NONE
 2858                                           ; FUNCTIONAL SIDE EFFECTS:  NONE
 2866                                           ; CALLING SEQUENCE:  SUB
 2872                                           ;--
 2873
 2880
 2886                                           ;---------- RANDOM GENERATOR ----------------------------------------
 2887  010344  012700  000001                  RANGEN: MOV     #1,R0
 2888  010350  063700  010432                          ADD     RAN1,R0
 2889  010354  063700  010434                          ADD     RAN2,R0
 2890  010360  042700  170000                          BIC     #170000,R0
 2891  010364  000241                                   CLC
 2892  010366  006100                                   ROL     R0
 2893  010370  006100                                   ROL     R0
 2894  010372  010037  010432                          MOV     R0,RAN1
 2895  010376  005000                                   CLR     R0
 2896  010400  013700  010434                          MOV     RAN2,R0
 2897  010404  006000                                   ROR     R0
 2898  010406  006000                                   ROR     R0
 2899  010410  063700  010432                          ADD     RAN1,R0
 2900  010414  042700  170000                          BIC     #170000,R0
 2901  010420  010037  010434                          MOV     R0,RAN2
 2902  010424  010037  010436                          MOV     R0,RANUM
 2903  010430  000207                                   RTS     PC
 2904                                           ;-------------------------------------------------------------------
 2905  010432  000000                           RAN1:   0
 2906  010434  000000                           RAN2:   0
 2907  010436  000000                           RANUM:  0
 2908                                           ;-------------------------------------------------------------------
```

```
2911                                    .SBTTL -  MOD U.DEV.INT - INITIALIZE DEVICE
2912                                    ;++
2913                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND INITIALIZE TO DEVICE.-ERROR CK
2914                                    ; INPUTS: NONE
2915                                    ; IMPLICIT INPUTS:  ERROR BIT
2916                                    ; OUTPUTS:  DEVICE INITIALIZE
2917                                    ; IMPLICIT OUTPUTS:
2918                                    ; SUBORDINATE ROUTINES USED:  COMMAND ERR CK, GET DEV. REGS, WAIT DONE
2919                                    ; FUNCTIONAL SIDE EFFECTS:
2920                                    ; CALLING SEQUENCE:  SUBR
2921                                    ;--
2922
2923                                    ;-------------------------------------------------------------------
2924
2925  010440  012737  040000  002400    INTIAL: MOV     #40000,CMD      ;SET INT COMMAND
2926  010446  013777  002400  171674            MOV     CMD,@RXCS       ;INIT UNIT 0
2927  010454  004737  012032                   CALL    AWDN            ;GO AWAIT DONE
2928  010460  004737  011544            XINT:   CALL    CDERCK          ;CALL COMMAND ERROR CK
2929  010464  004737  012244                   CALL    GETREG          ;CALL GET DEV REGS
2930  010470  000207                           RTS     PC              ;RETURN
2931                                    ;-------------------------------------------------------------------
2932
2933
2934
2935                                    .SBTTL -  MOD U.DEV.CLD - CLEAR DEVICE
2936                                    ;++
2937                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND INIT TO DEVICE - NO ERROR CK
2938                                    ; INPUTS:  NONE
2939                                    ; IMPLICIT INPUTS:  NONE
2940                                    ; OUTPUTS:  DEVICE INITIALIZE
2941                                    ; IMPLICIT OUTPUTS:
2942                                    ; SUBORDINATE ROUTINES USED:  A WAIT "DONE"
2943                                    ; FUNCTIONAL SIDE EFFECTS:
2944                                    ; CALLING SEQUENCE:  SUBR
2945                                    ;--
2946
2947                                    ;-------------------------------------------------------------------
2948
2949  010472  012701  040000    CLRDEV: MOV     #40000,R1       ;SET INITIALIZE COMMAND
2950  010476  010177  171646            MOV     R1,@RXCS        ;CLEAR DEVICE
2951  010502  004737  012032            CALL    AWDN            ;AWAIT DONE
2952  010506  000207                    RETURN                  ;RETURN
2953                                    ;-------------------------------------------------------------------
```

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

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

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

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

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

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

```
3028                                    .SBTTL -  MOD U.DEV.WRT - WRITE SUBROUTINE
3029                                    ;++
3030                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND WRITE SECTOR TO DEVICE.
3031                                    ; INPUTS:  NONE
3032                                    ; IMPLICIT INPUTS:  DELETED DATA MODE
3033                                    ; OUTPUTS: WRITE SECTOR TO RX
3034                                    ; IMPLICIT OUTPUTS:
3035                                    ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT "DONE", WAIT "TR"
3036                                    ; FUNCTIONAL SIDE EFFECTS:
3037                                    ; CALLING SEQUENCE:
3038                                    ;--
3039
3040                                    ;-----------------------------------------------------------------------
3041
3042  010744  004737  011634            WRITE:  CALL    DVDNCK          ;CALL DEVICE READY CHECK
3043  010750  005737  002454                    TST     FIN             ;IF FINI FLAG
3044  010754  001037                            BNE     XWRITE          ;EQUALS ZERO THEN
3045  010756  012737  000005  011542            MOV     #5,NCMD         ;SET TO WRITE SECTOR
3046  010764  053737  002402  011542            BIS     DELDAT,NCMD     ;SETUP WRITE DELETED DATA, IF SET
3047  010772  004737  011502                    CALL    SETSCD          ;CALL SET SUBSYS COMMAND
3048  010776  004737  011462                    CALL    SETDCD          ;CALL SET DEVICE COMMAND - MOD U.DEV.CMD
3049  011002  013777  002400  171340    WRITE1: MOV     CMD,@RXCS       ;LOAD COMMAND
3050  011010  004737  012110                    CALL    AWTR            ;GO AWAIT TRANSFER READY "TR"
3051  011014  005737  002454            IBWRT:  TST     FIN             ;IF FINI FLAG
3052  011020  001015                            BNE     XWRITE          ;EQUALS ZERO THEN
3053  011022  013777  002376  171322            MOV     SECTOR,@RXDB    ;LOAD SECTOR ADDRESS
3054  011030  004737  012110                    CALL    AWTR            ;GO AWAIT TRANSFER READY "TR"
3055  011034  005737  002454            ICWRT:  TST     FIN             ;IF FINI FLAG
3056  011040  001005                            BNE     XWRITE          ;EQUALS ZERO THEN
3057  011042  013777  002374  171302            MOV     TRACK,@RXDB     ;LOAD TRACK ADDRESS
3058  011050  004737  011610                    CALL    WAIT            ;WAIT FOR INTERRUPT OR "DONE"
3059  011054  004737  012244            XWRITE: CALL    GETREG          ;CALL GET DEV REGS
3060  011060  000207                            RTS     PC              ;RETURN
3061                                    ;-----------------------------------------------------------------------
```

```
3064                                    .SBTTL -  MOD U.DEV.RED - READ SUBROUTINE
3065                                    ;++
3066                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND READ SECTOR TO DEVICE.
3067                                    ; INPUTS:  NONE
3068                                    ; IMPLICIT INPUTS:  NONE
3069                                    ; OUTPUTS:  READ SECTOR TO RX
3070                                    ; IMPLICIT OUTPUTS:
3071                                    ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT "DONE", WAIT "TR"
3072                                    ; FUNCTIONAL SIDE EFFECTS:
3073                                    ; CALLING SEQUENCE:
3074                                    ;--
3075
3076                                    ;-----------------------------------------------------------------------
3077
3078  011062  004737  011634            READ:   CALL    DVDNCK          ;CALL DEVICE READY CHECK
3079  011066  005737  002454                    TST     FIN             ;IF FINI FLAG
3080  011072  001034                            BNE     XREAD           ;EQUALS ZERO, THEN
3081  011074  012737  000007  011542            MOV     #7,NCMD         ;SET READ COMMAND
3082  011102  004737  011502                    CALL    SETSCD          ;CALL SET SUBSYS COMMAND
3083  011106  004737  011462                    CALL    SETDCD          ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
3084  011112  013777  002400  171230    READ1:  MOV     CMD,@RXCS       ;LOAD COMMAND
3085  011120  004737  012110                    CALL    AWTR            ;GO AWAIT TRANSFER READY
3086  011124  005737  002454            1BRED:  TST     FIN             ;IF FINI FLAG
3087  011130  001015                            BNE     XREAD           ;EQUALS ZERO, THEN
3088  011132  013777  002376  171212            MOV     SECTOR,@RXDB    ;LOAD SECTOR ADDRESS
3089  011140  004737  012110                    CALL    AWTR            ;GO AWAIT TRANSFER READY
3090  011144  005737  002454            1CRED:  TST     FIN             ;IF FINI FLAG
3091  011150  001005                            BNE     XREAD           ;EQUALS ZERO, THEN
3092  011152  013777  002374  171172            MOV     TRACK,@RXDB     ;LOAD TRACK ADDRESS
3093  011160  004737  011610                    CALL    WAIT            ;WAIT FOR INTERRUPT OR "DONE"
3094  011164  004737  012244            XREAD:  CALL    GETREG          ;CALL GET DEV REGS
3095  011170  000207                            RETURN                  ;RETURN
3096                                    ;-----------------------------------------------------------------------
```

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

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

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

```
3131                                    .SBTTL -  MOD U.DEV.RST - READ STATUS
3132                                    ;++
3133                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND READ STATUS COMMAND TO DEVICE.
3134                                    ; INPUTS:  NONE
3135                                    ; IMPLICIT INPUTS:  NONE
3136                                    ; OUTPUTS:  READ STATUS TO RX
3137                                    ; IMPLICIT OUTPUTS:  NONE
3138                                    ; SUBORDINATE ROUTINES USED:  SETUP COMMANDS, WAIT 'DONE", WAIT "TR"
3139                                    ; FUNCTIONAL SIDE EFFECTS:  NONE
3140                                    ; CALLING SEQUENCE:
3141                                    ;--
3142
3143                                    ;-----------------------------------------------------------------------
3144
3145  011266  004737  011634            RDSTAT: CALL    DVDNCK          ;CALL DEVICE READY CHECK
3146  011272  022737  000060  002520            CMP     #NODNBT,ERRNBR  ;IF ERRNBR NOT SET=
3147  011300  001416                           BEQ     XRDSTA          ;"NO DONE BIT", THEN
3148  011302  012737  000013  011542           MOV     #13,NCMD        ;SET READ STATUS
3149  011310  004737  011502                   CALL    SETSCD          ;CALL SET SUBSYS COMMAND
3150  011314  004737  011462                   CALL    SETDCD          ;CALL SET DEVICE COMMAND - MOD U.DEV.SDC
3151  011320  013777  002400  171022           MOV     CMD,@RXCS       ;SEND COMMAND
3152  011326  004737  011610                   CALL    WAIT            ;GO AWAIT "DONE" OR INTERRUPT
3153  011332  004737  012244                   CALL    GETREG          ;CALL GET DEV REGS
3154  011336  000207                    XRDSTA: RETURN                  ;RETURN
3155                                    ;-----------------------------------------------------------------------
```

```
3158                                    .SBTTL -  MOD U.DEV.REC - READ ERROR CODE
3159                                    ;++
3160                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO SEND READ ERROR CODE TO DEVICE.
3161                                    ; INPUTS:  EXTENDED ADDRESS BITS, FINI FLAG, SETUP COMMAND WORD
3162                                    ; IMPLICIT INPUTS:  NONE
3163                                    ; OUTPUTS:  READ ERROR CODE FLAG, READ ERROR CODE TO DRIVE, READ ERROR CODE NEW
3164                                    ; IMPLICIT OUTPUTS:  NONE
3165                                    ; SUBORDINATE ROUTINES USED:  SET DEVICE CMD, WAIT, WAIT FOR ''TR'', GET
3166                                    ;                             REG, CMD ERR CK
3167                                    ; FUNCTIONAL SIDE EFFECTS:  NONE
3168                                    ; CALLING SEQUENCE:  -
3169                                    ;--
3170                                    ;-----------------------------------------------------------------------
3171
3172  011340  004737  011634            RDERCD: CALL    DVDNCK          ;CALL DEVICE READY CHECK
3173  011344  022737  000060  002520            CMP     #NODNBT,ERRNBR  ;IF ERRNBR NOT SET=
3174  011352  001440                            BEQ     XRDERC          ;''NO DONE BIT'', THEN
3175  011354  012737  000017  011542            MOV     #17,NCMD        ;SET ERROR CODE COMMAND
3176  011362  004737  011502                    CALL    SETSCD          ;CALL SET SUBSYS COMMAND
3177  011366  042737  000400  002400            BIC     #DENBIT,CMD     ;CLEAR DENSITY BIT FROM CMD
3178  011374  053737  002366  002400            BIS     EXTADR,CMD      ;SET EXTENDED ADDRESS BITS
3179  011402  013777  002400  170740            MOV     CMD,@RXCS       ;SEND COMMAND
3180  011410  004737  012110                    CALL    AWTR            ;THEN GO AWAIT ''TR''
3181  011414  005737  002454            IBREC:  TST     FIN             ;IF FINI FLAG
3182  011420  001015                            BNE     XRDERC          ;EQUALS ZERO THEN
3183  011422  013777  002364  170722            MOV     RECADR,@RXDB    ;SET BASE ADDR FOR READ ERR CODE
3184  011430  004737  011610                    CALL    WAIT            ;GO AWAIT ''DONE'' OR INTERRUPT
3185  011434  005737  002454            ICREC:  TST     FIN             ;IF FINI FLAG
3186  011440  001005                            BNE     XRDERC          ;NOT SET, THEN
3187  011442  052737  000200  002476            BIS     #RECFLG,FLAGST  ;SET PRINT ERROR CODE OR FLAG
3188  011450  004737  012244                    CALL    GETREG          ;CALL GET DEV REGS
3189  011454  004737  011544            XRDERC: CALL    CDERCK          ;CALL COMMAND ERROR CHECK
3190  011460  000207                            RTS     PC              ;RETURN
3191                                    ;-----------------------------------------------------------------------
```

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

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

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

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

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

011542  000000                  NCMD:   0                       ;NEW COMMAND
                                        ;-----------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.DEV.CEC - DEVICE COMMAND ERROR CHECK
                                        ;-------------------------------------------------------------------
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:  SUBR TO CHECK FOR DEVICE COMMAND FATAL ERRORS.
                                        ; INPUTS:  NONE
                                        ; IMPLICIT INPUTS:  FIN FLAG, FLAGS(NEG TEST), ERR NBR
                                        ; OUTPUTS:  NONE
                                        ; IMPLICIT OUTPUTS:  ERROR CONDITION
                                        ; SUBORDINATE ROUTINES USED:  ERROR
                                        ; FUNCTIONAL SIDE EFFECTS:  DROP UNIT & CLEAN UP
                                        ; CALLING SEQUENCE:  SUBR
                                        ;--
                                        ;
                                        ;-------------------------------------------------------------------
                                        ;
011544  000240                          CDERCK: NOP                     ;
011546  005737  002454                          TST     FIN             ;IF FINI FLAG
011552  001415                          .       BEQ     XCEC            ;SET, THEN
011554  005737  002520                  .       TST     ERRNBR          ;IF ERROR NUMBER
011560  001412                          .       BEQ     XCEC            ;NOT=0, THEN
011562  032737  004000  002476          .       BIT     #NEGTST,FLAGST  ;IF NEG TEST FLAG
011570  001006                          .       BNE     XCEC            ;NOT SET, THEN
011572  004737  003060                  .       CALL    ERROR           ;CALL ERROR-MOD
011576                                  .       DODU    UNIT            ;DROP UNIT
011604                                  .       DOCLN                   ;DO CLEAN-UP
011606  000207                          XCEC:   RETURN                  ;RETURN
                                        ;-------------------------------------------------------------------
```

```
3270                                    .SBTTL -  MOD U.DEV.WAT - WAIT SUBROUTINE
3271                                    ;++
3272                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO DETERMINE TO WAIT FOR "DONE" OR INTERRUPTS
3273                                    ; INPUTS:  DEVICE COMMAND
3274                                    ; IMPLICIT INPUTS:  NONE
3275                                    ; OUTPUTS:  NONE
3276                                    ; IMPLICIT OUTPUTS:  NONE
3277                                    ; SUBORDINATE ROUTINES USED:  WATCH & A WAIT DONE
3278                                    ; FUNCTIONAL SIDE EFFECTS:  NONE
3279                                    ; CALLING SEQUENCE:  SUBR
3280                                    ;--
3281
3282                                    ;-----------------------------------------------------------------------
3283
3284  011610  032737  000100  002400   WAIT:   BIT     #100,CMD        ;IF COMMAND-INTERRUPT BIT
3285  011616  001403                           BEQ     1$              ;SET, THEN
3286  011620  004737  011662                   CALL    WATCH           ;CALL WATCH DOG WAIT FOR INTERRUPT
3287  011624  000402                           BR      XWAIT           ;BR TO END
3288  011626  004737  012032           1$:     CALL    AWDN            ;ELSE, CALL WAIT FOR DONE
3289  011632  000207                   XWAIT:  RETURN                  ;RETURN
3290                                    ;-----------------------------------------------------------------------
3291
3292
3293
3294                                    .SBTTL -  MOD U.DEV.DRC - DEVICE DONE CHECK
3295                                    ;++
3296                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO CK IF DEVICE IS READY TO ACCEPT A CMD
3297                                    ; INPUTS:  NONE
3298                                    ; IMPLICIT INPUTS:  DONE BIT
3299                                    ; OUTPUTS:  NONE
3300                                    ; IMPLICIT OUTPUTS:  NONE
3301                                    ; SUBORDINATE ROUTINES USED:  WATCH & A WAIT DONE
3302                                    ; FUNCTIONAL SIDE EFFECTS:  NONE
3303                                    ; CALLING SEQUENCE:  SUBR
3304                                    ;--
3305
3306                                    ;-----------------------------------------------------------------------
3307
3308  011634  005003                   DVDNCK: CLR     R3              ;CLEAR REC
3309  011636  032777  000040  170504   1$:     BIT     #DNBIT,@RXCS    ;IF DEVICE DONE
3310  011644  001005                           BNE     XDVRCK          ;NOT SET
3311  011646  005203                           INC     R3              ;BUMP TIMEOUT COUNTER
3312  011650  001372                           BNE     1$              ;IF TIME OUT, THEN
3313  011652                                   BRESET                  ;EXECUTE BUS RESET
3314  011654  004737  012032                   CALL    AWDN            ;CALL A WAIT "DONE"
3315  011660  000207                   XDVRCK: RETURN                  ;RETURN
3316                                    ;-----------------------------------------------------------------------
```

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

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

011662  005037  012030                  WATCH:  CLR     DNFLAG          ;CLEAR DONE FLAG
011666                                          SETPRI  PRIORT          ;SET PROCESSOR PRI - ALLOW INTERRUPTS
011674  013704  012024                          MOV     DX,R4           ;SET DELAY MULT
011700  013703  012026                  BAUWCH: MOV     DLY,R3          ;SET DELAY
011704  005737  012030                  IBUWCH: TST     DNFLAG          ;IF INTERRUPTS DONE FLAG
011710  001413                                  BEQ     LBUWCH          ;IS SET, THEN
011712  032777  000040  170430          ICUWCH: BIT     #DNBIT,@RXCS    ;IF DONT BIT
011720  001035                                  BNE     XUWCH           ;IS NOT SET, THEN
011722  012737  000014  002520                  MOV     #INTNDN,ERRNBR  ;SET ERROR #=NO DONE BIT
011730  012737  010000  002460                  MOV     #BIT12,TYPERR   ;SET INTERR, BUT NO DONE ERROR
011736  000426                                  BR      XUWCH           ;BR TO MOD 'EXIT'
011740                                  LBUWCH: BREAK
011742  005303                                  DEC     R3              ;DECREMENT DELAY COUNT
011744  001357                          UDUWCH: BNE     IBUWCH          ;DO UNIT DELAY COUNT=0
011746  005304                                  DEC     R4              ;DECREMENT DELAY MULT
011750  001353                          UAUWCH: BNE     BAUWCH          ;DO UNTIL DELAY MULT=0
011752  032777  000040  170370          IEUWCH: BIT     #DNBIT,@RXCS    ;IF DONE BIT IS
011760  001407                                  BEQ     LEUWCH          ;SET, THEN
011762  012737  000015  002520                  MOV     #DNNINT,ERRNBR  ;SET ERR #=DONE, NO INTR
011770  052737  020000  002460                  BIS     #BIT13,TYPERR   ;SET DONE, BUT NO INTERRUPT ERROR
011776  000406                                  BR      XUWCH           ;BR TO MOD 'EXIT'
012000  052737  000020  002456          LEUWCH: BIS     #BIT4,SYSERR    ;SET NO DONE T.O. ERROR
012006  012737  000060  002520                  MOV     #NODNBT,ERRNBR  ;SET ERR #=NO DONE BIT
012014                                  XUWCH:  SETPRI  #PRI07          ;SET PROCESSOR PRI=7 - NO INTERRUPTS
012022  000207                                  RTS     PC              ;RETURN
                                                ;-----------------------------------------------------------------
012024  000010                          DX:     10                      ;DELAY MULT
012026  100000                          DLY:    100000                  ;DELAY
012030  000000                          DNFLAG: 0                       ;DONE FLAG
                                                ;MOD U.2.3.4 ---- END MODULE ----------------------------------------
```

```
3365                                    .SBTTL -  MOD U.DEV.WDN - AWAIT DONE BIT SUBROUTINE
3366                                    ;++
3367                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO WAIT FOR DEVICE "DONE" BIT
3368                                    ; INPUTS:  TIMEOUT PASS COUNTER
3369                                    ; IMPLICIT INPUTS:  DEVICE "DONE" BIT, (RXCSR), DONE WAIT MULTIPLIER
3370                                    ; OUTPUTS:  "DONE" BIT TIMEOUT ERROR
3371                                    ; IMPLICIT OUTPUTS:  NONE
3372                                    ; SUBORDINATE ROUTINES USED:  GET DEVICE REGISTERS
3373                                    ; FUNCTIONAL SIDE EFFECTS:  NONE
3374                                    ; CALLING SEQUENCE:  SUBR
3375                                    ;--
3376
3377                                    ;-----------------------------------------------------------------------
3378
3379  012032  005004                    AWDN:   CLR     R4              ;RESET TIME OUT MULTIPLIER
3380  012034  005003                    1$:     CLR     R3              ;PRESET TIME OUT COUNTER
3381  012036  032777  000040  170304    2$:     BIT     #DNBIT,@RXCS    ;SEE IF DONE SET
3382  012044  001020                            BNE     3$              ;IF SO: BR
3383  012046                                    BREAK                   ;TEMPORARY RETURN TO MONITOR
3384  012050  005203                            INC     R3              ;BUMP TIME OUT COUNTER
3385  012052  001371                            BNE     2$              ;IF NOT TIMED OUT: BR
3386  012054  005204                            INC     R4              ;INCREMENT TIMEOUT MULTIPLIER
3387  012056  023704  002474                    CMP     DNWTMT,R4       ;IF ON 2ND
3388  012062  101364                            BHI     1$              ;TIMEOUT PASS, THEN
3389  012064  012737  000060  002520            MOV     #NODNBT,ERRNBR  ;SET ERR #=NO DONE BIT
3390  012072  052737  000020  002456            BIS     #BIT4,SYSERR    ;SET NO DONE BIT ON SYSTEM ERROR
3391  012100  012737  000001  002454            MOV     #1,FIN          ;EXIT THIS COMMAND
3392  012106  000207                    3$:     RTS     PC              ;EXIT
3393                                    ;-----------------------------------------------------------------------
```

```
3396                                    .SBTTL -  MOD U.DEV.WTR - AWAIT TRANSFER READY SUBROUTINE
3397                                    ;++
3398                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO WAIT FOR DEVICE "TR" BIT
3399                                    ; INPUTS:  NONE
3400                                    ; IMPLICIT INPUTS:  DEVICE "TR", "DONE" & CSR, ESR
3401                                    ; OUTPUTS:  "TR" TIMEOUT ERROR, NO DONE BIT, PROTOCAL COUNTER
3402                                    ; IMPLICIT OUTPUTS:  NONE
3403                                    ; SUBORDINATE ROUTINES USED:  GET DEVICE REGISTERS
3404                                    ; FUNCTIONAL SIDE EFFECTS:  NONE
3405                                    ; CALLING SEQUENCE:  SUBR
3406                                    ;--
3407
3408                                    ;-----------------------------------------------------------------------
3409
3410  012110  005237  002472            AWTR:   INC     PROTCT          ;INCREMENT TEST PROTOCAL COUNTER
3411  012114  005004                            CLR     R4              ;PRESET TIMEOUT MULTIPLIER
3412  012116  005003                    1$:     CLR     R3              ;PRESET TIME OUT COUNTER
3413  012120  032777  000040  170222    2$:     BIT     #DNBIT,@RXCS    ;IF DONE BIT
3414  012126  001013                            BNE     3$              ;NOT SET, THEN
3415  012130  032777  000200  170212            BIT     #TRBIT,@RXCS    ;SEE IF TRANSFER READY SET
3416  012136  001041                            BNE     5$              ;IF SO: BR
3417  012140                                    BREAK                   ;TEMPORARY RETURN TO MONITOR
3418  012142  005203                            INC     R3              ;BUMP TIME OUT COUNTER
3419  012144  001365                            BNE     2$              ;IF NOT TIMED OUT: BR
3420  012146  005204                            INC     R4              ;INCREMENT TIMEOUT MULTIPLIER
3421  012150  022704  000004                    CMP     #4,R4           ;IF ON 2ND
3422  012154  101360                            BHI     1$              ;TIMEOUT PASS, THEN
3423  012156  012737  000001  002454    3$:     MOV     #1,FIN          ;EXIT THIS COMMAND
3424  012164  052737  000020  002460            BIS     #CMDERR,TYPERR  ;**** ERROR ON COMMAND ****
3425  012172  013737  002400  002422            MOV     CMD,ERRCMD      ;SETUP ERROR COMMAND
3426  012200  012737  000057  002520            MOV     #NOTRBT,ERRNBR  ;SET ERR #=NO "TR" BIT
3427  012206  052737  000200  002456            BIS     #TRBIT,SYSERR   ;SET SYS ERR=NO "TR" BIT
3428  012214  032777  000040  170126            BIT     #DNBIT,@RXCS    ;IF DONE BIT
3429  012222  001004                            BNE     4$              ;NOT SET, THEN
3430  012224  052737  000020  002456            BIS     #BIT4,SYSERR    ;SET NO DONE BIT EITHER
3431  012232  000403                            BR      5$              ;BR TO EXIT
3432  012234  012737  000063  002520    4$:     MOV     #DNNOTR,ERRNBR  ;SET ERR #="DONE" NO "TR"
3433  012242  000207                    5$:     RTS     PC              ;RETURN
3434                                    ;-----------------------------------------------------------------------
```

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

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

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



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

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

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

```
3480                                    .SBTTL -  MOD U.SFT.DPT - SET DATA PATTERN
3481                                    ;-----------------------------------------------------------------
3482                                    ;  PAT #   SUBROUTINE          DATA PATTERN
3483                                    ;  -----   ----------          ------------
3484                                    ;    0       RANDAT        NO PATTERN SPECIFIED (FORCE RANDOM DATA)
3485                                    ;    1       DATA0         ALL ZEROS
3486                                    ;    2       DATA1         ALL ONES
3487                                    ;    3       FLOAT0        FLOATING ZERO
3488                                    ;    4       FLOAT1        FLOATING ONE
3489                                    ;    5       PAT125        ALTERNATING BITS
3490                                    ;    6       PAT333        ALTERNATING PAIRS OF BITS
3491                                    ;    7       RANDAT        RANDOM
3492                                    ;-----------------------------------------------------------------
3493  012306  042737  000377  012372   STDATP: BIC     #377,@#BRONPT   ;CLEAR BRANCH OFFSET
3494  012314  005037  012654                   CLR     SUM             ;SET UP FOR ACCUMULATION OF CHECK SUM
3495  012320  005737  012660                   TST     PAT             ;IF NO PATTERN SPECIFIED FORCE PATTERN 7
3496  012324  001003                           BNE     1$
3497  012326  012737  000007  012660           MOV     #7,PAT
3498  012334  013704  012660           1$:     MOV     PAT,R4          ;GET PATTERN BITS
3499  012340  005304                           DEC     R4              ;ADJUST FOR CORRECT OFFSET
3500  012342  006304                           ASL     R4
3501  012344  150437  012372                   BISB    R4,@#BRONPT     ;INSERT OFFSET
3502  012350  012704  036224                   MOV     #DATPAT+2,R4    ;SET UP ADDRESS OF FIRST BYTE
3503  012354  013705  002370                   MOV     WDCNT,R5        ;SETUP WORD COUNT
3504  012360  006305                           ASL     R5              ;DOUBLE  WORD COUNT FOR ADR
3505  012362  062705  036222                   ADD     #DATPAT,R5      ;ADD DATA PATTERN ADR
3506  012366  162705  000004                   SUB     #4,R5           ;ADJ. FOR CHECKSUM
3507  012372  000777           BRONPT: BR      .               ;BRANCH BY OFFSET SELECTED
3508  012374  000137  012430                   JMP     DATA0           ;000 DATA BYTE
3509  012400  000137  012446                   JMP     DATA1           ;377 DATA BYTE
3510  012404  000137  012456                   JMP     FLOAT0          ;FLOAT A 0 THROUGH ALL 1'S
3511  012410  000137  012524                   JMP     FLOAT1          ;FLOAT A 1 THROUGH ALL 0'S
3512  012414  000137  012532                   JMP     PAT125          ;125/052 DATA WORD
3513  012420  000137  012556                   JMP     PAT333          ;314/063 DATA WORD
3514  012424  000137  012566                   JMP     RANDAT          ;RANDOM DATA BYTE
3515                                    ;-----------------------------------------------------------------
3516  012430  005037  012656           DATA0:  CLR     DATBYT
3517  012434  004737  012614           PG:     JSR     PC,LOAD         ;GO LOAD THE DATA BUFFER
3518  012440  005705                           TST     R5              ;IF R5
3519  012442  001463                           BEQ     END131          ;NOT =0 ,THEN
3520  012444  000773                           BR      PG
3521                                    ;-----------------------------------------------------------------
3522  012446  112737  000377  012656   DATA1:  MOVB    #377,DATBYT
3523  012454  000767                           BR      PG
3524                                    ;-----------------------------------------------------------------
3525  012456  112737  000376  012656   FLOAT0: MOVB    #376,DATBYT     ;SET UP A ONES FIELD
3526  012464  000261           XPG:    SEC                             ;SET THE C BIT TO ROTATE THROUGH THE DATA
3527  012466  012702  000000           1$:     MOV     #0,R2           ;CLR R2 (CAN'T USE "CLR" AS IT CLEARS "C" BIT)
3528  012472  103001                           BCC     2$              ;BR IF THE "C" BIT IS CLEARED
3529  012474  005202                           INC     R2              ;SET R2 IF NOT
3530  012476  004737  012614           2$:     JSR     PC,LOAD         ;GO LOAD THE DATA BUFFER
3531  012502  005705                           TST     R5              ;IF R5
3532  012504  001442                           BEQ     END131          ;NOT ZERO THEN
3533  012506  000241                           CLC
3534  012510  005702                           TST     R2              ;IS R2 NONZERO
3535  012512  001401                           BEQ     3$
```

```
3536  012514  000261                        SEC                     ;YES, SET THE "C" BIT
3537  012516  106137  012656          3$:   ROLB    DATBYT
3538  012522  000761                        BR      1$
3539                                  ;-------------------------------------------------------------------
3540  012524  005037  012656          FLOAT1: CLR   DATBYT
3541  012530  000755                        BR      XPG
3542                                  ;-------------------------------------------------------------------
3543  012532  112737  000125  012656  PAT125: MOVB  #125,DATBYT
3544  012540  004737  012614          XXPG:   JSR   PC,LOAD
3545  012544  005705                        TST     R5              ;IF R5
3546  012546  001421                        BEQ     END131          ;NOT ZERO THEN
3547  012550  105137  012656                COMB    DATBYT
3548  012554  000771                        BR      XXPG
3549                                  ;-------------------------------------------------------------------
3550  012556  112737  000333  012656  PAT333: MOVB  #333,DATBYT
3551  012564  000765                        BR      XXPG
3552                                  ;-------------------------------------------------------------------
3553  012566  004737  010344          RANDAT: JSR   PC,RANGEN       ;GET RANDOM NUMBER
3554  012572  113737  010436  012656        MOVB    RANUM,DATBYT
3555  012600  004737  012614                JSR     PC,LOAD
3556  012604  005705                        TST     R5              ;IF R5
3557  012606  001401                        BEQ     END131          ;NOT ZERO THEN
3558  012610  000766                        BR      RANDAT
3559                                  ;-------------------------------------------------------------------
3560  012612  000207                  END131: RTS   PC              ;RETURN.
3561                                  ;-------------------------------------------------------------------
3562
3563
3564                                  ;-------------------------------------------------------------------
3565  012614  063737  012656  012654  LOAD:   ADD     DATBYT,SUM      ;ACCUMULATE THE PATTERN CHECK SUM
3566  012622  113724  012656                MOVB    DATBYT,(R4)+    ;LOAD THE DATA BUFFER
3567  012626  020504                        CMP     R5,R4           ;HAVE 124 BYTES BEEN GENERATED
3568  012630  001401                        BEQ     1$              ;IF YES, RETURN
3569  012632  000407                        BR      ENDLD           ;IF NO, RETURN TO PATTERN GENERATOR
3570  012634  113724  012654          1$:   MOVB    SUM,(R4)+       ;PUT CHECKSUM INTO TABLE
3571  012640  005137  012654                COM     SUM             ;COMPLIMENT CHECKSUM
3572  012644  113714  012654                MOVE    SUM,(R4)        ;PUT COMP CHECK SUM INTO TABLE
3573  012650  005005                        CLR     R5              ;CLEAR TEMP #5 - FLAG DONE MODULE
3574  012652  000207                  ENDLD: RTS    PC              ;RETURN
3575                                  ;-------------------------------------------------------------------
3576  012654  000000                  SUM:    0
3577  012656  000000                  DATBYT: 0
3578  012660  000000                  PAT:    0
3579                                  ;MOD 1.3.1 ----- END MODULE ----------------------------------------
```

```
3582                                        .SBTTL -  MOD U.SFT.GTK - GET TRACK
3583                                        ;-------------------------------------------------------------
3584
3585  012662  000240                        GETTRK: NOP             ;
3586  012664  032737  000400  002510        IAGTK:  BIT     #ITK,TKSCFG     ;IF INITIALIZE TRK IS
3587  012672  001423                                BEQ     ICGTK           ;SET, THEN
3588  012674  042737  000400  002510                BIC     #ITK,TKSCFG     ;RESET INITIALIZE TRK FLG
3589  012702  013737  002336  013100                MOV     ID,TRKCNT       ;GET INSIDE TRACK
3590  012710  163737  002334  013100                SUB     OD,TRKCNT       ;GET OUTSIDE TRACK
3591  012716  005237  013100                      INC     TRKCNT          ;INCREMENT # OF TRACKS
3592  012722  013737  002334  002374                MOV     OD,TRACK        ;SET TRACK=O.D.
3593  012730  005337  002374                      DEC     TRACK           ;DECREMENT TRACK
3594  012734  042737  001000  002476                BIC     #TRKDON,FLAGST  ;CLEAR TRACK DONE FLAG
3595  012742  032737  000004  002510        ICGTK:  BIT     #ILTK,TKSCFG    ;IF TK/SC FLAGS=ILLEGAL TRACK
3596  012750  001416                                BEQ     LBGTK           ;BIT SET, THEN
3597  012752  012737  000115  002374                MOV     #77.,TRACK      ;SET TRACK=77=ILLEGAL TRACK
3598  012760  052737  001000  002476                BIS     #TRKDON,FLAGST  ;SET TRACK DONE FLAG
3599  012766  000443                                BR      XGTK            ;BR TO EXIT
3600  012770  032737  000001  002510        IBGTK:  BIT     #STK,TKSCFG     ;IF TK & SE FLAG=SEQ TRK FLAG
3601  012776  001403                                BEQ     LBGTK           ,SET, THEN
3602  013000  005237  002374                      INC     TRACK           ;INCREMENT TRACK
3603  013004  000426                                BR      EBGTK           ;BR TO END 'B'
3604  013006  004737  010344        LBGTK:  CALL    RANGEN          ;GET A RANDOM NUMBER
3605  013012  042737  177600  010436                BIC     #177600,RANUM   ;CLEAR ALL BUT LOW 7 BITS
3606  013020  123737  010436  002336        IDCOMP: CMPB    RANUM,ID        ;IF RANUM LARGER THAN ID ADDRESS
3607  013026  003401                                BLE     ODCOMP          ;THEN
3608  013030  000766                                BR      LBGTK           ;BR TO GET ANOTHER RANDOM NUMBER
3609  013032  123737  010436  002334        ODCOMP: CMPB    RANUM,OD        ;IF RANUM SMALLER THAN OD ADDRESS
3610  013040  002001                                BGE     PRESCK          ;THEN
3611  013042  000761                                BR      LBGTK           ;BR TO GET ANOTHER RANDOM NUMBER
3612  013044  123737  010436  002374        PRESCK: CMPB    RANUM,TRACK     ;IF RANUM EQUALS PRESENT TRACK
3613  013052  001755                                BEQ     LBGTK           ;GET ANOTHER RANDOM NUMBER
3614  013054  013737  010436  002374                MOV     RANUM,TRACK     ;RANUM OK PUT IT IN TARGET TRACK
3615  013062  005337  013100        EBGTK:  DEC     TRKCNT          ;IF TOTAL # OF TRACKS
3616  013066  001003                                BNE     XGTK            ;DONE, THEN
3617  013070  052737  001000  002476                BIS     #TRKDON,FLAGST  ;THEN SET TRACK DONE FLAG
3618  013076  000207                        XGTK:   RTS     PC              ;
3619                                        ;-------------------------------------------------------------------
3620  013100  000000                        TRKCNT: .WORD   0               ;DRV TRK TABLE LOCATOR
3621  013102  000000                        INITTK: .WORD   0               ;INITIALIZE TRK FLAG
3622                                        ;-------------------------------------------------------------------
```

```
3625                                        .SBTTL -  MOD U.SFT.GSC - GET SECTOR
3626                                        ;-----------------------------------------------------------------------
3627
3628  013104  000240                        GETSEC: NOP                     ;
3629  013106  032737  001000  002510        IAGSC:  BIT     #ISC,TKSCFG     ;IF TK/SC FLAGS=INIT SECTORS BIT
3630  013114  001411                                BEQ     IBGSC           ;SET, THEN
3631  013116  042737  001000  002510                BIC     #ISC,TKSCFG     ;CLEAR THE FLAG
3632  013124  012737  000001  002376                MOV     #1,SECTOR       ;SET SECTOR=1
3633  013132  042737  002000  002476                BIC     #SECDON,FLAGST  ;CLEAR FLAGST-SECTOR DONE FLAG
3634  013140  105737  002510                IBGSC:  TSTB    TKSCFG          ;IF SEQUENCE SECTOR
3635  013144  001416                                BEQ     BCGSC           ;SET, THEN
3636  013146  062737  000001  002376                ADD     #1,SECTOR       ;BUMP SECTOR ADDRESS
3637  013154  022737  000033  002376                CMP     #33,SECTOR      ;IF SECTORS
3638  013162  101030                                BHI     XGSC            ;DONE, THEN
3639  013164  012737  000001  002376                MOV     #1,SECTOR       ;SET SECTOR=1
3640  013172  052737  002000  002476                BIS     #SECDON,FLAGST  ;SET FLAGST-SECTOR DONE FLAG
3641  013200  000421                                BR      XGSC            ;BR EXIT
3642  013202  004737  010344                BCGSC:  CALL    RANGEN          ;BGN DO 'C'-CALL RANDOM NO. GENERATOR
3643  013206  042737  177740  010436                BIC     #177740,RANUM   ;CLEAR TOP BITS RANDOM NUM.
3644  013214  123727  010436  000033        UCGSC:  CMPB    RANUM,#27.      ;DOUNTIL RANNUM < 27.
3645  013222  103367                                BHIS    BCGSC           ;
3646  013224  105737  010436                IDGSC:  TSTB    RANUM           ;IF RANDOM NO.
3647  013230  001002                                BNE     EDGSC           ;EQUALS ZERO, THEN
3648  013232  105237  010436                        INCB    RANUM           ;SET RANNUM = 1
3649  013236  113737  010436  002376        EDGSC:  MOVB    RANUM,SECTOR    ;SET SECTOR ADR = RANDOM NO.
3650  013244  000207                        XGSC:   RTS     PC
3651                                        ;-----------------------------------------------------------------------
```

```
3654                                        .SBTTL -  MOD U.SFT.DCK - DATA CHECK
3655                                        ;-------------------------------------------------------------
3656
3657  013246  005037  013520                DATACK: CLR     DAERCT          ;CLEAR DATA ERR COUNT
3658  013252  052737  000100  002500              BIS     #HDRPRT,FLAGSP  ;SET PRINT HEADER FLAG
3659  013260  013737  002370  013514              MOV     WDCNT,BYTCNT    ;SAVE WORD COUNT
3660  013266  006337  013514                      ASL     BYTCNT          ;DOUBLE IT SO BYTE COUNT
3661  013272  005037  013516                      CLR     BYTNUM          ;CLEAR BYTE NUMBER
3662  013276  013705  013516                BADCK:  MOV     BYTNUM,R5       ;SETUP BYTE NUMBER FOR AUTO INDEX
3663  013302  116501  036222                      MOVB    DATPAT(R5),R1   ;SET TEMP#1=DATA SOURCE BYTE
3664  013306  116502  036622                      MOVB    DATBUF(R5),R2   ;SET TEMP#2=DATA BUFFER BYTE
3665  013312  120102                        IBDCK:  CMPB    R1,R2           ;IF SOURCE BYTE & BUFFER BYTE
3666  013314  001465                              BEQ     EBDCK           ;NOT EQUAL
3667  013316  005237  013520                      INC     DAERCT          ;INCREMENT DATA ERR COUNT
3668  013322  023727  013520  000012        IEDCK:  CMP     DAERCT,#10.     ;IF OVER 10 DATA ERRORS
3669  013330  103404                              BLO     TFDCK           ;THEN
3670  013332  032737  000020  002332        IFDCK:  BIT     #20,SWREG       ;IF PRINT ONLY 10 DATA ERROR FLAG
3671  013340  001053                              BNE     EBDCK           ;IS NOT SET, THEN
3672  013342  110137  013522                TFDCK:  MOVB    R1,DATASB       ;GET DATA SHOULD BE->PRINT
3673  013346  110237  013524                      MOVB    R2,DATAWS       ;GET DATA WAS->PRINT
3674  013352  032737  000100  002500        IMDCK:  BIT     #HDRPRT,FLAGSP  ;IF PRINT HEADER
3675  013360  001431                              BEQ     EMDCK           ;OK, THEN
3676  013362  042737  000100  002500              BIC     #HDRPRT,FLAGSP  ;CLEAR PRINT HEADER
3677  013370  012737  000005  002520              MOV     #DATER,ERRNBR   ;SETUP ERR NBR= DATA ERR
3678  013376  004737  003060                      CALL    ERROR           ;CALL ERROR
3679  013402  032737  000020  002476        INDCK:  BIT     #EMBUFF,FLAGST  ;IF EMPTY BUFFER BIT
3680  013410  001011                              BNE     ENDCK           ;NOT SET, THEN
3681  013412  012701  013526                      MOV     #DMSG1B,R1      ;SETUP MSG FORMAT
3682  013416  013702  002374                      MOV     TRACK,R2        ;SETUP TRACK # PRT
3683  013422  013703  002376                      MOV     SECTOR,R3       ;SETUP SECTOR # PRT
3684  013426  004737  002612                      CALL    PRTB2S          ;CALL PRINT BASIC-2 ARG
3685  013432  000400                              BR      ENDCK           ;BR TO END 'N'
3686  013434  012701  013561                ENDCK:  MOV     #DMSG1,R1       ;SETUP MSG FORMAT
3687  013440  004737  002550                      CALL    PRTBOS          ;CALL PRINT BASIC-0 ARG
3688  013444  012701  013615                EMDCK:  MOV     #DMSG2,R1       ;SETUP MSG FORMAT
3689  013450  013702  013516                      MOV     BYTNUM,R2       ;SETUP BYTE #
3690  013454  013703  013522                      MOV     DATASB,R3       ;SETUP DATA SHOULD BE
3691  013460  013704  013524                      MOV     DATAWS,R4       ;SETUP DATA WAS
3692  013464  004737  002636                      CALL    PRTB3S          ;CALL PRINT BASIC-3 ARG
3693  013470  005237  013516                EBDCK:  INC     BYTNUM          ;INCREMENT BYTE #
3694  013474  005337  013514                      DEC     BYTCNT          ;DECREMENT BYTE COUNT
3695  013500  005737  013514                UADCK:  TST     BYTCNT          ;DOUNTIL BYTE COUNT
3696  013504  003274                              BGT     BADCK           ;EQUALS 0
3697  013506  004737  013642                ENDDCK: CALL    CLRDAT          ;CALL CLEAR DATA BUFFER
3698  013512  000207                              RTS     PC              ;RETURN
3699                                        ;-------------------------------------------------------------
3700  013514  000000                        BYTCNT: 0                       ;BYTE COUNT
3701  013516  000000                        BYTNUM: 0                       ;BYTE NUMBER
3702  013520  000000                        DAERCT: 0                       ;DATA ERR COUNT
3703  013522  000000                        DATASB: 0                       ;DATA SHOULD BE
3704  013524  000000                        DATAWS: 0                       ;DATA WAS
3705                                        ;-------------------------------------------------------------
3706  013526  047045  040445  052040        DMSG1B: .ASCIZ  /%N%A TRK#%D3%A. SEC#%D2%A./
3707  013561    045   022516  020101        DMSG1:  .ASCIZ  /%N%A BYTE#%S2%AGOOD%S6%ABAD/
3708  013615    045   022516  031523        DMSG2:  .ASCIZ  /%N%S3%D3%S2%B8%S2%B8/
3709                                              .EVEN
```

```
3710                                    ;-----------------------------------------------------------------------
```

```
3713                                    .SBTTL -  MOD U.SFT.CDB - CLEAR DATA BUFFER
3714                                    ;-------------------------------------------------------------------
3715
3716  013642  012705  036622            CLRDAT: MOV     #DATBUF,R5      ;GET BEGIN OF DATA BUFFER
3717  013646  012704  000200                    MOV     #128.,R4        ;SET WORD LENGTH OF TABLE
3718  013652  005025                    BACDB:  CLR     (R5)+           ;CLEAR WORD IN DATA BUFFER TABLE
3719  013654  005304                            DEC     R4              ;DECREMENT WORD COUNT
3720  013656  005704                            TST     R4              ;DO UNTIL
3721  013660  001374                    UACDB:  BNE     BACDB           ;ALL TABLE WORDS ZEROED
3722  013662  000207                            RETURN                  ;RETURN
3723                                    ;-------------------------------------------------------------------
```

```
3726                                    .SBTTL -  MOD U.SFT.RCR - REGISTER CHECK & REPORT
3727                                    ;-------------------------------------------------------------------
3728                                    ;
3729                                    ; BGNSUB
3730                                    ;       IF FINI FLAG NOT SET
3731                                    ;       : THEN-
3732                                    ;       :   GET TEST TABLE ADDRESS
3733                                    ;       :   DOUNTIL TEST TABLE ENTRY=-1
3734                                    ;       :   : ADVANCE TEST TABLE ADDRESS
3735                                    ;       :   ENDDO
3736                                    ;       :   ADVANCE TEST TABLE ADDRESS
3737                                    ;       :   GET COMMAND COUNTER
3738                                    ;       :   DOUBLE COMMAND COUNTER
3739                                    ;       :   ADDRESS OF REG TABLE THIS CMD=CMD COUNTER + TEST TABLE ADR
3740                                    ;       :   GET ADDRESS OF REG TABLE THIS COMMAND
3741                                    ;       :   SET RXCSR COMPARE WORD=COMPARE WORD FROM TABLE
3742                                    ;       :   SET RXCSR MASK WORD=DON'T CARE BITS FROM REG TABLE
3743                                    ;       :   SET RXESR COMPARE WORD=COMPARE WORD FROM TABLE
3744                                    ;       :   SET RXESR MASK WORD=DON'T CARE BITS FROM REG TABLE
3745                                    ;       :   SETUP CSR REG CK
3746                                    ;       :   IF RXCSR NOT=CSRCMP
3747                                    ;       :   : THEN-CALL CK BITS
3748                                    ;       :   ENDIF
3749                                    ;       :   SETUP ESR REG CK
3750                                    ;       :   IF ESR NOT=ESRCMP
3751                                    ;       :   : THEN-CALL CK BITS
3752                                    ;       :   ENDIF
3753                                    ;       ENDIF
3754                                    ;       GET REGISTER ERR TABLE PTR
3755                                    ;       TERMINATE ERROR TABLE
3756                                    ;       ENDIF
3757                                    ;       NOP
3758                                    ; ENDSUB
3759                                    ;-------------------------------------------------------------------
3760  013664  000240                   REGSCK: NOP                     ;
3761  013666  005037  014670                    CLR     RGETPT          ;CLEAR REG ERROR TABLE PTR
3762  013672  005737  002454           IARCR:  TST     FIN             ;IF FINI FLAG
3763  013676  001160                           BNE     EARCR           ;NOT SET, THEN
3764  013700  004737  014276                   CALL    SURGCK          ;CALL SETUP REGS CHECK
3765  013704  013701  002466                   MOV     TSTID,R1        ;GET TEST TABLE ADDRESS
3766  013710  005721                   UBRCR:  TST     (R1)+           ;DO UNTIL TEST TABLE ENTRY
3767  013712  100401                           BMI     EBRCR           ;EQUALS -1, ADVANCE TEST TABLE ADRS
3768  013714  000775                           BR      UBRCR           ;END DO 'B'
3769  013716  013702  002470           EBRCR:  MOV     TCMDCT,R2       ;GET TEST COMMAND CTR
3770  013722  006302                           ASL     R2              ;DOUBLE COMMAND CTR
3771  013724  060201                           ADD     R2,R1           ;CAL ADRS OF REG TABLE FOR THIS CMD
3772  013726  011103                           MOV     (R1),R3         ;GET ADRS FROM TEST TABLE
3773  013730  012337  014260                   MOV     (R3)+,CSRCMP    ;SET RXCSR COMPARE WORD=TABLE CSR CMP
3774  013734  012337  014262                   MOV     (R3)+,CSRMSK    ;SET RXCSR MASK WORD=TABLE CSR MSK
3775  013740  012337  014264                   MOV     (R3)+,ESRCMP    ;SET RXESR COMPARE WORD=TABLE ESR CMP
3776  013744  011337  014266                   MOV     (R3),ESRMSK     ;SET RXESR MASK WORD=TABLE ESR MSK
3777  013750  013701  002432           CSRCHK: MOV     RXCSR,R1        ;GET RXCS
3778  013754  042701  172027                   BIC     #172027,R1      ;CLEAR OFF WRITE ONLY BIT-CK DRV SELECT BIT ****
3779  013760  043701  014262                   BIC     CSRMSK,R1       ;MASK OFF BITS DON'T CARE ABOUT
3780  013764  043737  014262  014270           BIC     CSRMSK,CSRSET   ;MASK OFF CSRSET BITS DON'T CARE
3781  013772  053737  014270  014260           BIS     CSRSET,CSRCMP   ;SET CSR COMMAND VARIABLE BITS
```

```
3782  014000  023701  014260                CMP     CSRCMP,R1       ;IF RXCS CONTAINS
3783  014004  001437                        BEQ     4$              ;ERRORS, THEN
3784  014006  013737  014260  002436        MOV     CSRCMP,REGEXP   ;SAVE EXPECTED
3785  014014  010137  002440                MOV     R1,REGACT       ;SAVE ACTUAL
3786  014020  032737  000002  002332        BIT     #FUNCTT,SWREG   ;IF FUNCTION TEST
3787  014026  001403                        BEQ     1$              ;MODE, THEN
3788  014030  005237  014274                INC     FTERCT          ;INCREMENT ERROR COUNT
3789  014034  000420                        BR      3$              ;BR TO REST OF SETUP
3790  014036  010137  014702        1$:     MOV     R1,BADWRD       ;SET BAD WORD
3791  014042  013737  014260  014700        MOV     CSRCMP,CMPWRD   ;SET COMPARE WORD
3792  014050  012737  000004  014676        MOV     #4,BITOFF       ;SET # BITS TO OFFSET WORD
3793  014056  012737  000014  014674        MOV     #12.,BITLIM     ;SET # BITS TO CHECK
3794  014064  012737  014776  014704  2$:    MOV     #CSERTB,RTBADR  ;SET REG TAB ADR=CSR
3795  014072  004737  014522                CALL    CKBITS          ;FIND BAD BITS & RELATED ERR #
3796  014076  012701  100000        3$:     MOV     #ERRFLG,R1      ;SET ERR
3797  014102  000401                        BR      XCSRCK          ;BR TO END
3798  014104  005001                4$:     CLR     R1              ;CLEAR ERRORS
3799  014106  050137  002476        XCSRCK: BIS     R1,FLAGST       ;SET FLAGST ERR BIT-IF ERRORS
3800  014112  013701  002434        ESRCHK: MOV     RXESR,R1        ;GET RXES
3801  014116  042701  176000                BIC     #176000,R1      ;MASK OFF BITS NOT USED IN RXES
3802  014122  043701  014266                BIC     ESRMSK,R1       ;MASK OFF BITS DON'T CARE ABOUT
3803  014126  043737  014266  014272        BIC     ESRMSK,ESRSET   ;MASK OFF ESRSET BITS DON'T CARE
3804  014134  053737  014272  014264        BIS     ESRSET,ESRCMP   ;SET ESR COMMAND VARIBLE BITS
3805  014142  023701  014264                CMP     ESRCMP,R1       ;IF RXES CONTAINS
3806  014146  001431                        BEQ     4$              ;ERRORS, THEN
3807  014150  032737  000002  002332        BIT     #FUNCTT,SWREG   ;IF FUNCTION TEST
3808  014156  001403                        BEQ     1$              ;MODE, THEN
3809  014160  005237  014274                INC     FTERCT          ;INCREMENT ERROR COUNT
3810  014164  000417                        BR      3$              ;BR TO REST OF SETUP
3811  014166  010137  014702        1$:     MOV     R1,BADWRD       ;SET BAD WORD
3812  014172  013737  014264  014700        MOV     ESRCMP,CMPWRD   ;SET COMPARE WORD
3813  014200  005037  014676                CLR     BITOFF          ;SET BIT OFFSET
3814  014204  012737  000014  014674        MOV     #12.,BITLIM     ;SET # BITS TO CHECK
3815  014212  012737  014746  014704  2$:    MOV     #ESERTB,RTBADR  ;SET REG ERR TAB ADR=ESR
3816  014220  004737  014522                CALL    CKBITS          ;FIND BAD BITS & RELATED ERR #
3817  014224  012701  100000        3$:     MOV     #ERRFLG,R1      ;SET ERR
3818  014230  000401                        BR      XESRCK          ;BR TO END
3819  014232  005001                4$:     CLR     R1              ;CLEAR ERRORS
3820  014234  050137  002476        XESRCK: BIS     R1,FLAGST       ;SET TEST ERROR FLAG, IF ERRORS
3821  014240  013705  014670        EARCR:  MOV     RGETPT,R5       ;GET REG ERR TBL PTR
3822  014244  006305                        ASL     R5              ;DOUBLE REG ERROR TAB PTR FOR ADDRESSING
3823  014246  012765  177777  014706        MOV     #-1,RGERTB(R5)  ;TERMINATE TBL
3824  014254  000240                        NOP                     ;
3825  014256  000207                XREGCK: RTS     PC              ;RETURN
3826                                ;-------------------------------------------------------------------
3827  014260  000000                CSRCMP: 0                       ;CSR COMPARE WORD
3828  014262  000000                CSRMSK: 0                       ;CSR MASK WORD
3829  014264  000000                ESRCMP: 0                       ;ESR COMPARE WORD
3830  014266  000000                ESRMSK: 0                       ;ESR MASK WORD
3831  014270  000000                CSRSET: 0                       ;CSR SET - SETUP REGS CK
3832  014272  000000                ESRSET: 0                       ;ESR SET - SETUP REGS CK
3833  014274  000000                FTERCT: 0                       ;FUNCTION TEST ERROR COUNTER
3834                                ;-------------------------------------------------------------------
```

```
3837                                        .SBTTL -  MOD U.SFT.SRC - SETUP REGISTER CHECK
3838                                        ;-------------------------------------------------------------------
3839  014276  000240                        SURGCK: NOP                     ;
3840  014300  005037  014272                        CLR     ESRSET          ;CLEAR ESR SET
3841  014304  032737  040000  002400        IGSRC:  BIT     #RXINIT,CMD     ;IF CMD WAS RX INITIALIZE
3842  014312  001406                                BEQ     EGSRC           ;THEN
3843  014314  042737  001000  002400                BIC     #SIDE1,CMD      ;CLEAR SIDE #1 SELECT BIT
3844  014322  042737  000400  002400                BIC     #DRIVE1,CMD     ;CLEAR DRIVE #1 SELECT BIT
3845  014330  013705  002400        EGSRC:  MOV     CMD,R5          ;GET COMMAND
3846  014334  042705  177761                BIC     #177761,R5      ;CLEAR ALL BUT COMMAND
3847  014340  022705  000016        IASRC:  CMP     #16,R5          ;IF COMMAND = READ ERROR CODE
3848  014344  001015                        BNE     EASRC           ;THEN
3849  014346  032737  000200  002500        IFSRC:  BIT     #RECTST,FLAGSP  ;IF FLAGSP NOT=REC TEST
3850  014354  001011                        BNE     EASRC           ;THEN
3851  014356  013737  002424  002400                MOV     LCMD,CMD        ;SET COMMAND=LAST COMMAND
3852  014364  013737  002426  002432                MOV     LRXCSR,RXCSR    ;GET LAST RXCSR
3853  014372  013737  002430  002434                MOV     LRXESR,RXESR    ;GET LAST RXESR
3854  014400  013705  002400        EASRC:  MOV     CMD,R5          ;GET COMMAND
3855  014404  010537  014270                MOV     R5,CSRSET       ;SETUP CRS SET
3856  014410  042737  176277  014270        BIC     #176277,CSRSET  ;SAVE ONLY: SIDE,DENS,INTR ENA,(DRV SEL CK) BITS
3857  014416  032705  001000        IBSRC:  BIT     #SIDE1,R5       ;IF SIDE #1 SELECTED
3858  014422  001403                        BEQ     ICSRC           ;THEN
3859  014424  052737  001000  014272        BIS     #SIDE1,ESRSET   ;SETUP ESR SET -> SIDE1
3860  014432  032705  000020        ICSRC:  BIT     #DRV1,R5        ;IF DRIVE #1 SELECTED
3861  014436  001403                        BEQ     IDSRC           ;THEN
3862  014440  052737  000400  014272        BIS     #DRIVE1,ESRSET  ;SETUP ESRSET -> DRIVE1
3863  014446  032705  000400        IDSRC:  BIT     #DENBIT,R5      ;IF DOUBLE DENSITY SELECTED
3864  014452  001403                        BEQ     EDSRC           ;THEN
3865  014454  052737  000040  014272        BIS     #DRVDEN,ESRSET  ;SETUP ESR SET = DOUBLE DENSITY
3866  014462  042705  177761        EDSRC:  BIC     #177761,R5      ;CLEAR ALL BUT COMMAND
3867  014466  005737  002402        IESRC:  TST     DELDAT          ;IF DELETED DATA MODE
3868  014472  001411                        BEQ     EESRC           ;AND
3869  014474  022705  000006                CMP     #RSCMD,R5       ;COMMAND=READ SECTOR
3870  014500  001403                        BEQ     1$              ;OR
3871  014502  022705  000014                CMP     #WDDCMD,R5      ;COMMAND-WRITE DELETED DATA SECTOR
3872  014506  001003                        BNE     EESRC           ;THEN
3873  014510  052737  000100  014272        1$:     BIS     #DLDBIT,ESRSET  ;SETUP  ESR SET ->DELETED DATA BIT
3874  014516  000240                EESRC:  NOP                     ;
3875  014520  000207                XSRC:   RETURN                  ;RETURN
3876                                        ;-------------------------------------------------------------------
```

```
3879                                        .SBTTL -  MOD U.SFT.BTK - BITS SET/NOT SET CHECK
3880                                        ;-------------------------------------------------------------------
3881
3882  014522  013702  014700                CKBITS: MOV     CMPWRD,R2       ;GET COMPARE WORD
3883  014526  013701  014702                        MOV     BADWRD,R1       ;GET BAD WORD
3884  014532  040201                              BIC     R2,R1           ;SET R1=BITS THAT SHOULDN'T BE SET
3885  014534  005102                              COM     R2              ;COMPLIMENT COMPARE WORD
3886  014536  053702  014702                      BIS     BADWRD,R2       ;SET BAD BITS
3887  014542  005102                              COM     R2              ;SET R2=BITS THAT SHOULD BE SET
3888  014544  050201                              BIS     R2,R1           ;SET R1=ALL BITS THAT SHOULD OR SHOULDN'T BE SET
3889  014546  005737  014676                      TST     BITOFF          ;IF BIT OFFSET
3890  014552  001407                              BEQ     2$              ;NOT=0, THEN
3891  014554  005337  014676                1$:   DEC     BITOFF          ;
3892  014560  000241                              CLC                     ;CLEAR CARRY
3893  014562  006001                              ROR     R1              ;
3894  014564  005737  014676                      TST     BITOFF          ;IF BIT OFFSET
3895  014570  001371                              BNE     1$              ;EQUALS 0, THEN
3896  014572  005037  014672                2$:   CLR     BITCNT          ;CLEAR BIT COUNTER
3897  014576  032701  000001                3$:   BIT     #1,R1           ;IF LSB
3898  014602  001417                              BEQ     4$              ;NOT=0, THEN
3899  014604  013702  014672                      MOV     BITCNT,R2       ;GET BIT COUNTER
3900  014610  006302                              ASL     R2              ;DOUBLE IT FOR ADDRESSING
3901  014612  063702  014704                      ADD     RTBADR,R2       ;ADD REG TABLE ADR
3902  014616  011203                              MOV     (R2),R3         ;GET ERR# THIS BIT ERROR FROM TABLE
3903  014620  005703                              TST     R3              ;IF ERR #
3904  014622  001407                              BEQ     4$              ;NOT=0, THEN
3905  014624  013704  014670                      MOV     RGETPT,R4       ;SET UP REG ERR TABLE POINTER
3906  014630  006304                              ASL     R4              ;DOUBLE IT FOR ADDRESSING
3907  014632  010364  014706                      MOV     R3,RGERTB(R4)   ;SET THIS ERR# IN TABLE OF REG ERRORS
3908  014636  005237  014670                      INC     RGETPT          ;ADVANCE TABLE POINTER TO NEXT LOCATION
3909  014642  005237  014672                4$:   INC     BITCNT          ;INCREMENT BIT COUNTER
3910  014646  000241                              CLC                     ;CLEAR CARRY
3911  014650  006001                              ROR     R1              ;SHIFT NEXT BIT FOR TEST
3912  014652  023737  014674  014672              CMP     BITLIM,BITCNT   ;IF ALL BITS SPECIFIED
3913  014660  101346                              BHI     3$              ;DONE, THEN
3914  014662  005037  014672                      CLR     BITCNT          ;RESET BIT COUNT
3915  014666  000207                      XCRBIT: RETURN                  ;RETURN
3916                                        ;-------------------------------------------------------------------
3917  014670  000000                      RGETPT: 0                       ;REG ERROR TABLE POINTER
3918  014672  000000                      BITCNT: 0                       ;BIT COUNTER
3919  014674  000000                      BITLIM: 0                       ;BIT REGISTER LIMIT
3920  014676  000000                      BITOFF: 0                       ;BIT REGISTER OFFSET
3921  014700  000000                      CMPWRD: 0                       ;COMPARE WORD
3922  014702  000000                      BADWRD: 0                       :BAD WORD
3923  014704  000000                      RTBADR: 0                       ;REGISTER ERROR TABLE ADDRESS
3924                                        ;-------------------------------------------------------------------
```

```
3927
3928
3929  014706  000000  RGERTB: .WORD   0               ;
3930  014710  177777          .WORD   -1              ;
3931  014712  177777          .WORD   -1              ;
3932  014714  177777          .WORD   -1              ;
3933  014716  177777          .WORD   -1              ;
3934  014720  177777          .WORD   -1              ;
3935  014722  177777          .WORD   -1              ;
3936  014724  177777          .WORD   -1              ;
3937  014726  177777          .WORD   -1              ;
3938  014730  177777          .WORD   -1              ;
3939  014732  177777          .WORD   -1              ;
3940  014734  177777          .WORD   -1              ;
3941  014736  177777          .WORD   -1              ;
3942  014740  177777          .WORD   -1              ;
3943  014742  177777          .WORD   -1              ;
3944  014744  177777          .WORD   -1              ;
3945
3946
3947
3948
3949  014746  000004  ESERTB: .WORD   CRCERR          ;BIT #00 - CRC ERR
3950  014750  000024          .WORD   SDRDYE          ;BIT #01 - SIDE 1 RDY
3951  014752  000062          .WORD   NOITDP          ;BIT #02 - INIT DONE
3952  014754  004050          .WORD   ACLOWF!NEGTST   ;BIT #03 - AC LOW
3953  014756  004030          .WORD   DENERR!NEGTST   ;BIT #04 - DEN ERR
3954  014760  004020          .WORD   DENDSK!NEGTST   ;BIT #05 - DRV DEN-->NOT ERROR
3955  014762  000032          .WORD   DLDTER          ;BIT #06 - DEL DATA
3956  014764  000025          .WORD   DVRDYE          ;BIT #07 - DRV RDY
3957  014766  000027          .WORD   DRVWRG          ;BIT #08 - UNIT SEL
3958  014770  000026          .WORD   SIDWRG          ;BIT #09 - HEAD SEL
3959  014772  004051          .WORD   WCOVFE!NEGTST   ;BIT #10 - WC OVFL
3960  014774  004052          .WORD   NXMERR!NEGTST   ;BIT #11 - NXM
3961
3962
3963
3964
3965  014776  000033  CSERTB: .WORD   CSRERR          ;BIT #04 - UNIT SEL     - R/W
3966  015000  000033          .WORD   CSRERR          ;BIT #05 - "DONE"       - R
3967  015002  000033          .WORD   CSRERR          ;BIT #06 - INTER ENB    - R/W
3968  015004  000033          .WORD   CSRERR          ;BIT #07 - "TR"         - R
3969  015006  000033          .WORD   CSRERR          ;BIT #08 - DENSITY      - R/W
3970  015010  000033          .WORD   CSRERR          ;BIT #09 - HEAD SEL     - R/W
3971  015012  000033          .WORD   CSRERR          ;BIT #10 -
3972  015014  000033          .WORD   CSRERR          ;BIT #11 - RX02         - R
3973  015016  000033          .WORD   CSRERR          ;BIT #12 -              - W
3974  015020  000033          .WORD   CSRERR          ;BIT #13 -              - W
3975  015022  000033          .WORD   CSRERR          ;BIT #14 -              - W
3976  015024  000033          .WORD   CSRERR          ;BIT #15 - ERR BIT      - R
3977
```

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

                                        TN=0
3980
3981
3982
3983                    000000          REGTB   1,04040,0,0,-1          ;RXCS ONLY
3984    015026                          TORT1:  .WORD   04040                   ;RXCSR SHOULD BE
 (2)    015026  004040                          .WORD   0                       ;RXCSR DONT CARE
 (2)    015030  000000                          .WORD   0                       ;RXESR SHOULD BE
 (2)    015032  000000                          .WORD   -1                      ;RXESR DONT CARE
 (2)    015034  177777
3985    015036                          REGTB   2,04040,0,0,0           ;RXCS & RXES/ALL
 (2)    015036  004040                  TORT2:  .WORD   04040                   ;RXCSR SHOULD BE
 (2)    015040  000000                          .WORD   0                       ;RXCSR DONT CARE
 (2)    015042  000000                          .WORD   0                       ;RXESR SHOULD BE
 (2)    015044  000000                          .WORD   0                       ;RXESR DONT CARE
3986    015046                          REGTB   3,04040,0,4,177773      ;RXCS & RXES INITIALIZE CK
 (2)    015046  004040                  TORT3:  .WORD   04040                   ;RXCSR SHOULD BE
 (2)    015050  000000                          .WORD   0                       ;RXCSR DONT CARE
 (2)    015052  000004                          .WORD   4                       ;RXESR SHOULD BE
 (2)    015054  177773                          .WORD   177773                  ;RXESR DONT CARE
3987    015056                          REGTB   4,04040,0,4,1640        ;RXCS & RXES INITIALIZE ALL CK
 (2)    015056  004040                  TORT4:  .WORD   04040                   ;RXCSR SHOULD BE
 (2)    015060  000000                          .WORD   0                       ;RXCSR DONT CARE
 (2)    015062  000004                          .WORD   4                       ;RXESR SHOULD BE
 (2)    015064  001640                          .WORD   1640                    ;RXESR DONT CARE
3988    015066                          REGTB   5,04040,0,200,60        ;RXCS & RXES READ STATUS CK
 (2)    015066  004040                  TORT5:  .WORD   04040                   ;RXCSR SHOULD BE
 (2)    015070  000000                          .WORD   0                       ;RXCSR DONT CARE
 (2)    015072  000200                          .WORD   200                     ;RXESR SHOULD BE
 (2)    015074  000060                          .WORD   60                      ;RXESR DONT CARE
3989    015076                          REGTB   6,04040,0,0,1440        ;RXCS & RXES NO DISK OPERATION
 (2)    015076  004040                  TORT6:  .WORD   04040                   ;RXCSR SHOULD BE
 (2)    015100  000000                          .WORD   0                       ;RXCSR DONT CARE
 (2)    015102  000000                          .WORD   0                       ;RXESR SHOULD BE
 (2)    015104  001440                          .WORD   1440                    ;RXESR DONT CARE
3990                                    ;-----------------------------------------------------------------
3991            015026          CSONLY  =       TORT1           ;RXCS ONLY
3992            015036          CSESAL  =       TORT2           ;RXCS & RXES ALL
3993            015046          CSINIT  =       TORT3           ;RXCS & RXES INITIALIZE CK
3994            015056          CSESIT  =       TORT4           ;RXCS &RXES INITIALIZE ALL
3995            015066          CSESRS  =       TORT5           ;RXCS & RXES READ STATUS CK
3996            015076          CSESND  =       TORT6           ;RXCS & RXES NO DISK OPERATION
3997                                    ;-----------------------------------------------------------------
```

```
4000                                        .SBTTL -  MOD U.SET.GEN - GET ERROR CODE-ERR #
4001                                        ;-------------------------------------------------------------------
4002
4003  015106  005002                        GTECEN: CLR     R2              ;CLEAR TEMP REG #2
4004  015110  105737  002442                IAGEN:  TSTB    XERUUT          ;IF X ERR CODE UUT
4005  015114  001422                                BEQ     XGTECN          ;NOT=0, THEN
4006  015116  122737  000260  002442        IBGEN:  CMPB    #260,XERUUT     ;IF ERR CODE UUT
4007  015124  101003                                BHI     LBGEN           ;EXCEEDS 260, THEN
4008  015126  012702  000017                        MOV     #ILLERC,R2      ;SET ERR CODE #
4009  015132  000407                                BR      EBGEN           ;BR TO END 'B'
4010  015134  052737  100000  002476        LBGEN:  BIS     #ERRFLG,FLAGST  ;SET FLAGS-ERR FLAG
4011  015142  004737  017106                        CALL    GTECOF          ;CALL GET ERROR CODE OFFSET
4012  015146  016102  015164                        MOV     ECERNT(R1),R2   ;GET ERROR CODE ERR # FROM TABLE
4013  015152  010237  002462                EBGEN:  MOV     R2,RECERN       ;READ ERR CODE ERR #
4014  015156  010237  020164                        MOV     R2,ECERNB       ;PASS ERR CODE ERR # TO "ERRCHK" MOD
4015  015162  000207                        XGTECN: RETURN                  ;RETURN
4016                                        ;-------------------------------------------------------------------
4017
4018                                        ;       ERROR CODE ERROR # TABLE
4019                                        ;-------------------------------------------------------------------
4020
4021  015164  000000                        ECERNT: .WORD                   ; 00->NO ERROR                  -
4022  015166  000006                                .WORD   SEKERR          ; 10->NO HOME DRV0              -SEEK
4023  015170  000006                                .WORD   SEKERR          ; 20->NO HOME DRV1              -SEEK
4024  015172  000017                                .WORD   ILLERC          ; 30-> --                       -
4025  015174  004041                                .WORD   TRKAER!NEGTST   ; 40->ACC TK > 76               -TRACK ERR
4026  015176  000006                                .WORD   SEKERR          ; 50->HOME BEFORE TRK           -SEEK
4027  015200  000017                                .WORD   ILLERC          ; 60-> --                       -
4028  015202  004003                                .WORD   RDERR!NEGTST    ; 70->NO SEC-52 TRIES           -READ
4029  015204  000017                                .WORD   ILLERC          ;100-> --                       -
4030  015206  000003                                .WORD   RDERR           ;110->NO STEP CLOCK             -READ
4031  015210  000003                                .WORD   RDERR           ;120->NO PREAMBLE               -READ
4032  015212  000003                                .WORD   RDERR           ;130->PREAMBLE-NO I.D.          -READ
4033  015214  000017                                .WORD   ILLERC          ;140-> --                       -
4034  015216  000006                                .WORD   SEKERR          ;150->GD TRK NOT=TRK            -SEEK
4035  015220  000003                                .WORD   RDERR           ;160->TOO MY TRIES IDAM         -READ
4036  015222  000003                                .WORD   RDERR           ;170->DATA AM NOT FND           -READ
4037  015224  000004                                .WORD   CRCERR          ;200->CRC                       -CRC
4038  015226  000017                                .WORD   ILLERC          ;210-> --                       -
4039  015230  000056                                .WORD   HDSFDG          ;220->SELF DIAG                 -SELF DIAG
4040  015232  004051                                .WORD   WCOVFE!NEGTST   ;230->WRD COUNT OVF             -WRD CTOV
4041  015234  004030                                .WORD   DENERR!NEGTST   ;240->DENSITY ERR               -DEN ERR
4042  015236  004036                                .WORD   SDKYWD!NEGTST   ;250->WRG KEYWD-S.D.            -WRG KEY
4043                                        ;-------------------------------------------------------------------
```

```
                                        .SBTTL -  MOD U.PRT.STA - PRINT UNIT STATUS
                                        ;-------------------------------------------------------------------
                                        ;
015240  012701  015446          PRTSTA: MOV     #IDENT1,R1      ;SETUP FORMAT MSG
015244  013702  002512                  MOV     UNTPRT,R2       ;SETUP UNIT PRT
015250  013703  002432                  MOV     RXCSR,R3        ;SETUP RXCSR
015254  013704  002434                  MOV     RXESR,R4        ;SETUP RXESR
015260  013705  002400                  MOV     CMD,R5          ;SETUP COMMAND
015264  004737  002664                  CALL    PRTB4S          ;CALL PRINT BASIC 4-PARM.
015270  005737  002400          IBSTA:  TST     CMD             ;IF CMD
015274  001417                          BEQ     IASTA           ;NOT = 0, THEN
015276  032737  040000  002400  ICSTA:  BIT     #BIT14,CMD      ;IF PROG INIT
015304  001403                          BEQ     LCSTA           ;THEN
015306  012701  007452                  MOV     #CMDM8,R1       ;SETUP PROG INIT MSG
015312  000406                          BR      ECSTA           ;BR TO END 'C'
015314  013705  002400          LCSTA:  MOV     CMD,R5          ;GET COMMAND
015320  042705  177761                  BIC     #177761,R5      ;CLR ALL BUT CMD
015324  016501  007164                  MOV     CMDMSG(R5),R1   ;GET CMD MSG
015330  004737  002550          ECSTA:  CALL    PRTBOS          ;CALL PRINT BASIC 0 - PAR
015334  032737  000200  002476  IASTA:  BIT     #RECFLG,FLAGST  ;IF ERR CODE FLAG
015342  001435                          BEQ     XPTSTA          ;SET, THEN
015344  004737  015744                  CALL    PRTECD          ;CALL PRINT ERROR CODE
015350  004737  017124                  CALL    CLRRGS          ;CALL CLEAR REGISTER
015354  012701  015531                  MOV     #XER2,R1        ;SETUP FORMAT MSG
015360  113702  002443                  MOVB    WC,R2           ;SETUP WORD COUNT
015364  113703  002444                  MOVB    CTK0,R3         ;SETUP CTK0
015370  113704  002445                  MOVB    CTK1,R4         ;SETUP CTK1
015374  004737  003002                  CALL    PRTX3S          ;CALL PRINT-EXT 3 PARAMETERS
015400  012701  015627                  MOV     #XER3,R1        ;SETUP FORMAT MSG
015404  113702  002446                  MOVB    TTRK,R2         ;SETUP TTRK
015410  113703  002447                  MOVB    TSEC,R3         ;SETUP TSEC
015414  113704  002450                  MOVB    SFTSTS,R4       ;SETUP SFTSTS
015420  113705  002451                  MOVB    BTRK,R5         ;SETUP BTRK
015424  004737  003030                  CALL    PRTX4S          ;CALL PRINT-EXT 4 PAR
015430  042737  000200  002476          BIC     #RECFLG,FLAGST  ;CLEAR ERROR CODE FLAG
015436  005037  015444          XPTSTA: CLR     ERRREG          ;CLEAR ERROR REGISTER
015442  000207                          RTS     PC              ;RETURN
                                        ;-------------------------------------------------------------------
015444  000000                  ERRREG: 0                       ;
                                        ;-------------------------------------------------------------------
                                        ;
015446  047045  040445  020040  IDENT1: .ASCIZ  /%N%A  UNIT#%O1%A RXCSR=%O%A RXESR=%O%A CMD=%O%A ->/
015531     045  022516  020101  XER2:   .ASCIZ  /%N%A  WORD CNT=%O3%N%A  CUR TRK DV0=%D2%A. CUR TRK DV1=%D2%A./
015627     045  022516  020101  XER3:   .ASCIZ  /%N%A  TARGET TRK =%D2%A. TARGET SEC =%D2%A. SOFT STAT=%O3%A BAD
                                        .EVEN
                                        ;-------------------------------------------------------------------
```

```
4093                                        .SBTTL -  MOD U.PRT.EC  - PRINT UNIT ERROR CODE
4094                                        ;-------------------------------------------------------
4095
4096  015744  012701  016014                PRTECD: MOV     #XER1,R1        ;SETUP FORMAT MSG
4097  015750  113702  002442                        MOVB    XERUUT,R2       ;GET ERROR CODE
4098  015754  042702  177400                        BIC     #177400,R2      ;CEAR TOP R2
4099  015760  004737  002734                        CALL    PRTX1S          ;CALL PRINT EXTENDED-1 ARG
4100  015764  105737  002442                        TSTB    XERUUT          ;IF ERROR
4101  015770  001410                              BEQ     ENDXER          ;NOT=0, THEN
4102  015772  004737  017106                        CALL    GTECOF          ;CALL GET ERROR CODE OFFSET
4103  015776  016101  016042                        MOV     ECTAB-2(R1),R1  ;SET ADR OF ERROR MSG FOR PRINT
4104  016002  004737  002714                        CALL    PRTXOS          ;CALL PRINT EXTENDED-NO ARG
4105  016006  105037  002442                        CLRB    XERUUT          ;CLEAR ERROR CODE
4106  016012  000207                          ENDXER: RTS     PC              ;RETURN
4107                                        ;-------------------------------------------------------------------
4108  016014  047045  040445  020040        XER1:   .ASCIZ  /%N%A  ERR CODE=%03%A ->/
4109                                                .EVEN
4110                                        ;-------------------------------------------------------------------
4111
4112  016044  016136                        ECTAB:  .WORD   EC1
4113  016046  016175                                .WORD   EC2
4114  016050  016116                                .WORD   EC0
4115  016052  016234                                .WORD   EC4
4116  016054  016274                                .WORD   EC5
4117  016056  016116                                .WORD   EC0
4118  016060  016337                                .WORD   EC7
4119  016062  016116                                .WORD   EC0
4120  016064  016407                                .WORD   EC11
4121  016066  016451                                .WORD   EC12
4122  016070  016477                                .WORD   EC13
4123  016072  016116                                .WORD   EC0
4124  016074  016567                                .WORD   EC15
4125  016076  016640                                .WORD   EC16
4126  016100  016670                                .WORD   EC17
4127  016102  016716                                .WORD   EC20
4128  016104  016116                                .WORD   EC0
4129  016106  016753                                .WORD   EC22
4130  016110  017013                                .WORD   EC23
4131  016112  017033                                .WORD   EC24
4132  016114  017052                                .WORD   EC25
4133                                        ;-------------------------------------------------------------------
```

```
4136                                        .SBTTL -    UNIT ERROR CODE MESSAGES
4137                                        ;-------------------------------------------------------------------
4138  016116  040445  044440  046114       EC0:    .ASCIZ  /%A ILL ERR CODE/
4139  016136  040445  047516  044040       EC1:    .ASCIZ  /%ANO HOME ON INITIALIZE DRV 0./
4140  016175     045  047101  020117       EC2:    .ASCIZ  /%ANO HOME ON INITIALIZE DRV 1./
4141                                        ;EC3:   .ASCIZ  /%AILL ERR CDE./
4142  016234  040445  051124  042511       EC4:    .ASCIZ  /%ATRIED TO ACCESS A TRACK > 76./
4143  016274  040445  047510  042515       EC5:    .ASCIZ  /%AHOME FOUND BEFORE DESIRED TRACK./
4144                                        ;EC6:   .ASCIZ  /%AILL ERR CDE./
4145  016337     045  032501  020062       EC7:    .ASCIZ  /%A52 HEADERS PASSED & SECTOR NOT FOUND./
4146                                        ;EC10:  .ASCIZ  /%AILL ERR CDE./
4147  016407     045  047101  020117       EC11:   .ASCIZ  /%ANO STEPCLK SEEN IN 40 MICROSEC./
4148  016451     045  050101  042522       EC12:   .ASCIZ  /%APREAMBLE NOT FOUND./
4149  016477     045  050101  042522       EC13:   .ASCIZ  /%APREAMBLE FOUND BUT NO ID MARK IN TIME./
4150  016550  040445  046111  020114       EC14:   .ASCIZ  /%AILL ERR CDE./
4151  016567     045  043501  047517       EC15:   .ASCIZ  /%AGOOD HEADER TRACK ADR NOT=SELECTED TRK/
4152  016640  040445  042111  046501       EC16:   .ASCIZ  /%AIDAM->TOO MANY TRIES./
4153  016670  040445  047516  042040       EC17:   .ASCIZ  /%ANO DATA AM IN TIME./
4154  016716  040445  051103  020103       EC20:   .ASCIZ  /%ACRC ERR ON READING SECTOR./
4155                                        ;EC21:  .ASCIZ  /%AILL ERR CDE./
4156  016753     045  051101  053455       EC22:   .ASCIZ  /%AR-W ELECT. FAILED MAINT. TST./
4157  017013     045  053501  051117       EC23:   .ASCIZ  /%AWORD CNT OVF./
4158  017033     045  042101  047105       EC24:   .ASCIZ  /%ADENSITY ERR./
4159  017052  040445  042523  020124       EC25:   .ASCIZ  /%ASET DENSITY WRG KEY WORD./
4160                                        ;-------------------------------------------------------------------
4161                                            .EVEN
4162                                        .SBTTL -  MOD U.SFT.GEO - GET ERROR CODE OFFSET
4163                                        ;-------------------------------------------------------------------
4164
4165  017106  013701  002442               GTECOF: MOV     XERUUT,R1       ;SAVE EXTENDED ERROR CODE IN TEMP #1
4166  017112  006201                               ASR     R1              ;FORMAT E.C.
4167  017114  006201                               ASR     R1              ;FORMAT E.C. FOR ADR
4168  017116  042701  177700                       BIC     #177700,R1      ;CLR TOP BYTE
4169  017122  000207                               RETURN                  ;RETURN
4170                                        ;-------------------------------------------------------------------
4171
4172                                        .SBTTL -  MOD U.SFT.CRS - CLEAR REGISTERS
4173                                        ;-------------------------------------------------------------------
4174
4175  017124  005001                       CLRRGS: CLR     R1
4176  017126  005002                               CLR     R2
4177  017130  005003                               CLR     R3
4178  017132  005004                               CLR     R4
4179  017134  005005                               CLR     R5
4180  017136  000207                               RETURN                  ;RETURN
4181                                        ;-------------------------------------------------------------------
```

```
4184                                    .SBTTL -  MOD U.SFT.DSC - DEVICE STATE CHECK
4185                                    ;-------------------------------------------------------------------
4186                                    ; BGNSUB
4187                                    ;       IF RXCS ERROR BIT SET
4188                                    ;       : THEN
4189                                    ;       :   IF RXCS DONE BIT SET
4190                                    ;       :   : THEN
4191                                    ;       :   :   IF RXES ACLOW BIT SET
4192                                    ;       :   :   : THEN-SETUP ERROR
4193                                    ;       :   :   :       SETUP MSG->''NO PWR, CABLED BACK, RX01 STRAP, PDP-8''
4194                                    ;       :   :   :       CALL ERROR
4195                                    ;       :   :   :       SETUP DROP UNIT
4196                                    ;       :   :   :       DO DROP UNIT
4197                                    ;       :   :   ENDIF
4198                                    ;       :   ENDIF
4199                                    ;       ENDIF
4200                                    ; ENDSUB
4201                                    ;-------------------------------------------------------------------
4202
4203  017140  013701  002350            DVSTCK: MOV     RXCS,R1         ;SET R1=RXCS ADDRESS
4204  017144  032711  100000            IADSC:  BIT     #ERRBIT,(R1)    ;IF RXCS REG=ERR BIT
4205  017150  001423                            BEQ     EADSC           ;SET, THEN
4206  017152  032721  000040            IBDSC:  BIT     #DNBIT,(R1)+    ;IF RXCS REG=DONE BIT
4207  017156  001420                            BEQ     EADSC           ;SET, THEN
4208  017160  032711  000010            ICDSC:  BIT     #ACLOW,(R1)     ;IF RXES REG=AC LOW BIT
4209  017164  001415                            BEQ     EADSC           ;SET, THEN
4210  017166  012737  000050  002520            MOV     #ACLOWF,ERRNBR  ;SET ERR NBR=AC LOW FATAL ERROR
4211  017174  004737  003060                    CALL    ERROR           ;CALL ERROR
4212  017200  012701  017222                    MOV     #STATER,R1      ;SET MSG->''NO PWR, CABLE BACK...ETC.''
4213  017204  004737  002550                    CALL    PRTBOS          ;CALL PRINT BASIC-NO ARG
4214  017210                                    DODU    UNIT            ;DROP UNIT
4215  017216                                    DOCLN                   ;DO CLEAN
4216  017220  000207                    EADSC:  RETURN                  ;RETURN
4217                                    ;-------------------------------------------------------------------
4218  017222  047045  040445  026440  STATER: .ASCIZ  /%N%A ->NO PWR, CABLED BACKWARDS, STRAPPED RX01, PDP-8/
4219                                            .EVEN
4220                                    ;-------------------------------------------------------------------
```

```
4222
4223                                        .SBTTL -  MOD U.SFT.DRC - DEVICE READY CHECK
4224                                        ;-------------------------------------------------------------------
4225                                        ; BGNSUB
4226                                        ;       CALL READ STATUS
4227                                        ;       IF RXES DRV RDY NOT SET                                 [A]
4228                                        ;       :  THEN-SET SYS ERR-DRV RDY ERR
4229                                        ;       :       SETUP ERR # DRV RDY ERR
4230                                        ;       :       CALL ERR
4231                                        ;       ENDIF
4232                                        ; ENDSUB
4233                                        ;-------------------------------------------------------------------
4234
4235  017310  000240                        DVRYCK: NOP                     ;
4236  017312  004737  011266                        CALL    RDSTAT          ;CALL READ STATUS
4237  017316  032777  000200  163026        IADRC:  BIT     #DRVRDY,@RXDB   ;IF RXDB-DRIVE RDY
4238  017324  001010                                BNE     EADRC           ;NOT SET, THEN
4239  017326  052737  000040  002456                BIS     #BIT5,SYSERR    ;SET SYS ERR=DRV RDY ERR
4240  017334  012737  000025  002520                MOV     #DVRDYE,ERRNBR  ;SET ERR NBR=DRV RDY ERROR
4241  017342  004737  003060                        CALL    ERROR           ;CALL ERROR
4242  017346  000207                        EADRC:  RETURN                  ;BR TO EXIT
4243                                        ;-------------------------------------------------------------------
```

```
4246                                        .SBTTL -  MOD U.SFT.DDC - DEVICE DENSITY CK
4247                                        ;-------------------------------------------------------------------
4248                                        ; BGNSUB
4249                                        ;       CALL DEVICE READY CK
4250                                        ;       IF SYS ERR=DEVICE READY ERR NOT SET
4251                                        ;       :       THEN-SET TRACK=0, SECTOR=10
4252                                        ;       :       CALL READ SECTOR
4253                                        ;       :       IF FINI NOT SET                                 [A]
4254                                        ;       :       :  THEN
4255                                        ;       :       :    IF RXES DRIVE DENSITY=DOUBLE DEN           [B]
4256                                        ;       :       :    :  THEN-SET DENSITY STATUS=DOUBLE DENSITY
4257                                        ;       :       :    :  ELSE-SET DENSITY STATUS=SINGLE DENSITY
4258                                        ;       :       :    ENDIF
4259                                        ;       :       :    SET TRACK=76, SECTOR=10
4260                                        ;       :       :    CALL READ SECTOR
4261                                        ;       :       :    IF RXES DRIVE DENSITY NOT=DENSITY STATUS   [C]
4262                                        ;       :       :    :  THEN-
4263                                        ;       :       :    :    SETUP ERROR # & ERROR MSG=>''DISKETTE-MIXED DENSITY''
4264                                        ;       :       :    :    CALL ERROR
4265                                        ;       :       :    :    DO DROP UNIT
4266                                        ;       :       :    ENDIF
4267                                        ;       :       ENDIF
4268                                        ;       ENDIF
4269                                        ; ENDSUB
4270                                        ;-------------------------------------------------------------------
4271  017350  004737  017310               DENCHK: CALL    DVRYCK          ;CALL DEVICE READY CK
4272  017354  032737  000040  002456       IDDDC:  BIT     #BIT5,SYSERR    ;IF SYS ERR=DEVICE RDY ERR
4273  017362  001054                               BNE     EADDC           ;NOT SET, THEN
4274  017364  005037  002374                       CLR     TRACK           ;SET TRACK=0
4275  017370  012737  000012  002376               MOV     #10.,SECTOR     ;SET SECTOR=10
4276  017376  004737  011062                       CALL    READ            ;CALL READ SECTOR
4277  017402  005737  002454               IADDC:  TST     FIN             ;IF FINI
4278  017406  001042                               BNE     EADDC           ;NOT SET, THEN
4279  017410  032777  000040  162734       IBDDC:  BIT     #DRVDEN,@RXDB   ;IF DRIVE DEN-DOUBLE DEN BIT
4280  017416  001404                               BEQ     LBDDC           ;SET, THEN
4281  017420  012737  000400  002414               MOV     #DENBIT,DENSTA  ;SET DENSITY STATUS=DOUBLE DEN
4282  017426  000402                               BR      EBDDC           ;BR TO END 'B'
4283  017430  005037  002414       LBDDC:  CLR     DENSTA          ;SET DENSITY STATUS=SINGLE DEN
4284  017434  012737  000114  002374       EBDDC:  MOV     #76.,TRACK      ;SET TRACK=76.
4285  017442  004737  011062                       CALL    READ            ;CALL READ SECTOR
4286  017446  017701  162700                       MOV     @RXDB,R1        ;GET RXES
4287  017452  042701  177737                       BIC     #^CDRVDEN,R1    ;CLEAR ALL BUT DRIVE DENSITY
4288  017456  006301                               ASL     R1              ;    ADV DRIVE DENSITY
4289  017460  006301                               ASL     R1              ;      SO EQUAL TO
4290  017462  006301                               ASL     R1              ;        DENSITY STATUS
4291  017464  020137  002414               ICDDC:  CMP     R1,DENSTA       ;IF RXES DRIVE DENSITY & DENSITY STATUS
4292  017470  001411                               BEQ     EADDC           ;NOT=, THEN
4293  017472  012737  000020  002520               MOV     #DENDSK,ERRNBR  ;SET ERR NBR=DISK DENSITY ERROR
4294  017500  004737  003060                       CALL    ERROR           ;CALL ERROR-MOD
4295  017504                                       DODU    UNIT            ;DROP UNIT
4296  017512                                       DOCLN                   ;DO CLEAN
4297  017514  000207               EADDC:  RETURN                  ;RETURN
4298                                      ;-------------------------------------------------------------------
```

```
4301                    .SBTTL -  MOD U.SFT.TKE - TRACK ERROR CHECK
4302                    ;-----------------------------------------------------------------
4303                    ; BGNSUB
4304                    ;       IF LAST COMMAND=READ OR WRITE SECTOR                    [A]
4305                    ;       :  THEN-IF FLAG=READ ERROR CODE BIT SET                 [B]
4306                    ;       :       :  THEN-IF DRIVE #0 SELECTED                    [C]
4307                    ;       :       :       :  THEN-IF CURRENT TRK DRV #0 NOT=TRACK [D]
4308                    ;       :       :       :       :  THEN-
4309                    ;       :       :       :       :    IF FLAGS=NEG TST NOT SET   [E]
4310                    ;       :       :       :       :    :  THEN-SETUP ERROR #
4311                    ;       :       :       :       :    :       SET PRINT TRACKS-PRINT FLAGS
4312                    ;       :       :       :       :    :       CALL ERROR REPORT
4313                    ;       :       :       :       :    ENDIF
4314                    ;       :       :       :       ENDIF
4315                    ;       :       :       :  ELSE-IF CURRENT TRK DRV #1 NOT=TRACK [F]
4316                    ;       :       :       :       :  THEN-
4317                    ;       :       :       :       :    IF FLAGS=NEG TST NOT SET   [G]
4318                    ;       :       :       :       :    :  THEN-SETUP ERROR
4319                    ;       :       :       :       :    :       SET PRINT TRACKS-PRINT FLAGS
4320                    ;       :       :       :       :    :       CALL ERROR REPORT
4321                    ;       :       :       :       :    ENDIF
4322                    ;       :       :       :       ENDIF
4323                    ;       :       :       ENDIF
4324                    ;       :       :  ELSE-IF ERROR ON COMMAND                     [H]
4325                    ;       :       :       :  THEN-
4326                    ;       :       :       :    IF FLAGS=NEG TEST NOT SET          [I]
4327                    ;       :       :       :    :  THEN-SETUP ERR #
4328                    ;       :       :       :    :       SET PRINT TRACKS-PRINT FLAGS
4329                    ;       :       :       :    :       CALL ERR REPORT
4330                    ;       :       :       :    ENDIF
4331                    ;       :       :       ENDIF
4332                    ;       :       ENDIF
4333                    ;       ENDIF
4334                    ;       NOP
4335                    ; ENDSUB
4336                    ;-----------------------------------------------------------------
```

```
 4339  017516  000240                    TKERCK: NOP                     ;
 4340  017520  022737  000017  002424    IATKE:  CMP     #17,LCMD        ;IF LAST COMMAND
 4341  017526  001471                            BEQ     EATKE           ;  WAS
 4342  017530  032737  000004  002400            BIT     #4,CMD          ;    READ OR WRITE
 4343  017536  001465                            BEQ     EATKE           ;THEN
 4344  017540  032737  000200  002476    IBTKE:  BIT     #RECFLG,FLAGST  ;IF FLAGS=READ ERROR CODE BIT
 4345  017546  001442                            BEQ     IHTKE           ;SET, THEN
 4346  017550  005737  002406            ICTKE:  TST     DRIVE           ;IF DRIVE# 0
 4347  017554  001016                            BNE     IFTKE           ;SELECTED, THEN
 4348  017556  123737  002444  002374    IDTKE:  CMPB    CTK0,TRACK      ;IF CURRENT TRACK DRIVE 0 & TRACK
 4349  017564  001452                            BEQ     EATKE           ;NOT=, THEN
 4350  017566  032737  004000  002476    IETKE:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NEG TEST BIT
 4351  017574  001046                            BNE     EATKE           ;NOT SET, THEN
 4352  017576  012737  000041  002520            MOV     #TRKAER,ERRNBR  ;SET ERR NBR=TRACK ADDRESS ERROR
 4353  017604  004737  003060                    CALL    ERROR           ;CALL ERROR
 4354  017610  000440                            BR      EATKE           ;BR TO END 'A'
 4355  017612  123737  002445  002374    IFTKE:  CMPB    CTK1,TRACK      ;IF CURRENT TRACK DRIVE 1 & TRACK
 4356  017620  001434                            BEQ     EATKE           ;NOT=, THEN
 4357  017622  032737  004000  002476    IGTKE:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NE TEST BIT
 4358  017630  001030                            BNE     EATKE           ;NOT SET, THEN
 4359  017632  012737  000041  002520            MOV     #TRKAER,ERRNBR  ;SET ERR NBR=TRACK ADDRESS ERROR
 4360  017640  052737  000001  002500            BIS     #TKPRT,FLAGSP   ;SET PRINT TRACKS FLAG-PROGRAM FLAGS
 4361  017646  004737  003060                    CALL    ERROR           ;CALL ERROR
 4362  017652  000417                            BR      EATKE           ;BR TO END 'A'
 4363  017654  005737  002432            IHTKE:  TST     RXCSR           ;IF ERROR ON COMMAND (READ OR WRITE)
 4364  017660  100014                            BPL     EATKE           ;SET, THEN
 4365  017662  032737  004000  002476    IITKE:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NEG TEST BIT
 4366  017670  001010                            BNE     EATKE           ;SET, THEN
 4367  017672  012737  000041  002520            MOV     #TRKAER,ERRNBR  ;SET ERR NBR=TRACK ADDRESS ERROR
 4368  017700  052737  000001  002500            BIS     #TKPRT,FLAGSP   ;SET PRINT TRACKS FLAG
 4369  017706  004737  003060                    CALL    ERROR           ;CALL ERROR
 4370  017712  000240                    EATKE:  NOP                     ;
 4371  017714  042737  000001  002500            BIC     #TKPRT,FLAGSP   ;CLEAR PRINT TRACKS FLAG
 4372  017722  000207                    XTKECK: RETURN                  ;RETURN
 4373                                    ;-----------------------------------------------------------------------
```

```
4376                    .SBTTL -  MOD U.SFT.ECK - ERROR CHECK
4377                    ;-----------------------------------------------------------------
4378                    ; BGNSUB
4379                    ;       IF REG CHECK SET                                        [A]
4380                    ;       :  THEN-CALL REGISTER CHECK
4381                    ;       ENDIF
4382                    ;       IF READ ERROR CODE SET                                  [B]
4383                    ;       :  THEN-IF FLAGSP=READ ERROR CODE TEST NOT SET          [N]
4384                    ;       :       :  THEN-CALL READ ERROR CODE CHECK
4385                    ;       :       :       CALL ERROR NEG TEST CK
4386                    ;       :       ENDIF
4387                    ;       ENDIF
4388                    ;       IF ERROR FLAG SET                                       [C]
4389                    ;       :  THEN
4390                    ;       :    IF ERR NUMBER NOT SET=SYSFTL ERROR                 [D]
4391                    ;       :    :  THEN-CLEAR REG ERR #
4392                    ;       :    :  DOWHILE REG ERR # TABLE ENTRY NOT=-1            [E]
4393                    ;       :    :  :  SET TEMP R2=REG ERR # TABLE ENTRY
4394                    ;       :    :  :  IF TEMP REG #2 > REG ERR #                   [I]
4395                    ;       :    :  :  :  THEN-SET REG ERR #=TEMP REG
4396                    ;       :    :  :  ENDIF
4397                    ;       :    :  ENDDO
4398                    ;       :    :  IF REG ERR # > ERR CODE ERR #                   [M]
4399                    ;       :    :  :  THEN-SET ERR NUMBER=REG ERR #
4400                    ;       :    :  :  ELSE-SET ERR NUMBER=ERR CODE ERR #
4401                    ;       :    :  ENDIF
4402                    ;       :    ENDIF
4403                    ;       :    CLEAR REG ERR #
4404                    ;       :    CLEAR ERR CODE ERR #
4405                    ;       :    CALL ERROR
4406                    ;       ENDIF
4407                    ; ENDSUB
4408                    ;-----------------------------------------------------------------
```

```
4411  017724  000240                    ERRCHK: NOP                     ;
4412  017726  032737  000001  002476    IAECK:  BIT     #REGCK,FLAGST   ;IF FLAGS=REG CK BIT
4413  017734  001402                            BEQ     IBECK           ;SET, THEN
4414  017736  004737  013664                    CALL    REGSCK          ;CALL REGISTER CHECK
4415  017742  032737  000200  002476    IBECK:  BIT     #RECFLG,FLAGST  ;IF FLAGS=READ ERROR CODE BIT
4416  017750  001420                            BEQ     ICECK           ;SET, THEN
4417  017752  032737  000200  002500    INECK:  BIT     #RECTST,FLAGSP  ;IF FLAGSP=READ ERROR CODE TEST
4418  017760  001014                            BNE     ICECK           ;NOT SET, THEN
4419  017762  032737  100000  002432    IOECK:  BIT     #ERRBIT,RXCSR   ;IF RXCSR ERR BIT
4420  017770  001410                            BEQ     ICECK           ;SET, THEN
4421  017772  004737  015106                    CALL    GTECEN          ;CALL GET READ ERROR CODE ERR #
4422  017776  013702  020164                    MOV     ECERNB,R2       ;PASS ERROR CODE ERR # TO "NEG TEST CK" MOD
4423  020002  004737  020170                    CALL    ERNTCK          ;CALL ERROR NEG TEST CHECK
4424  020006  010237  020164                    MOV     R2,ECERNB       ;SAVE REC ERR
4425  020012  032737  100000  002476    ICECK:  BIT     #ERRFLG,FLAGST  ;IF FLAGS=ERROR FLAG
4426  020020  001460                            BEQ     XERRCK          ;SET, THEN
4427  020022  022737  000047  002520    IDECK:  CMP     #39.,ERRNBR     ;IF ERR NUMBER NOT=SYS FTL ERR
4428  020030  103434                            BLO     EDECK           ;THEN
4429  020032  005037  020166                    CLR     RGERNB          ;CLEAR REGISTER ERROR #
4430  020036  005001                            CLR     R1              ;CLEAR REGISTER ERROR TABLE PTR
4431  020040  005761  014706    WEECK:  TST     RGERTB(R1)      ;DOWHILE REG ERR TABLE ENTRY
4432  020044  100413                            BMI     IMECK           ;NOT=-1, THEN
4433  020046  016102  014706                    MOV     RGERTB(R1),R2   ;PASS REG ERR # TABLE ENTRY TO "NEG TEST CK" MOD
4434  020052  004737  020170                    CALL    ERNTCK          ;CALL ERROR NEG TEST CHECK
4435  020056  020237  020166    IIECK:  CMP     R2,RGERNB       ;IF TEMP R2 > REG ERR NBR
4436  020062  103402                            BLO     EIECK           ;THEN
4437  020064  010237  020166                    MOV     R2,RGERNB       ;SET REG ERR NUMBER=R2
4438  020070  005721                    EIECK:  TST     (R1)+           ;INCREMENT INDEX
4439  020072  000762                    EEECK:  BR      WEECK           ;BR TO DOWHILE 'E'
4440  020074  023737  020166  020164    IMECK:  CMP     RGERNB,ECERNB   ;IF REG ERR# > ERR CODE ERR#
4441  020102  103404                            BLO     LMECK           ;THEN
4442  020104  013737  020166  002520            MOV     RGERNB,ERRNBR   ;SET ERR NUMBER=REG ERR #
4443  020112  000403                            BR      EDECK           ;BR TO END 'D'
4444  020114  013737  020164  002520    LMECK:  MOV     ECERNB,ERRNBR   ;SET ERR NUMBER=ERR CODE ERR#
4445  020122  000240                    EDECK:  NOP                     ;
4446  020124  032737  020000  002332    IPECK:  BIT     #BIT13,SWREG    ;IF SW REG BIT #13
4447  020132  001402                            BEQ     EPECK           ;SET, THEN
4448  020134  004737  020240                    CALL    TSTDBG          ;**
4449  020140  005037  020166    EPECK:  CLR     RGERNB          ;CLEAR REG ERR #
4450  020144  005037  020164                    CLR     ECERNB          ;CLEAR ERR CODE ERR #
4451  020150  004737  003060                    CALL    ERROR           ;CALL ERROR
4452  020154  042737  000200  002500            BIC     #RECFLG,FLAGSP  ;CLEAR RD ERR CODE FLG
4453  020162  000207                    XERRCK: RETURN                  ;RETURN
4454                                    ;-----------------------------------------------------------------------
4455  020164  000000                    ECERNB: 0                       ;ERR CODE ERR #
4456  020166  000000                    RGERNB: 0                       ;REG ERR #
4457                                    ;-----------------------------------------------------------------------
```

```
4460                                    .SBTTL -  MOD U.SFT.ENC - ERROR NEG TEST CHECK
4461                                    ;-----------------------------------------------------------------------
4462                                    ; BGNSUB
4463                                    ;       IF TEMP REG #2=NEG TEST FLAG SET                        [A]
4464                                    ;       :  THEN-CLEAR NEG TEST FLAG FROM ERR #
4465                                    ;       :       IF FLAGS=NEG TEST FLAG SET                      [B]
4466                                    ;       :       :  THEN-IF NEG TEST ERR #=SET NEG TEST ERR      [C]
4467                                    ;       :       :       :  THEN-CLEAR THE ERROR
4468                                    ;       :       :       :  ELSE-IF REG #2=DISK ERROR            [D]
4469                                    ;       :       :       :       :  THEN-CLEAR-NOT ERROR
4470                                    ;       :       :       :      ENDIF
4471                                    ;       :       :      ENDIF
4472                                    ;       :      ENDIF
4473                                    ;      ENDIF
4474                                    ; ENDSUB
4475                                    ;-----------------------------------------------------------------------
4476
4477  020170  000240                    ERNTCK: NOP                     ;
4478  020172  032702  004000            IAENC:  BIT     #NEGTST,R2      ;IF TEMP REG=NEG TEST FLAG
4479  020176  001417                            BEQ     XENTCK          ;SET, THEN
4480  020200  042702  004000                    BIC     #NEGTST,R2      ;CLEAR NEG TEST FLAG
4481  020204  032737  004000  002476    IBENC:  BIT     #NEGTST,FLAGST  ;IF FLAGS=NEG TEST BIT
4482  020212  001411                            BEQ     XENTCK          ;SET, THEN
4483  020214  023702  002464            ICENC:  CMP     NGTSER,R2       ;IF NEG TEST ERR # & SET NEG TEST ERR
4484  020220  001002                            BNE     IDENC           ;ARE EQUAL, THEN
4485  020222  005002                            CLR     R2              ;OK, CLEAR THE ERROR !!
4486  020224  000404                            BR      XENTCK          ;BR TO IF 'I'
4487  020226  022702  000020            IDENC:  CMP     #DENDSK,R2      ;IF DISK DEN
4488  020232  001001                            BNE     XENTCK          ;ERROR, THEN
4489  020234  005002                            CLR     R2              ;CLEAR-NOT ERROR<-----
4490  020236  000207                    XENTCK: RETURN                  ;RETURN
4491                                    ;-----------------------------------------------------------------------
```

```
4494                                        .SBTTL -  MOD U.SFT.DBG - TEST STATUS
4495                                        ;-------------------------------------------------------------------
4496
4497  020240  013702  002476                TSTDBG: MOV     FLAGST,R2
4498  020244  013703  002500                        MOV     FLAGSP,R3
4499  020250  013704  002522                        MOV     ERRMSG,R4
4500  020254  012701  020306                        MOV     #TSDGMS,R1
4501  020260  004737  002636                        CALL    PRTB3S
4502  020264  012701  020364                        MOV     #TSDGM1,R1
4503  020270  013702  020166                        MOV     RGERNB,R2
4504  020274  013703  020164                        MOV     ECERNB,R3
4505  020300  004737  002612                        CALL    PRTB2S
4506  020304  000207                              RETURN                  ;RETURN
4507                                        ;-------------------------------------------------------------------
4508  020306  047045  040445  037055        TSDGMS: .ASCIZ  /%N%A->FLAGST=%O%A FLAGSP=%O%A ERRMSG ADR=%O%N/
4509  020364  040445  051040  043505        TSDGM1: .ASCIZ  /%A REG ERR #%O%A ERR CODE ERR #%O%N/
4510                                              .EVEN
4511                                        ;-------------------------------------------------------------------
4512
4513                                        .SBTTL -  MOD U.SFT.CDC - COMPLIMENT DENSITY CONTROL
4514                                        ;-------------------------------------------------------------------
4515
4516  020430  000240                        CDENC:  NOP                     ;
4517  020432  005737  002412                IACDC:  TST     DENSTY          ;IF CONTROL DENSITY
4518  020436  001406                                BEQ     LACDC           ;EQUALS DOUBLE, THEN
4519  020440  042737  000002  002476                BIC     #DDCFLG,FLAGST  ;CLEAR DOUBLE DENSITY CONTROL FLAG
4520  020446  005037  002412                        CLR     DENSTY          ;SET CONTROL DENSITY=SINGLE
4521  020452  000406                                BR      XCDENC          ;BR TO 'X'
4522  020454  012737  000400  002412        LACDC:  MOV     #DENBIT,DENSTY  ;SET CONTROL DENSTY=DOUBLE
4523  020462  052737  000002  002476                BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
4524  020470  000207                        XCDENC: RETURN                  ;RETURN
4525                                        ;-------------------------------------------------------------------
4526
4527                                        .SBTTL -  MOD U.SFT.SDC - SETUP DENSITY CONTROL
4528                                        ;-------------------------------------------------------------------
4529
4530  020472  013737  002414  002412        SDENC:  MOV     DENSTA,DENSTY   ;SET DENSTY CONTROL=DENSITY STATUS
4531  020500  005737  002414                IASDC:  TST     DENSTA          ;IF DENSITY STATUS SET TO
4532  020504  001407                                BEQ     LASDC           ;DOUBLE DENSITY, THEN
4533  020506  052737  000002  002476                BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
4534  020514  012737  000200  002370                MOV     #128.,WDCNT     ;SET WORD COUNT=128
4535  020522  000406                                BR      XSDC            ;BR TO EXIT
4536  020524  042737  000002  002476        LASDC:  BIC     #DDCFLG,FLAGST  ;CLEAR DOUBLE DENSITY CONTROL FLAG
4537  020532  012737  000100  002370                MOV     #64.,WDCNT      ;SET WORD COUNT=64
4538  020540  000207                        XSDC:   RETURN                  ;RETURN
4539                                        ;-------------------------------------------------------------------
```

```
 4542                                   .SBTTL -  MOD U.PRT.UNT - PRINT UNIT IDENT
 4543                                   ;-------------------------------------------------------------------
 4544                                   ;BGNSUB
 4545                                   ;       GET UNIT #
 4546                                   ;       GET UNIT MSG
 4547                                   ;       CALL PRINT-1 ARG
 4548                                   ;ENDSUB
 4549                                   ;-------------------------------------------------------------------
 4550
 4551  020542  013702  002512                   MOV     UNTPRT,R2       ;GET UNIT #
 4552  020546  012701  020560                   MOV     #PTUTMS,R1      ;GET UNIT MSG
 4553  020552  004737  002570                   CALL    PRTB1S          ;CALL PRINT BASIC-1 ARG
 4554  020556  000207                           RETURN                  ;RETURN
 4555                                   ;-------------------------------------------------------------------
 4556  020560  047045  040445  052440   PTUTMS: .ASCIZ  /%N%A UNIT #%D2/
 4557          020600                           .EVEN
 4558                                   ;-------------------------------------------------------------------
 4559
 4560                                   .SBTTL -  MOD U.PRT.DID - PRINT DRIVE IDENT
 4561                                   ;-------------------------------------------------------------------
 4562                                   ; BGNSUB
 4563                                   ;       GET DRIVE #
 4564                                   ;       GET SIDE #
 4565                                   ;       IF DOUBLE SIDED DEVICE
 4566                                   ;       : THEN-SETUP PRINT IDENT DOUBLE SIDED DEVICE
 4567                                   ;       :       CALL PRINT BASIC-2 PAR.
 4568                                   ;       : ELSE-SETUP PRINT IDENT SINGLE SIDED DEVICE
 4569                                   ;       :       CALL PRINT BASIC-1 PAR.
 4570                                   ;       ENDIF
 4571                                   ; ENDSUB
 4572                                   ;-------------------------------------------------------------------
 4573
 4574  020600  013702  002514   PRTDID: MOV     DRVPRT,R2       ;SETUP R2=DRV #
 4575  020604  012701  020657           MOV     #IDSSMS,R1      ;SETUP PRINT IDENT SINGLE SIDED DEVICE
 4576  020610  004737  002570           CALL    PRTB1S          ;CALL PRINT BASIC-1 PAR.
 4577  020614  032737  010000  002332   IADID:  BIT     #SIDFLG,SWREG   ;IF DOUBLE SIDED DEVICE
 4578  020622  001406                   BEQ     XPTDID          ;FLAG SET, THEN
 4579  020624  013702  002515           MOV     SIDPRT,R2       ;SETUP R3=SID #
 4580  020630  012701  020642           MOV     #IDDSMS,R1      ;SETUP PRINT IDENT DOUBLE SIDED DEVICE
 4581  020634  004737  002570           CALL    PRTB1S          ;CALL PRINT BASIC-2 PAR.
 4582  020640  000207           XPTDID: RETURN                  ;RETURN
 4583                                   ;-------------------------------------------------------------------
 4584  020642  040445  051440  042111   IDDSMS: .ASCIZ  /%A SIDE #%01/
 4585  020657     045  022516  020101   IDSSMS: .ASCIZ  /%N%A DRIVE #%01/
 4586          020700                           .EVEN
 4587                                   ;-------------------------------------------------------------------
```

```
4590                                    .SBTTL -  MOD U.TST.FTS - FUNCTION TEST SETUP
4591                                    ;-------------------------------------------------------------------------
4592                                    ; BGNSUB
4593                                    ;       SET FUNCTION TEST BIT-FLAGS
4594                                    ;       SETUP TEST IDENT MSG IN 'ERRMSG'
4595                                    ;       SET FLAGS REGISTER CHECK
4596                                    ;       NOP
4597                                    ; ENDSUB
4598                                    ;-------------------------------------------------------------------------
4599  020700  000240                    FTSTUP: NOP                     ;
4600  020702  004737  021122                    CALL    CLRCR           ;CALL CLEAR CTRS & REGS
4601  020706  012737  000040  002476            MOV     #FUNTST,FLAGST  ;SET FUNCTION TEST BIT-FLAGS
4602  020714  017737  161546  002522            MOV     @TSTID,ERRMSG   ;SETUP TEST IDENT MSG
4603  020722  052737  000001  002476            BIS     #REGCK,FLAGST   ;SET FLAGS-REGISTER CHECK
4604  020730  004737  021014                    CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
4605  020734  000207                            RETURN                  ;RETURN
4606                                    ;-------------------------------------------------------------------------
4607
4608                                    .SBTTL -  MOD U.TST.LTS - LOGIC TEST SETUP
4609                                    ;-------------------------------------------------------------------------
4610                                    ; BGNSUB
4611                                    ;       CLEAR FUNCTION TEST BIT-FLAGS
4612                                    ;       SETUP TEST IDENT MSG IN 'ERRMSG'
4613                                    ;       GET TEST TABLE ADDRESS
4614                                    ;       INCREMENT TO NEXT ADDRESS
4615                                    ;       SET ANY FLAGS FROM THAT ADDRESS
4616                                    ;       SET FLAGS REGISTER CHECK
4617                                    ;       NOP
4618                                    ; ENDSUB
4619                                    ;-------------------------------------------------------------------------
4620  020736  000240                    LTSTUP: NOP                     ;
4621  020740  004737  021122                    CALL    CLRCR           ;CALL CLEAR CTRS & REGS
4622  020744  042737  000040  002476            BIC     #FUNTST,FLAGST  ;CLEAR FUNCTION TEST BIT-FLAGS
4623  020752  017737  161510  002522            MOV     @TSTID,ERRMSG   ;SETUP TEST IDENT MSG
4624  020760  004737  020772                    CALL    SUTSFG          ;CALL SETUP TEST FLAGS
4625  020764  004737  021014                    CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
4626  020770  000207                            RETURN                  ;RETURN
4627                                    ;-------------------------------------------------------------------------
4628
4629                                    .SBTTL -  MOD U.TST.SFG - SETUP TEST FLAGS
4630                                    ;-------------------------------------------------------------------------
4631  020772  000240                    SUTSFG: NOP                     ;
4632  020774  013701  002466                    MOV     TSTID,R1        ;GET TEST TABLE ADDRESS
4633  021000  005721                            TST     (R1)+           ;INC TEST TABLE ADDRESS
4634  021002  012137  002476                    MOV     (R1)+,FLAGST    ;SET TEST FLAGS FROM TABLE
4635  021006  111137  002500                    MOVB    (R1),FLAGSP     ;SET PRINT FLAGS FROM TABLE
4636  021012  000207                            RETURN                  ;RETURN
4637                                    ;-------------------------------------------------------------------------
```

```
4640                                        .SBTTL -  MOD U.SFT.SDC - SETUP DEVICE COMMANDS
4641                                        ;-------------------------------------------------------------------
4642
4643  021014  012737  036622  002360        SUDVCD: MOV     #DATBUF,EMPADR  ;SETUP EMPTY BUFFER ADDRESS
4644  021022  012737  000111  002372                MOV     #'I,VARIFY      ;SETUP SET DENSITY KEYWORD=''I''
4645  021030  012737  036222  002362                MOV     #DATPAT,FILADR  ;SETUP FILL BUFFER ADDRESS
4646  021036  032737  000002  002476        1$:     BIT     #DDCFLG,FLAGST  ;IF DOUBLE DENSITY FLAGS
4647  021044  001407                                BEQ     2$              ;SET, THEN
4648  021046  012737  000400  002412                MOV     #DENBIT,DENSTY  ;SET DEVICE DENSITY=DOUBLE
4649  021054  012737  000200  002370                MOV     #128.,WDCNT     ;SET WORD COUNT=DOUBLE DEN SIZE
4650  021062  000405                                BR      3$              ;BR
4651  021064  005037  002412                2$:     CLR     DENSTY          ;SET DEVICE DENSITY=SINGLE
4652  021070  012737  000100  002370                MOV     #64.,WDCNT      ;SET WORD COUNT=SINGLE DEN SIZE
4653  021076  012737  002442  002364        3$:     MOV     #XERUUT,RECADR  ;SET READ ERROR CODE ADR=NORMAL ADR
4654  021104  012737  000001  002374                MOV     #1,TRACK        ;SETUP TRACK=1
4655  021112  012737  000001  002376                MOV     #1,SECTOR       ;SETUP SECTOR=1
4656  021120  000207                                RETURN                  ;RETURN
4657                                        ;-------------------------------------------------------------------
4658
4659                                        .SBTTL -  MOD U.TST.CCR - CLEAR TEST CTRS & ERROR REGS
4660                                        ;-------------------------------------------------------------------
4661                                        ; BGNSUB
4662                                        ;       CLEAR ANY ERRORS FROM PREVIOUS TESTS
4663                                        ; ENDSUB
4664                                        ;-------------------------------------------------------------------
4665
4666  021122  005037  002400                CLRCR:  CLR     CMD             ;CLEAR COMMAND WORD
4667  021126  005037  002454                        CLR     FIN             ;CLEAR COMMAND FINI FLAG
4668  021132  005037  002460                        CLR     TYPERR          ;CLEAR TYPE ERROR
4669  021136  005037  002470                        CLR     TCMDCT          ;CLEAR TEST COMMAND CTR
4670  021142  005037  002442                        CLR     XERUUT          ;CLEAR READ ERR CODE WORD
4671  021146  005037  002510                        CLR     TKSCFG          ;CLEAR TRK & SEC FLAGS
4672  021152  005037  002402                        CLR     DELDAT          ;CLEAR DELETED DATA MODE
4673  021156  005037  002504                        CLR     TTEMP1          ;CLEAR TEST TEMP #1
4674  021162  000240                                NOP                     ;
4675  021164  000240                                NOP                     ;
4676  021166  000240                                NOP                     ;
4677  021170  000240                                NOP                     ;
4678  021172  000207                                RETURN                  ;RETURN
4679                                        ;-------------------------------------------------------------------
4680
4681                                        .SBTTL -  MOD U.TST.T76 - SET TRACK=76
4682                                        ;-------------------------------------------------------------------
4683
4684  021174  012737  000114  002374        STTK76: MOV     #76.,TRACK      ;SET TRACK=76.
4685  021202  012737  000012  002376                MOV     #10.,SECTOR     ;SET SECTOR=10.
4686  021210  000207                                RETURN                  ;RETURN
4687                                        ;-------------------------------------------------------------------
4688
4689  021212                                        ENDMOD
4690
```

```
 4703                                   .TITLE MISCELLANEOUS SECTIONS
 4704                                   .SBTTL  REPORT CODING SECTION
 4732
 4733  021212                                 BGNMOD
 4734
 4735                                   ;++
 4736                                   ; THE REPORT CODING SECTION CONTAINS THE
 4737                                   ; 'PRINTS' CALLS THAT GENERATE STATISTICAL REPORTS.
 4738                                   ;--
 4739
 4740  021212                                 BGNRPT
 4746
 4747  021212                                 ENDRPT
 4748
 4759                                         .EVEN
```

```
                                        .SBTTL  INITIALIZE SECTION

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

021214                                          BGNINIT

021214  000240                          INIT:   NOP
021216                                          RFLAGS  FLGDRS
021224                                          READEF  #EF.CONTINUE    ;IF CONTINUE
021232                                          BCOMPLETE XINIT         ;NOT SET, THEN
021234                                          READEF  #EF.PWR         ;IF POWER FAIL
021242                                          BCOMPLETE XINIT         ;NOT SET, THEN
021244  042737  140000  002500                  BIC     #RESFLG!STAFLG,FLAGSP ;CLEAR RESTART & START FLAGS
021252                                  START:  READEF  #EF.START       ;IF START FLAG
021260                                          BNCOMPLETE RESTAR       ;SET, THEN
021262                                  START0: READBUS                 ;IF BUS IS "LSI-BUS"
021264                                          BNCOMPLETE UN1          ;THEN
021266  052737  000400  002500                  BIS     #LSIFLG,FLAGSP  ;SET LSI FLAG-PROGRAM FLAGS
021274  022737  004177  002120                  CMP     #4177,L$HIMEM   ;IF HI MEMORY (417776=HI LIMIT 124K)
021302  101007                                  BHI     START1          ;IS 124K OR HIGHER, THEN
021304  052737  010000  002500                  BIS     #FONZFG,FLAGSP  ;SET LSI 11/23 FLAG
021312  000403                                  BR      START1          ;BR TO "START1"
021314  042737  000400  002500          UN1:    BIC     #LSIFLG,FLAGSP  ;CLEAR LSI FLAG-PROGRAM FLAGS
021322  052737  100000  002500          START1: BIS     #STAFLG,FLAGSP  ;SET START FLAG
021330  000414                                  BR      SETUP           ;BR TO "SET UP"
021332                                  RESTAR: READEF  #EF.RESTART     ;IF RESTART FLAG
021340                                          BNCOMPLETE NEW          ;SET, THEN
021342  052737  040000  002500                  BIS     #RESFLG,FLAGSP  ;SET RESTART FLAG
021350  000404                                  BR      SETUP           ;BR TO "SETUP"
021352                                  NEW:    READEF  #EF.NEW         ;IF NEW PASS FLAG
021360                                          BNCOMPLETE NEXT         ;THEN
021362  012737  177777  021526          SETUP:  MOV     #-1,UNIT        ;SETUP TO START GETING UNITS OVER
021370  062737  000001  021526          NEXT:   ADD     #1,UNIT         ;BUMP UNIT TO NEXT UNIT
021376  023737  002012  021526                  CMP     L$UNIT,UNIT     ;IF "DRS" UNIT CNT & DIAG UNIT
021404  001426                                  BEQ     INITER          ;NOT EXCEEDED, THEN
021406                                          GPHARD  UNIT,PLOC       ;GET NEXT UNIT
021420                                          BNCOMPLETE NEXT         ;IF FOUND A UNIT,THEN
021422  004737  021742                          CALL    INTTBL          ;CALL INITIALIZE TABLES
021426  004737  021572                          CALL    UNPKHP          ;UNPACK HARDAWRE P-TABLES
021432                                          SETVEC  VECT,#INTRHD,#PRIO7
021460  000414                                  BR      XINIT
021462                                  INITER: PRINTF  #INTER1         ;PRINT "TOO MANY UNITS"
021502  012737  000001  002452                  MOV     #1,ABORT        ;SET ABORT FLAG
021510                                          DOCLN
021512  000240                          XINIT:  NOP                     ;
021514  013737  021526  002512                  MOV     UNIT,UNTPRT     ;SET USER # = LOGICAL UNIT #
021522                                          ENDINIT
                                        ;-------------------------------------------------------------------
021524  000000                          PLOC:   .WORD   0               ;P-TABLE LOCATION
021526  177777                          UNIT:   .WORD   -1              ;LOGICAL UNIT# UNDER TEST
                                        ;-------------------------------------------------------------------
021530  047045  040445  052123          INTER1: .ASCIZ  /%N%ASTART OVER -> TOO MANY UNITS/
021572                                          .EVEN
```

```
4838                                    ;--------------------------------------------------------------------
```

```
 4850                                          .SBTTL -  MOD I.1 - UNPACK HARDWARE P-TABLES
 4851                                          ;-------------------------------------------------------------------
 4852
 4853  021572  013701  021524                 UNPKHP: MOV     PLOC,R1         ;SAVE P-TABLE LOCATION
 4854  021576  012137  002350                         MOV     (R1)+,RXCS      ;LOAD UNIT BUS ADR-CSR
 4855  021602  013737  002350  002352                 MOV     RXCS,RXDB       ;LOAD UNIT BUS ADR-DBR
 4856  021610  062737  000002  002352                 ADD     #2,RXDB         ;SET UNIT BUS ADR-DBR
 4857  021616  012137  002354                         MOV     (R1)+,VECT      ;LOAD UNIT VECTOR
 4858  021622  005721                         IAI1:   TST     (R1)+           ;IF DRIVE #0
 4859  021624  001007                                 BNE     LAI1            ;THEN
 4860  021626  005037  002406                         CLR     DRIVE           ;SETUP TO SELECT DRIVE #0
 4861  021632  005037  002420                         CLR     DRVOFF          ;SETUP DRIVE BYTE OFFSET DRV0
 4862  021636  105037  002514                         CLRB    DRVPRT          ;SET PRINT DRV #=0
 4863  021642  000411                                 BR      IBI1            ;BR TO IF 'B'
 4864  021644  012737  000020  002406         LAI1:   MOV     #DRV1,DRIVE     ;SETUP TO SELECT DRIVE #1
 4865  021652  012737  000001  002420                 MOV     #1,DRVOFF       ;SETUP DRIVE BYTE OFFSET DRV1
 4866  021660  112737  000001  002514                 MOVB    #1,DRVPRT       ;SET PRINT DRV #=1
 4867  021666  005721                         IBI1:   TST     (R1)+           ;IF SIDE #0 SELECTED
 4868  021670  001005                                 BNE     LBI1            ;THEN
 4869  021672  005037  002410                         CLR     SIDE            ;SETUP TO SELECT SIDE #0
 4870  021676  105037  002515                         CLRB    SIDPRT          ;SET PRINT SID #=0
 4871  021702  000406                                 BR      EBI1            ;BR TO END 'B'
 4872  021704  012737  001000  002410         LBI1:   MOV     #SIDE1,SIDE     ;SETUP TO SELECT SIDE #1
 4873  021712  112737  000001  002515                 MOVB    #1,SIDPRT       ;SET PRINT SID #=1
 4874  021720  011102                         EBI1:   MOV     (R1),R2         ;GET DEVICE PRIORITY
 4875  021722  116237  021732  002356                 MOVB    PRITAB(R2),RXPRI  ;SETUP PROPER DEVICE PRIORITY
 4876  021730  000207                                 RETURN                  ;RETURN
 4877                                          ;-------------------------------------------------------------------
 4878  021732     000                         PRITAB: .BYTE   PRI00           ;PRIORITY 0
 4879  021733     040                                 .BYTE   PRI01           ;PRIORITY 1
 4880  021734     100                                 .BYTE   PRI02           ;PRIORITY 2
 4881  021735     140                                 .BYTE   PRI03           ;PRIORITY 3
 4882  021736     200                                 .BYTE   PRI04           ;PRIORITY 4
 4883  021737     240                                 .BYTE   PRI05           ;PRIORITY 5
 4884  021740     300                                 .BYTE   PRI06           ;PRIORITY 6
 4885  021741     340                                 .BYTE   PRI07           ;PRIORITY 7
 4886                                          ;-------------------------------------------------------------------
 4887
 4888                                          .SBTTL -  MOD I.2 - INITIALIZE TABLES
 4889                                          ;-------------------------------------------------------------------
 4890
 4891  021742  000240                         INTTBL: NOP                     ;
 4892  021744  012701  002452                         MOV     #ABORT,R1       ;GET ADDRES SOF TABLE TO CLEAR
 4893  021750  012702  000010                         MOV     #10,R2          ;SET TABLE LENGTH
 4894  021754  005021                         1$:     CLR     (R1)+           ;CLEAR LOCATOIN
 4895  021756  005302                                 DEC     R2              ;DECREMENT TABLE COUNT
 4896  021760  001375                                 BNE     1$              ;IF DONE, THEN
 4897  021762  000207                                 RETURN                  ;RETURN
 4898                                          ;-------------------------------------------------------------------
```

```
 4900                                           .SBTTL  CLEANUP CODING SECTION
 4901
 4902                                           ;++
 4903                                           ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
 4904                                           ; AFTER THE HARDWARE TESTS HAVE BEEN PERFORMED.
 4905                                           ;--
 4906
 4907  021764                                           BGNCLN
 4908  021764                                           CLRVEC  VECT    ;CLEAR VECTOR
 4909  021772                                           BRESET          ;BUS RESET
 4916  021774                                           ENDCLN
 4927                                                   .EVEN
 4928                                           ;-----------------------------------------------------------------
 4929
 4930                                           .SBTTL  DROP UNIT SECTION
 4931                                           ;++
 4932                                           ; THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE TO NO
 4933                                           ; LONGER BE TESTED.
 4934                                           ;-----------------------------------------------------------------------
 4935  021776                                           BGNDU
 4941  021776  010002                                   MOV     R0,R2           ;GET LOGICAL UNIT #
 4946  022000  012701  022012                           MOV     #DUMSG1,R1      ;SET DROP MSG
 4947  022004  004737  002570                           CALL    PRTB1S          ;CALL PRINTB 1 ARG
 4948  022010                                           ENDDU
 4949                                           ;-----------------------------------------------------------------------
 4950  022012  047045  040445  042040           DUMSG1: .ASCIZ  /%N%A DROP UNIT#%D1%A FROM TEST%N/
 4951                                           ;-----------------------------------------------------------------------
 4962          022054                                   .EVEN
 4963
 4964
 4967                                           .SBTTL  AUTO DROP UNIT SECTION
 4968                                           ;-----------------------------------------------------------------
 4969  022054                                           BGNAUTO
 4970  022054  004737  022066                           CALL    ADRTST          ;CALL ADDRESSING TST
 4971  022060                                           ENDAUTO
 4972                                           ;-----------------------------------------------------------
 4974
 4975
 4976                                           .SBTTL  ADD UNIT SECTION
 4977                                           ;-----------------------------------------------------------
 4978                                           ;++
 4979                                           ; THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
 4980                                           ;  TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
 4981                                           ;  TO THE TEST CYCLE.
 4982                                           ;-----------------------------------------------------------
 4983  022062                                           BGNAU
 4989  022062  000240                                   NOP
 4990  022064                                           ENDAU
 4991                                           ;-----------------------------------------------------
 5002                                                   .EVEN
 5003  022066                                           ENDMOD
 5004
```

```
 5007                                           .TITLE HARDWARE TESTS
 5018
 5054  022066                                           BGNMOD
 5055
 5056                                           .SBTTL  TEST 0 - ADDRESSING TEST
 5057                                           ;++
 5058                                           ; TEST TO ASSURE THAT THE DEVICE WILL RESPOND WITHOUT A BUS TRAP.
 5059                                           ;--------------------------------------------------------------------
 5060                                           ; BGNSUB
 5061                                           ;       SETUP TEST
 5062                                           ;       SETUP BUS TRAPS
 5063                                           ;       READ RXCSR
 5064                                           ;       RESET BUS TRAPS
 5065                                           ;       IF TRAP
 5066                                           ;       :  THEN-SET SYSTEM  FATAL FLAG
 5067                                           ;       :       CALL FUNCTION TEST ERROR
 5068                                           ;       :       REPORT BUS TRAP ON RXCSR
 5069                                           ;       ENDIF
 5070                                           ;       READ RXDBR
 5071                                           ;       IF TRAP
 5072                                           ;       :  THEN-SET SYSTEM FATAL FLAG
 5073                                           ;       :       CALL FUNCTION TEST ERROR
 5074                                           ;       :       REPORT BUS TRAP ON RXDBR
 5075                                           ;       ENDIF
 5076                                           ;       RESET BUS TRAPS
 5077                                           ; ENDSUB
 5078                                           ;--------------------------------------------------------------------
 5079  022066  000240                           ADRTST: NOP                     ;
 5080  022070  005037  002452                           CLR     ABORT           ;CLEAR ABORT FLAG
 5081  022074                                           SETVEC  #BTRP4,#TRAP,#PRI07
 5082  022122  017701  160222                           MOV     @RXCS,R1        ;READ RXCSR
 5083  022126                                           CLRVEC  #BTRP4
 5084  022134  005737  002452                           TST     ABORT           ;IF ABORT FLAG
 5085  022140  001413                                   BEQ     1$              ;SET, THEN
 5086  022142  012701  022212                           MOV     #TRPMS1,R1      ;SET TRAP MESSAGE
 5087  022146  013702  002350                           MOV     RXCS,R2         ;SET TRAP ADDRESS
 5088  022152                                           ERRSF   60,TOMSG,PRTB1
 5089  022162                                           DODU    UNIT
 5090  022170  000207                           1$:     RETURN                  ;RETURN
 5091                                           ;--------------------------------------------------------------------
 5092  022172  042101  051104  051505         TOMSG:  .ASCIZ  /ADDRESSING TEST/
 5093  022212  040445  041040  051525         TRPMS1: .ASCII  /%A BUS TRAP AT ADDRESS:%06%N/
 5094  022246  040445  044440  052116                 .ASCIZ  /%A INTERFACE BAD OR NOT SET TO ABOVE ADDRESS/
 5095          022324                                   .EVEN
 5096                                           ;--------------------------------------------------------------------
 5097
```

```
5099                                    .SBTTL -  MOD U.SFT.TRP - BUS TRAP HANDLER
5100                                    ;++
5101                                    ; FUNCTIONAL DESCRIPTION:  SUBR TO HANDLE DEVICE BUS TRAP
5102                                    ; INPUTS:  NONE
5103                                    ; IMPLICIT INPUTS:  BUS TRAP
5104                                    ; OUTPUTS:  ABORT FLAG
5105                                    ; IMPLICIT OUTPUTS:  NONE
5106                                    ; SUBORDINATE ROUTINES USED:  NONE
5107                                    ; FUNCTIONAL SIDE EFFECTS:  NONE
5108                                    ; CALLING SEQUENCE:  INTERRUPT
5109                                    ;--
5110
5111                                    ;-------------------------------------------------------------------
5112
5113  022324  005237  002452           TRAP:   INC     ABORT           ;SET ABORT FLAG
5114  022330  000002                           RTI                     ;RETURN FROM TRAP INTERRUPT
5115                                    ;-------------------------------------------------------------------
5116                                    ;
5117                                    ;
5118                                    ;       TEST SETUP DEFINITIONS
5119                                    ;
5120          000000                    .       FRUS1=0
5121          000000                    .       TN=0
5122          000001                    .       FUNCT=1
5124                                    .SBTTL  TEST 1 -   INITIALIZE - FNC TST
 (2)  022332  000414                    .       BR      .BGNT1          ;BR TO BGN TST
 (2)  022334  020040  047111  052111   T1MSG: .ASCIZ   /  INITIALIZE - FNC TST/
 (2)          022364                    .       .EVEN
5125
5126                                    ;++
5127                                    ; TEST TO VERIFY THAT AN RX INITIALIZE WILL RETURN THE DEVICE TO A VALID
5128                                    ; STATE.
5129                                    ;-------------------------------------------------------------------
5130                                    ; BGNTST
5131                                    ;       IF FUNCTION TEST
5132                                    ;       :  THEN-SETUP TEST I.D.
5133                                    ;       :       CALL FUNCTION TEST SETUP
5134                                    ;       :       BUS INITIALIZE
5135                                    ;       :       CALL ERROR CHECK
5136                                    ;       :       CALL DEVICE STATE CHECK
5137                                    ;       :       INCREMENT COMMAND PTR
5138                                    ;       :       PROGRAM INITIALIZE RX
5139                                    ;       :       CALL ERROR CHECK
5140                                    ;       ENDIF
5141                                    ; ENDTST
5142                                    ;-------------------------------------------------------------------
5143
5144  022364                            .       TSETUP
 (2)  022364  012737  022444  002466   BGNT1:  MOV     #T1TBL,TSTID    ;SETUP TEST ID TBL-TEST# 1
 (2)  022372  032737  000002  002324   IAT1:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2)  022400  001417                            BEQ     XT1             ;BIT SET, THEN
 (2)  022402  004737  020700                    CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5145  022406                            .       BRESET
5146  022410  004737  011610                    CALL    WAIT
5147  022414  004737  012244                    CALL    GETREG          ;CALL GET REGS
5148  022420  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
```

```
 5149  G22424  0C4737  017140                    CALL    DVSTCK          ;CALL DEVICE CK
 5150  022430  004737  010440                    CALL    INTIAL          ;CALL PROG INITIALIZE
 5151  022434  004737  017724                    CALL    ERRCHK          ;CALL ERROR CHECK
 5152  022440                              XT1:  EXIT    TST
 5153  022444                                    REGTBL  CSONLY
   (1)         015026                                                    REGS1=CSONLY
 5154  022444                                    TTBL
   (2)  022444  022334                                        T1TBL: .WORD    T1MSG
   (2)  022446  177777                                               .WORD   -1
   (3)  022450                                                T1RTB:
   (3)  022450  015026                                               .WORD   REGS1
   (3)  022452  177777                                               .WORD   -1
 5155  022454                                    ENDTST
```

```
5158                                            .SBTTL  TEST 2 -   READ ERROR CODE - FNC TST
 (2) 022456 000416                                      BR      BGNT2           ;BR TO BGN TST
 (2) 022460 020040 042522 042101                T2MSG: .ASCIZ   /  READ ERROR CODE - FNC TST/
 (2)                                                    .EVEN
5159
5160                                            ;++
5161                                            ; TEST TO VERIFY THAT THE DEVICE WILL COMPLETE A READ ERROR CODE COMMAND
5162                                            ; WITHOUT ENCOUNTERING AN ERROR.
5163                                            ;--------------------------------------------------------------------------
5164                                            ; BGNTST
5165                                            ;       IF FUNCTION TEST
5166                                            ;       :  THEN-SETUP TEST IDENT
5167                                            ;       :       CALL FUNCTION TEST SETUP
5168                                            ;       :       PROGRAM INITIALIZE RX
5169                                            ;       :       CALL ERROR CHECK
5170                                            ;       :       SETUP ERROR CODE ADDRESS
5171                                            ;       :       CALL READ ERROR CODE
5172                                            ;       :       CALL ERROR CHECK
5173                                            ;       ENDIF
5174                                            ; ENDTST
5175                                            ;--------------------------------------------------------------------------
5176
5177 022514                                             TSETUP
 (2) 022514 012737 022604 002466                BGNT2:  MOV     #T2TBL,TSTID    ;SETUP TEST ID TBL-TEST# 2
 (2) 022522 032737 000002 002324                IAT2:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2) 022530 001423                                      BEQ     XT2             ;BIT SET, THEN
 (2) 022532 004737 020700                               CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5178 022536 004737 010440                               CALL    INTIAL          ;CALL PROGRAM INITIALIZE
5179 022542 004737 017724                               CALL    ERRCHK          ;CALL ERROR CHECK
5180 022546 012737 002442 002364                        MOV     #XERUUT,RECADR  ;SETUP READ ERROR CODE ADDRESS
5181 022554 052737 000200 002500                        BIS     #RECTST,FLAGSP  ;SET READ ERROR CODE TEST=FLAGSP
5182 022562 004737 011340                               CALL    RDERCD          ;CALL READ ERROR CODE
5183 022566 004737 017724                               CALL    ERRCHK          ;CALL ERROR CHECK
5184 022572 042737 000200 002500                        BIC     #RECTST,FLAGSP  ;CLEAR READ ERROR CODE TEST=FLAGSP
5185 022600                                    XT2:     EXIT    TST
5186 022604                                             REGTBL  CSONLY
 (1)        015026                                                              REGS1=CSONLY
5187 022604                                             TTBL
 (2) 022604 022460                                                      T2TBL: .WORD    T2MSG
 (2) 022606 177777                                                             .WORD   -1
 (3) 022610                                                             T2RTB:
 (3) 022610 015026                                                             .WORD   REGS1
 (3) 022612 177777                                                             .WORD   -1
5188 022614                                             ENDTST
```

```
 5191                                           .SBTTL  TEST 3 -   FILL BUFFER - FNC TST
  (2)  022616  000414                                   BR      BGNT3           ;BR TO BGN TST
  (2)  022620  020040  044506  046114           T3MSG: .ASCIZ   /  FILL BUFFER - FNC TST/
  (2)                                                   .EVEN
 5192
 5193                                           ;++
 5194                                           ; TEST TO VERIFY THE DEVICE BUFFER WILL FILL WITH NO RESULTING ERROR.
 5195                                           ;--------------------------------------------------------------------
 5196                                           ; BGNTST
 5197                                           ;       IF FUNCTION TEST
 5198                                           ;       :  THEN-SETUP TEST IDENT
 5199                                           ;       :       SETUP DENSITY CONTROL
 5200                                           ;       :       CALL SETUP DEVICE COMMANDS
 5201                                           ;       :       CALL FILL BUFFER
 5202                                           ;       :       NOP
 5203                                           ;       ENDIF
 5204                                           ; ENDTST
 5205                                           ;--------------------------------------------------------------------
 5206
 5207  022650                                           TSETUP
  (2)  022650  012737  022720  002466           BGNT3:  MOV     #T3TBL,TSTID    ;SETUP TEST ID TBL-TEST# 3
  (2)  022656  032737  000002  002324           IAT3:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
  (2)  022664  001413                                   BEQ     XT3             ;BIT SET, THEN
  (2)  022666  004737  020700                           CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
 5208  022672  052737  000002  002476                   BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG COMMANDS
 5209  022700  004737  021014                           CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
 5210  022704  004737  010510                           CALL    FILBUF
 5211  022710  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
 5212  022714                                 XT3:      EXIT    TST
 5213  022720                                           REGTBL  CSONLY
  (1)          015026                                                  REGS1=CSONLY
 5214  022720                                           TTBL
  (2)  022720  022620                                                     T3TBL: .WORD    T3MSG
  (2)  022722  177777                                                            .WORD   -1
  (3)  022724                                                            T3RTB:
  (3)  022724  015026                                                            .WORD   REGS1
  (3)  022726  177777                                                            .WORD   -1
 5215  022730                                           ENDTST
```

```
5218                                            .SBTTL  TEST 4 -   EMPTY BUFFER - FNC TST
 (2)  022732  000415                                   BR      BGNT4           ;BR TO BGN TST
 (2)  022734  020040  046505  052120           T4MSG: .ASCIZ   /  EMPTY BUFFER - FNC TST/
 (2)          022766                                   .EVEN
5219
5220                                            ;++
5221                                            ; TEST TO VERIFY THE DEVICE BUFFER WILL EMPTY WITHOUT ERRORS.
5222                                            ;-------------------------------------------------------------------------
5223                                            ; BGNTST
5224                                            ;       IF FUNCTION TEST
5225                                            ;       :  THEN-SETUP TEST IDENT
5226                                            ;       :       SETUP DENSITY CONTROL
5227                                            ;       :       CALL SETUP DEVICE COMMANDS
5228                                            ;       :       CALL EMPTY BUFFER
5229                                            ;       :       CALL ERROR CHECK
5230                                            ;       :       NOP
5231                                            ;       ENDIF
5232                                            ; ENDTST
5233                                            ;-------------------------------------------------------------------------
5234
5235  022766                                            TSETUP
 (2)  022766  012737  023036  002466           BGNT4:  MOV     #T4TBL,TSTID    ;SETUP TEST ID TBL-TEST# 4
 (2)  022774  032737  000002  002324           IAT4:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2)  023002  001413                                   BEQ     XT4             ;BIT SET, THEN
 (2)  023004  004737  020700                           CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5236  023010  052737  000002  002476                   BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
5237  023016  004737  021014                           CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
5238  023022  004737  010626                           CALL    EMPBUF          ;CALL EMPTY BUFFER
5239  023026  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5240  023032                                  XT4:    EXIT    TST
5241  023036                                          REGTBL  CSONLY
 (1)          015026                                                         REGS1=CSONLY
5242  023036                                          TTBL
 (2)  023036  022734                                                    T4TBL: .WORD    T4MSG
 (2)  023040  177777                                                           .WORD   -1
 (3)  023042                                                            T4RTB:
 (3)  023042  015026                                                           .WORD   REGS1
 (3)  023044  177777                                                           .WORD   -1
5243  023046                                          ENDTST
```

```
5246                                                    .SBTTL  TEST 5 -   READ STATUS - FNC TST
 (2) 023050 000414                                              BR      BGNT5           ;BR TO BGN TST
 (2) 023052 020040 042522 042101                        T5MSG: .ASCIZ   /  READ STATUS - FNC TST/
 (2)                                                            .EVEN
5247
5248                                                    ;++
5249                                                    ; TEST TO VERIFY THAT A DEVICE MAINTENANCE READ STATUS (RXES) COMMAND
5250                                                    ; WILL EXECUTE WITHOUT ERROR.
5251                                                    ;--------------------------------------------------------------------
5252                                                    ; BGNTST
5253                                                    ;       IF FUNCTION TEST
5254                                                    ;       :  THEN-SETUP TEST IDENT
5255                                                    ;       :       SETUP DENSITY CONTROL=SINGLE
5256                                                    ;       :       CALL SETUP DEVICE COMMANDS
5257                                                    ;       :       CALL READ MAINT STATUS
5258                                                    ;       :       CALL ERROR CHECK
5259                                                    ;       :       NOP
5260                                                    ;       ENDIF
5261                                                    ; ENDTST
5262                                                    ;--------------------------------------------------------------------
5263
5264 023102                                                     TSETUP
 (2) 023102 012737 023154 002466                        BGNT5:  MOV     #T5TBL,TSTID    ;SETUP TEST ID TBL-TEST# 5
 (2) 023110 032737 000002 002324                        IAT5:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2) 023116 001414                                              BEQ     XT5             ;BIT SET, THEN
 (2) 023120 004737 020700                                       CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5265 023124 042737 000002 002476                                BIC     #DDCFLG,FLAGST  ;CLEAR DOUBLE DENSITY CONTROL FLAG
5266 023132 000240                                              NOP                     ;
5267 023134 004737 021014                                       CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
5268 023140 004737 011266                                       CALL    RDSTAT          ;CALL READ MAINT STATUS
5269 023144 004737 017724                                       CALL    ERRCHK          ;CALL ERROR CHECK
5270 023150                                             XT5:    EXIT    TST
5271 023154                                                     REGTBL  CSONLY
 (1)        015026                                                                      REGS1=CSONLY
5272 023154                                                     TTBL
 (2) 023154 023052                                                              T5TBL: .WORD    T5MSG
 (2) 023156 177777                                                                     .WORD   -1
 (3) 023160                                                                     T5RTB:
 (3) 023160 015026                                                                     .WORD   REGS1
 (3) 023162 177777                                                                     .WORD   -1
5273 023164                                                     ENDTST
```

```
5276                                            .SBTTL  TEST 6 -   FILL & EMPTY BUFFER - FNC TST
 (2)  023166  000420                                    BR      BGNT6           ;BR TO BGN TST
 (2)  023170  020040  044506  046114              T6MSG: .ASCIZ   /  FILL & EMPTY BUFFER - FNC TST/
 (2)                                                    .EVEN
5277
5278                                            ;++
5279                                            ; TEST TO VERIFY THE DEVICE BUFFER DATA IS VALID AFTER A FILL/EMPTY
5280                                            ; BUFFER COMMAND SEQUENCE.
5281                                            ;--------------------------------------------------------------------------
5282                                            ; BGNTST
5283                                            ;       IF FUNCTION TEST
5284                                            ;       :  THEN-SETUP TEST IDENT
5285                                            ;       :       SETUP DENSITY CONTROL=DOUBLE
5286                                            ;       :       CALL SETUP DEVICE COMMANDS
5287                                            ;       :       SET DATA PATTERN=RANDOM
5288                                            ;       :       CALL DATA PATTERN SETUP
5289                                            ;       :       CALL FILL BUFFER
5290                                            ;       :       CALL ERROR CHECK
5291                                            ;       :       CALL EMPTY BUFFER
5292                                            ;       :       CALL ERROR CHECK
5293                                            ;       :       SET EMPTY BUFFER FLAG
5294                                            ;       :       CALL DATA CHECK
5295                                            ;       ENDIF
5296                                            ; ENDTST
5297                                            ;--------------------------------------------------------------------------
5298
5299  023230                                            TSETUP
 (2)  023230  012737  023340  002466              BGNT6:  MOV     #T6TBL,TSTID    ;SETUP TEST ID TBL-TEST# 6
 (2)  023236  032737  000002  002324              IAT6:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2)  023244  001433                                       BEQ     XT6             ;BIT SET, THEN
 (2)  023246  004737  020700                               CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5300  023252  052737  000002  002476                       BIS     #DDCFLG,FLAGST  ;SET DOUBLE DENSITY CONTROL FLAG
5301  023260  004737  021014                               CALL    SUDVCD          ;CALL SETUP DEVICE COMMANDS
5302  023264  005037  012660                               CLR     PAT             ;SET DATA PATTERN=RANDOM
5303  023270  004737  012306                               CALL    STDATP          ;CALL SET DATA PATTERN
5304  023274  004737  010510                               CALL    FILBUF          ;CALL FILL BUFFER
5305  023300  004737  017724                               CALL    ERRCHK          ;CALL ERROR CHECK
5306  023304  004737  010626                               CALL    EMPBUF          ;CALL EMPTY BUFFER
5307  023310  004737  017724                               CALL    ERRCHK          ;CALL ERROR CHECK
5308  023314  052737  000020  002476                       BIS     #EMBUFF,FLAGST  ;SET EMPTY BUFFER FLAG
5309  023322  004737  013246                               CALL    DATACK          ;CALL DATA CHECK
5310  023326  042737  000020  002476                       BIC     #EMBUFF,FLAGST  ;CLEAR EMPTY BUFFER FLAG
5311  023334                                      XT6:    EXIT    TST
5312  023340                                              RFGTBL  CSONLY
 (1)          015026                                                     REGS1=CSONLY
5313  023340                                              TTBL
 (2)  023340  023170                                                T6TBL: .WORD    T6MSG
 (2)  023342  177777                                                       .WORD    -1
 (3)  023344                                                T6RTB:
 (3)  023344  015026                                                       .WORD    REGS1
 (3)  023346  177777                                                       .WORD    -1
5314  023350                                              ENDTST
```

```
5317                                            .SBTTL  TEST 7 -   READ & WRITE SECTOR - FNC TST
 (2)  023352  000420                                    BR      BGNT7           ;BR TO BGN TST
 (2)  023354  020040  042522  042101             T7MSG: .ASCIZ   /  READ & WRITE SECTOR - FNC TST/
 (2)                                                    .EVEN
5318
5319                                            ;++
5320                                            ; TEST TO VERIFY THE DEVICE WILL READ AND WRITE IN BOTH DENSITIES WITHOUT
5321                                            ; AN ERROR.
5322                                            ;--------------------------------------------------------------------------
5323                                            ; BGNTST
5324                                            ;       IF FUNCTION TEST
5325                                            ;       :  THEN-SETUP TEST IDENT
5326                                            ;       :       CALL DENSITY CHECK
5327                                            ;       :       SETUP TRACK=0, SECTOR=10
5328                                            ;       :       CLEAR ENDDO FLAG
5329                                            ;       :       BGNDO
5330                                            ;       :       :  SET DENSITY CONTROL WORD=OPPOSITE DENSITY STATUS
5331                                            ;       :       :  SET NEGATIVE TEST FLAG
5332                                            ;       :       :  SETUP EXPECTED DEN ERR
5333                                            ;       :       :  CALL WRITE SECTOR
5334                                            ;       :       :  CALL ERROR CK
5335                                            ;       :       :  CALL READ SECTOR
5336                                            ;       :       :  CALL ERROR CK
5337                                            ;       :       :  SET DENSITY CONTROL WORD=DOUBLE DEN
5338                                            ;       :       :  CALL WRITE SECTOR
5339                                            ;       :       :  CALL ERROR CK
5340                                            ;       :       :  CALL READ SECTOR
5341                                            ;       :       :  CALL ERROR CK
5342                                            ;       :       :  CALL SET TRACK=76, SECTOR=10
5343                                            ;       :       :  COMP ENDDO FLAG
5344                                            ;       :       DOUNTIL ENDDO FLAG=0
5345                                            ;       ENDIF
5346                                            ; ENDTST
5347                                            ;--------------------------------------------------------------------------
5348
```

```
5351  023414                                          TSETUP
 (2)  023414  012737  023602  002466  BGNT7:  MOV     #T7TBL,TSTID    ;SETUP TEST ID TBL-TEST# 7
 (2)  023422  032737  000002  002324  IAT7:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2)  023430  001462                          BEQ     XT7             ;BIT SET, THEN
 (2)  023432  004737  020700                  CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5352  023436  004737  017350                  CALL    DENCHK          ;CALL DENSITY CHECK
5353  023442  005037  002374                  CLR     TRACK           ;SET TRACK=0
5354  023446  012737  000012  002376          MOV     #10.,SECTOR     ;SET SECTOR=10.
5355  023454  005037  002504                  CLR     TTEMP1          ;CLEAR ENDDO FLAG
5356  023460  000240                  BBT7:   NOP                     ;
5357  023462  004737  020472                  CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
5358  023466  042737  004000  002476          BIC     #NEGTST,FLAGST  ;CLEAR NEG TEST FLAG
5359  023474  004737  010744                  CALL    WRITE           ;CALL WRITE SECTOR
5360  023500  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
5361  023504  004737  011062                  CALL    READ            ;CALL READ SECTOR
5362  023510  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
5363  023514  004737  020430                  CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
5364  023520  052737  004000  002476          BIS     #NEGTST,FLAGST  ;SET NEG TEST FLAG
5365  023526  012737  000030  002464          MOV     #DENERR,NGTSER  ;SETUP EXPECTED NEG TEST ERR=DEN ERR
5366  023534  004737  010744                  CALL    WRITE           ;CALL WRITE SECTOR
5367  023540  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
5368  023544  004737  011062                  CALL    READ            ;CALL READ SECTOR
5369  023550  004737  017724                  CALL    ERRCHK          ;CALL ERROR CHECK
5370  023554  005137  002504                  COM     TTEMP1          ;COMPLIMENT ENDDO FLAG
5371  023560  004737  020430                  CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
5372  023564  004737  021174                  CALL    STTK76          ;CALL SET TRACK=76.
5373  023570  005737  002504          UBT7:   TST     TTEMP1          ;DOUNTIL ENDDO FLAG
5374  023574  001331                          BNE     BBT7            ;EQUALS 0
5375  023576                          XT7:    EXIT    TST
5376  023602                                  REGTBL  CSESAL
 (1)          015036                                                 REGS1=CSESAL
5377  023602                                  TTBL
 (2)  023602  023354                                      T7TBL: .WORD    T7MSG
 (2)  023604  177777                                             .WORD   -1
 (3)  023606                                              T7RTB:
 (3)  023606  015036                                             .WORD   REGS1
 (3)  023610  177777                                             .WORD   -1
5378  023612                                  ENDTST
```

```
5381                                                    .SBTTL  TEST 8 -   WRITE SECTOR DELETED DATA - FNC TST
 (2)  023614  000423                                             BR      BGNT8           ;BR TO BGN TST
 (2)  023616  020040  051127  052111                    T8MSG: .ASCIZ   /  WRITE SECTOR DELETED DATA - FNC TST/
 (2)                                                             .EVEN
5382
5383                                                    ;++
5384                                                    ; TEST TO VERIFY THAT THE DEVICE WILL WRITE A DELETED DATA MARK ON THE
5385                                                    ; DISKETTE WITHOUT ERROR.
5386                                                    ;--------------------------------------------------------------------
5387                                                    ; BGNTST
5388                                                    ;       IF FUNCTION TEST
5389                                                    ;       :  THEN-SETUP TEST IDENT
5390                                                    ;       :       SET TRACK=76, SECTOR=10
5391                                                    ;       :       CALL DENSITY CHECK
5392                                                    ;       :       SET DELETED DATA FLAG
5393                                                    ;       :       SET DENSITY CONTROL WORD=DISK DENSITY
5394                                                    ;       :       CALL WRITE SECTOR
5395                                                    ;       :       CALL ERROR CK
5396                                                    ;       :       CALL READ SECTOR SECTOR
5397                                                    ;       :       CALL ERROR CK
5398                                                    ;       :       CLEAR DELETED DATA FLAG
5399                                                    ;       :       CALL WRITE SECTOR
5400                                                    ;       :       CALL ERROR CK
5401                                                    ;       ENDIF
5402                                                    ; ENDTST
5403                                                    ;--------------------------------------------------------------------
5404  023664                                                    TSETUP
 (2)  023664  012737  023772  002466                    BGNT8:  MOV     #T8TBL,TSTID    ;SETUP TEST ID TBL-TEST# 8
 (2)  023672  032737  000002  002324                    IAT8:   BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2)  023700  001432                                            BEQ     XT8             ;BIT SET, THEN
 (2)  023702  004737  020700                                    CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5405  023706  004737  021174                                    CALL    STTK76          ;CALL SET TRACK=76.
5406  023712  004737  017350                                    CALL    DENCHK          ;CALL DENSITY CHECK
5407  023716  004737  020472                                    CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
5408  023722  012737  000010  002402                          MOV     #DLDCMD,DELDAT  ;SETUP DELETED DATA COMMAND MODE
5409  023730  004737  010744                                    CALL    WRITE           ;CALL WRITE SECTOR
5410  023734  004737  017724                                    CALL    ERRCHK          ;CALL ERROR CHECK
5411  023740  004737  011062                                    CALL    READ            ;CALL READ SECTOR
5412  023744  004737  017724                                    CALL    ERRCHK          ;CALL ERROR CHECK
5413  023750  005037  002402                                    CLR     DELDAT          ;CLEAR DELETED DATA COMMAND MODE
5414  023754  004737  010744                                    CALL    WRITE           ;CALL WRITE SECTOR
5415  023760  004737  017724                                    CALL    ERRCHK          ;CALL ERROR CHECK
5416  023764  000240                                            NOP                     ;
5417  023766                                            XT8:    EXIT    TST
5418  023772                                                    REGTBL  CSESAL
 (1)          015036                                                                    REGS1=CSESAL
5419  023772                                                    TTBL
 (2)  023772  023616                                                        T8TBL: .WORD    T8MSG
 (2)  023774  177777                                                               .WORD   -1
 (3)  023776                                                                T8RTB:
 (3)  023776  015036                                                               .WORD   REGS1
 (3)  024000  177777                                                               .WORD   -1
5420  024002                                                    ENDTST
```

```
 5423                                           .SBTTL  TEST 9 -   SET DENSITY - FNC TST
  (2)  024004  000414                                   BR      BGNT9           ;BR TO BGN TST
  (2)  024006  020040  042523  020124           T9MSG: .ASCIZ   /  SET DENSITY - FNC TST/
  (2)                                                   .EVEN
 5424
 5425                                           ;++
 5426                                           ; TEST TO VERIFY THE DEVICE WILL CHANGE DENSITIES WITHOUT INCURRING AN
 5427                                           ; ERROR.
 5428                                           ;--------------------------------------------------------------------
 5429                                           ; BGNTST
 5430                                           ;       IF FUNCTION TEST
 5431                                           ;       :  THEN-SETUP TEST IDENT
 5432                                           ;       :       CALL DENSITY CHECK
 5433                                           ;       :       SET DENSITY CONTROL WORD=DISK DENSITY
 5434                                           ;       :       CALL SET DENSITY
 5435                                           ;       :       CALL ERROR CK
 5436                                           ;       :       CALL SET TRACK=76, SECTOR=10
 5437                                           ;       :       CALL READ SECTOR
 5438                                           ;       :       CALL ERROR CK
 5439                                           ;       :       SET TRACK=0
 5440                                           ;       :       CALL READ SECTOR
 5441                                           ;       :       CALL ERROR CK
 5442                                           ;       :       CALL COMPLIMENT DENSITY CONTROL
 5443                                           ;       :       CALL SET DENSITY
 5444                                           ;       :       CALL ERROR CK
 5445                                           ;       :       CALL READ SECTOR
 5446                                           ;       :       CALL ERROR CK
 5447                                           ;       :       CALL SET TRACK=76., SECTOR=10.
 5448                                           ;       :       CALL READ SECTOR
 5449                                           ;       :       CALL ERROR CK
 5450                                           ;       :       SET DENSITY CONTROL WORD=DISK DENSITY
 5451                                           ;       :       CALL SET DENSITY
 5452                                           ;       :       CALL ERROR CK
 5453                                           ;       ENDIF
 5454                                           ; ENDTST
 5455                                           ;--------------------------------------------------------------------
```

```
                                                        TSETUP
5458  024036
 (2)  024036  012737  024210  002466          BGNT9:   MOV     #T9TBL,TSTID    ;SETUP TEST ID TBL-TEST# 9
 (2)  024044  032737  000002  002324          IAT9:    BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2)  024052  001454                                   BEQ     XT9             ;BIT SET, THEN
 (2)  024054  004737  020700                           CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5459  024060  004737  017350                           CALL    DENCHK          ;CALL DENSITY CHECK
5460  024064  004737  020472                           CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
5461  024070  004737  011172                           CALL    SETDN           ;CALL SET DENSITY
5462  024074  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5463  024100  004737  021174                           CALL    STTK76          ;CALL SET TRACK=76.
5464  024104  004737  011062                           CALL    READ            ;CALL READ SECTOR
5465  024110  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5466  024114  005037  002374                           CLR     TRACK           ;SET TRACK=0
5467  024120  004737  011062                           CALL    READ            ;CALL READ SECTOR
5468  024124  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5469  024130  004737  020430                           CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
5470  024134  004737  011172                           CALL    SETDN           ;CALL SET DENSITY
5471  024140  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5472  024144  004737  011062                           CALL    READ            ;CALL READ SECTOR
5473  024150  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5474  024154  004737  021174                           CALL    STTK76          ;CALL SET TRACK=76.
5475  024160  004737  011062                           CALL    READ            ;CALL READ SECTOR
5476  024164  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5477  024170  004737  020472                           CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
5478  024174  004737  011172                           CALL    SETDN           ;CALL SET DENSITY
5479  024200  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5480  024204                                  XT9:     EXIT    TST
5481  024210                                           REGTBL  CSESAL
 (1)          015036                                                  REGS1=CSESAL
5482  024210                                           TTBL
 (2)  024210  024006                                             T9TBL: .WORD    T9MSG
 (2)  024212  177777                                                    .WORD    -1
 (3)  024214                                                     T9RTB:
 (3)  024214  015036                                                    .WORD    REGS1
 (3)  024216  177777                                                    .WORD    -1
5483  024220                                           ENDTST
```

```
5486                                            .SBTTL  TEST 10 -  POSITIONING - FNC TST
 (2) 024222 000414                                      BR      BGNT10          ;BR TO BGN TST
 (2) 024224 050040 051517 052111                T10MSG: .ASCIZ  / POSITIONING - FNC TST/
 (2)        024254                                      .EVEN
5487
5488                                            ;++
5489                                            ; TEST TO VERIFY THE DEVICE WILL CHANGE SECTORS AND TRACKS WITHOUT
5490                                            ; INCURRING AN ERROR.
5491                                            ;--------------------------------------------------------------------
5492                                            ; BGNTST
5493                                            ;       IF FUNCTION TEST
5494                                            ;       :  THEN-SETUP TEST IDENT
5495                                            ;       :       SET TRACK PATTERN=RANDOM
5496                                            ;       :       CALL DENSITY CHECK
5497                                            ;       :       SET DENSITY CONTROL WORD=DRV DENSITY
5498                                            ;       :       BGNDO
5499                                            ;       :       :  CALL GET A TRACK
5500                                            ;       :       :  CALL GET A SECTOR
5501                                            ;       :       :  CALL READ SECTOR
5502                                            ;       :       :  CALL ERROR CK
5503                                            ;       :       DOUNTIL TRACKS DONE FLAG SET
5504                                            ;       :       NOP
5505                                            ;       ENDIF
5506                                            ; ENDTST
5507                                            ;--------------------------------------------------------------------
5508                                            ;--
5509 024254                                             TSETUP
 (2) 024254 012737 024352 002466                BGNT10: MOV     #T10TBL,TSTID   ;SETUP TEST ID TBL-TEST# 10
 (2) 024262 032737 000002 002324                IAT10:  BIT     #FUNCTT,TSTMOD  ;IF TEST MODE=FUNCTION TEST
 (2) 024270 001426                                      BEQ     XT10            ;BIT SET, THEN
 (2) 024272 004737 020700                               CALL    FTSTUP          ;CALL FUNCTION TEST SETUP
5510 024276 012737 000400 002510                        MOV     #ITK!RTK,TKSCFG ;SET TRK/SEC FLAGS-->TRACK=INIT & RANDOM
5511 024304 004737 017350                               CALL    DENCHK          ;CALL DENSITY CHECK
5512 024310 004737 020472                               CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
5513 024314 004737 012662                       BBT10:  CALL    GETTRK          ;CALL GET TRACK
5514 024320 004737 013104                               CALL    GETSEC          ;CALL GET SECTOR
5515 024324 004737 011062                               CALL    READ            ;CALL READ SECTOR
5516 024330 004737 017724                               CALL    ERRCHK          ;CALL ERROR CHECK
5517 024334 032737 001000 002476                UBT10:  BIT     #TRKDON,FLAGST  ;DOUNTIL FLAGS->TRACK DONE FLAG
5518 024342 001764                                      BEQ     BBT10           ;SET
5519 024344 000240                                      NOP                     ;
5520 024346                                     XT10:   EXIT    TST
5521 024352                                             REGTBL  CSESAL
 (1)        015036                                                              REGS1=CSESAL
5522 024352                                             TTBL
 (2) 024352 024224                                                      T10TBL: .WORD   T10MSG
 (2) 024354 177777                                                              .WORD   -1
 (3) 024356                                                             T10RTB:
 (3) 024356 015036                                                              .WORD   REGS1
 (3) 024360 177777                                                              .WORD   -1
5523 024362                                             ENDTST
```

```
 5527                                           .SBTTL  TEST 11 -  CSR BITS - LGC TST
  (2)  024364  000412                                   BR      BGNT11          ;BR TO BGN TST
  (2)  024366  041440  051123  041040           T11MSG: .ASCIZ  / CSR BITS - LGC TST/
  (2)                                                   .EVEN
 5528
 5529                                           ;++
 5530                                           ; TEST TO VERIFY THAT THE READ/WRITE BITS OF THE CONTROL AND STATUS REG-
 5531                                           ; ISTER CAN BE WRITTEN INTO AND READ AND OTHERWISE BEHAVE AS EXPECTED.
 5532                                           ;--------------------------------------------------------------------
 5533                                           ; BGNTST
 5534                                           ;       IF LOGIC TEST
 5535                                           ;       :  THEN-SETUP TEST TEST IDENT
 5536                                           ;       :       CALL RX LEGAL STATE CHECK
 5537                                           ;       :       WRITE RXCSR-ALL 1'S (EXCEPT BITS #14 & #1)
 5538                                           ;       :       SETUP EXPECTED REGISTER RESULTS
 5539                                           ;       :       IF RXCSR DOES NOT=037566
 5540                                           ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
 5541                                           ;       :       :       SETUP ERRNBR=CSR ERROR
 5542                                           ;       :       :       CALL ERROR
 5543                                           ;       :       ENDIF
 5544                                           ;       :       WRITE RXCSR-ALL 0'S
 5545                                           ;       :       IF RXCSR DOES NOT=004040
 5546                                           ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
 5547                                           ;       :       :       SETUP ERRNBR=CSR ERROR
 5548                                           ;       :       :       CALL ERROR
 5549                                           ;       :       ENDIF
 5550                                           ;       :       NOP
 5551                                           ;       ENDIF
 5552                                           ; ENDTST
 5553                                           ;--------------------------------------------------------------------
 5554                                           ; BOARD CALLOUT:
 5555                                           ;       1.  INTERFACE
 5556                                           ;--------------------------------------------------------------------
 5557                                           ;--
```

```
5560  024412                                          TSETUP
 (2)  024412  012737  024602  002466  BGNT11: MOV     #T11TBL,TSTID   ;SETUP TEST ID TBL-TEST# 11
 (2)  024420  032737  000001  002324  IAT11:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  024426  001463                          BEQ     XT11            ;BIT SET, THEN
 (2)  024430  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
5561  024434                                  DRESET                  ;BUS RESET
5562  024436  004737  011610                  CALL    WAIT            ;WAIT FOR DONE
5563  024442  004737  017140                  CALL    DVSTCK          ;CALL DEVICE STATE CHECK
5564  024446  012777  137776  155674          MOV     #137776,@RXCS   ;WRITE RXCSR=ALL 1'S (EXCEPT BIT#14 & #1)
5565  024454  032737  000400  002500  IDT11:  BIT     #LSIFLG,FLAGSP  ;IF LSI FLG - FLAGSP
5566  024462  001404                          BEQ     LDT11           ;SET, THEN
5567  024464  012737  005560  002436          MOV     #5560,REGEXP    ;SETUP EXPECTED REG RESULTS = 5560
5568  024472  000403                          BR      IBT11           ;BR TO IF 'B'
5569  024474  012737  037566  002436  LDT11:  MOV     #037566,REGEXP  ;SETUP EXPECTED REGISTER RESULTS=037566
5570  024502  023777  002436  155640  IBT11:  CMP     REGEXP,@RXCS    ;IF RXCSR NOT=EXPECTED REGISTER
5571  024510  001410                          BEQ     EBT11           ;THEN
5572  024512  017737  155632  002440          MOV     @RXCS,REGACT    ;SETUP ACTUAL REGISTER
5573  024520  012737  000033  002520          MOV     #CSRERR,ERRNBR  ;SET ERRNBR=CSRERR
5574  024526  004737  003060                  CALL    ERROR           ;CALL ERROR
5575  024532  012737  004040  002436  EBT11:  MOV     #4040,REGEXP    ;SETUP EXPECTED REGISTER RESULTS=4040
5576  024540  012777  000000  155602          MOV     #0,@RXCS        ;WRITE RXCSR=ALL 0'S
5577  024546  023777  002436  155574  ICT11:  CMP     REGEXP,@RXCS    ;IF RXCSR NOT=EXPECTED REGISTER
5578  024554  001410                          BEQ     XT11            ;THEN
5579  024556  017737  155566  002440          MOV     @RXCS,REGACT    ;SETUP ACTUAL REGISTER
5580  024564  012737  000033  002520          MOV     #CSRERR,ERRNBR  ;SET ERRNBR=CSR ERR
5581  024572  004737  003060                  CALL    ERROR           ;CALL ERROR
5582  024576                          XT11:   EXIT    TST
5583  024602                                  REGTBL
5584  024602                                  TTBL    0,RGPRT
 (2)  024602  024366                                          T11TBL: .WORD   T11MSG
 (2)  024604  000000                                                  .WORD   0
 (2)  024606  000004                                                  .WORD   RGPRT
 (2)  024610  177777                                                  .WORD   -1
 (3)  024612                                                  T11RTB:
 (3)  024612  177777                                                  .WORD   -1
5585  024614                                  FRUTBL  INTONL
 (2)  024614                                                  T11FTB:
 (2)  024614  006644                                                  .WORD   INTONL
 (2)  024616  177777                                                  .WORD   -1
5586  024620                                  ENDTST
```

```
5589                                            .SBTTL  TEST 12 -  DBR BITS - LGC TST
 (2)  024622  000412                                   BR      BGNT12          ;BR TO BGN TST
 (2)  024624  042040  051102  041040            T12MSG: .ASCIZ  / DBR BITS - LGC TST/
 (2)                                                    .EVEN
5590
5591                                            ;++
5592                                            ; TEST TO VERIFY THAT THE READ/WRITE BITS OF THE DATA BUFFER REGISTER
5593                                            ; CAN BE WRITTEN INTO AND READ AS EXPECTED.
5594                                            ;-------------------------------------------------------------------------
5595                                            ; BGNTST
5596                                            ;       IF LOGIC TEST
5597                                            ;       :  THEN-SETUP TEST IDENT
5598                                            ;       :       WRITE RXDBR-ALL 1'S
5599                                            ;       :       SETUP EXPECTED REGISTER RESULTS
5600                                            ;       :       IF RXDBR NOT=173767
5601                                            ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
5602                                            ;       :       :       SETUP ERR NBR=DBR ERR
5603                                            ;       :       :       CALL ERROR
5604                                            ;       :       ENDIF
5605                                            ;       :       WRITE RXDBR-ALL 0'S
5606                                            ;       :       SETUP EXPECTED REGISTER RESULTS
5607                                            ;       :       IF RXDBR NOT=000000
5608                                            ;       :       :  THEN-SETUP ACTUAL REGISTER RESULTS
5609                                            ;       :       :       SET ERRNBR=DBR ERR
5610                                            ;       :       :       CALL ERROR
5611                                            ;       :       ENDIF
5612                                            ;       :       NOP
5613                                            ;       ENDIF
5614                                            ; ENDTST
5615                                            ;-------------------------------------------------------------------------
5616                                            ; BOARD CALLOUT:
5617                                            ;       1.  INTERFACE
5618                                            ;-------------------------------------------------------------------------
5619                                            ;--
```

```
 5622  024650                                          TSETUP
  (2)  024650  012737  025012  002466  BGNT12: MOV     #T12TBL,TSTID   ;SETUP TEST ID TBL-TEST# 12
  (2)  024656  032737  000001  002324  IAT12:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
  (2)  024664  001450                          BEQ     XT12            ;BIT SET, THEN
  (2)  024666  004737  020736                  CALL    LTSTUP          ;CALL LOGIC TEST SETUP
 5623  024672                                  BRESET                  ;BUS RESET
 5624  024674  004737  011610                  CALL    WAIT            ;WAIT FOR DONE
 5625  024700  012777  177777  155444          MOV     #-1,@RXDB       ;WRITE RXDBR-ALL 1'S
 5626  024706  012737  173767  002436          MOV     #173767,REGEXP  ;SETUP EXPECTED REGISTER RESULTS=173767
 5627  024714  023777  002436  155430  IBT12:  CMP     REGEXP,@RXDB    ;IF RXDBR NOT=EXPECTED REGISTER
 5628  024722  001410                          BEQ     EBT12           ;THEN
 5629  024724  017737  155422  002440          MOV     @RXDB,REGACT    ;SETUP ACTUAL REGISTER RESULTS
 5630  024732  012737  000034  002520          MOV     #DBRERR,ERRNBR  ;SET ERRNBR=DBR ERR
 5631  024740  004737  003060                  CALL    ERROR           ;CALL ERROR
 5632  024744  005037  002436  EBT12:  CLR     REGEXP          ;SETUP EXPECTED REGISTER RESULTS=0'S
 5633  024750  012777  000000  155374          MOV     #0,@RXDB        ;WRITE RXDBR=ALL 0'S
 5634  024756  023777  002436  155366  ICT12:  CMP     REGEXP,@RXDB    ;IF RXDBR NOT=EXPECTED REGISTER
 5635  024764  001410                          BEQ     XT12            ;THEN
 5636  024766  017737  155360  002440          MOV     @RXDB,REGACT    ;SETUP ACTUAL REGISTER RESULTS
 5637  024774  012737  000034  002520          MOV     #DBRERR,ERRNBR  ;SET ERRNBR=DBR ERR
 5638  025002  004737  003060                  CALL    ERROR           ;CALL ERROR
 5639  025006                          XT12:   EXIT    TST
 5640  025012                                  TTBL    0,RGPRT
  (2)  025012  024624                                          T12TBL: .WORD   T12MSG
  (2)  025014  000000                                                  .WORD   0
  (2)  025016  000004                                                  .WORD   RGPRT
  (2)  025020  177777                                                  .WORD   -1
  (3)  025022                                                  T12RTB:
  (3)  025022  177777                                                  .WORD   -1
 5641  025024                                  FRUTBL  INTONL
  (2)  025024                                                  T12FTB:
  (2)  025024  006644                                                  .WORD   INTONL
  (2)  025026  177777                                                  .WORD   -1
 5642  025030                                  ENDTST
```

```
5645                                            .SBTTL  TEST 13 -  CSR-DBR COMMON BYTE - LGC TST
 (2)  025032  000420                                    BR      BGNT13          ;BR TO BGN TST
 (2)  025034  041440  051123  042055             T13MSG: .ASCIZ  / CSR-DBR COMMON BYTE - LGC TST/
 (2)          025074                                    .EVEN
5646
5647                                            ;++
5648                                            ; TEST TO VERIFY THAT THE LOWER BYTE OF THE RXCS MAPS INTO THE RXDB AND
5649                                            ; THEREFORE CHECK WRITE ONLY BITS OF THE RXCS.
5650                                            ;-------------------------------------------------------------------------
5651                                            ; BGNTST
5652                                            ;       IF LOGIC TEST
5653                                            ;       : THEN-SETUP TEST IDENT
5654                                            ;       :       WRITE RXCSR LOW BYTE-ALL 1'S (EXCEPT BIT #1)
5655                                            ;       :       SETUP EXPECTED REGISTER RESULTS
5656                                            ;       :       IF RXDBR LOW BYTE NOT=376
5657                                            ;       :       : THEN-SETUP ACTUAL REGISTER RESULTS
5658                                            ;       :       :       SETUP ERR NBR=CSR ERR
5659                                            ;       :       :       CALL ERROR
5660                                            ;       :       ENDIF
5661                                            ;       :       WRITE RXCSR LOW BYTE-ALL 0'S
5662                                            ;       :       SETUP EXPECTED REGISTER RESULTS
5663                                            ;       :       IF RXDBR LOW BYTE NOT=000
5664                                            ;       :       : THEN-SETUP ACTUAL REGISTER RESULTS
5665                                            ;       :       :       SETUP ERR NBR=CSR ERR
5666                                            ;       :       :       CALL ERROR
5667                                            ;       :       ENDIF
5668                                            ;       ENDIF
5669                                            ; ENDTST
5670                                            ;-------------------------------------------------------------------------
5671                                            ; BOARD CALLOUT:
5672                                            ;       1.  INTERFACE
5673                                            ;-------------------------------------------------------------------------
5674                                            ;--
5675
```

```
     025074                                    TSETUP
(2)  025074  012737  025242  002466   BGN13:   MOV     #T13TBL,TSTID    ;SETUP TEST ID TBL-TEST# 13
(2)  025102  032737  000001  002324   IAT13:   BIT     #LOGICT,TSTMOD   ;IF TEST MODE=LOGIC TEST
(2)  025110  001452                            BEQ     XT13             ;BIT SET, THEN
(2)  025112  004737  020736                    CALL    LTSTUP           ;CALL LOGIC TEST SETUP
     025116                                    BRESET                   ;BUS RESET
     025120  004737  011610                    CALL    WAIT             ;WAIT FOR DONE
     025124  012777  000376  155216            MOV     #376,@RXCS       ;WRITE RXCSR LOW BYTE-ALL 1F (EXCEPT BIT #1)
     025132  012737  000366  002436            MOV     #366,REGEXP      ;SETUP EXPECTED REGISTER RESULTS=366
     025140  123777  002436  155204   IBT13:   CMPB    REGEXP,@RXDB     ;IF RXDBR LOW BYTE NOT=376
     025146  001413                            BEQ     EBT13            ;THEN
     025150  117737  155176  002440            MOVB    @RXDB,REGACT     ;SETUP ACTUAL REGISTER RESULTS
     025156  042737  177400  002440            BIC     #177400,REGACT   ;CLEAR TOP BYTE
     025164  012737  000033  002520            MOV     #CSRERR,ERRNBR   ;SET ERRNBR=CSR ERR
     025172  004737  003060                    CALL    ERROR            ;CALL ERROR
     025176  005037  002436           EBT13:   CLR     REGEXP           ;SETUP EXPECTED REGISTER RESULTS=0'S
     025202  112777  000000  155140            MOVB    #0,@RXCS         ;WRITE RXDBR=ALL 0'S
     025210  123777  002436  155134   ICT13:   CMPB    REGEXP,@RXDB     ;IF RXDBR NOT=EXPECTED RESULTS
     025216  001407                            BEQ     XT13
     025220  005037  002440                    CLR     REGACT           ;SETUP ACTUAL REGISTER RESULTS
     025224  012737  000033  002520            MOV     #CSRERR,ERRNBR   ;SETUP ERRNBR=CSR ERR
     025232  004737  003060                    CALL    ERROR            ;CALL ERROR

     025236                           XT13:    EXIT    TST

     025242                                    TTBL    0,RGPRT
(2)  025242  025034                                             T13TBL: .WORD   T13MSG
(2)  025244  000000                                                     .WORD   0
(2)  025246  000004                                                     .WORD   RGPRT
(2)  025250  177777                                                     .WORD   -1
(3)  025252                                                     T13RTB:
(3)  025252  177777                                                     .WORD   -1
     025254                                    FRUTBL  INTONL
(2)  025254                                                     T13FTB:
(2)  025254  006644                                                     .WORD   INTONL
(2)  025256  177777                                                     .WORD   -1
     025260                                    ENDTST
```

```
                                        .SBTTL  TEST 14 -  BUS INITIALIZE - LGC TST
 (2)  025262  000415                            BR      BGNT14          ;BR TO BGN TST
 (2)  025264  041040  051525  044440    T14MSG: .ASCIZ  / BUS INITIALIZE - LGC TST/
 (2)                                            .EVEN

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

```
5731
5732  025316                                          TSETUP
 (2)  025316  012737  025462  002466    BGNT14: MOV     #T14TBL,TSTID   ;SETUP TEST ID TBL-TEST# 14
 (2)  025324  032737  000001  002324    IAT14:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  025332  001451                            BEQ     XT14            ;BIT SET, THEN
 (2)  025334  004737  020736                    CALL    LTSTUP          ;CALL LOGIC TEST SETUP
5733  025340                                          BRESET
5734  025342  032777  100000  155000    IBT14:  BIT     #ERRBIT,@RXCS   ;IF RXCSR ERROR BIT
5735  025350  001442                            BEQ     XT14            ;SET, THEN
5736  025352  032777  000004  154772    ICT14:  BIT     #INITDN,@RXDB   ;IF RXESR=INIT DONE
5737  025360  001406                            BEQ     IDT14           ;SET, THEN
5738  025362  012737  000061  002520            MOV     #NOITDB,ERRNBR  ;SET ERR NBR=NO INIT DONE-BUS
5739  025370  004737  003060                    CALL    ERROR           ;CALL ERROR
5740  025374  000430                            BR      XT14            ;BR TO EXIT
5741  025376  032777  000030  154746    IDT14:  BIT     #DENERR,@RXDB   ;IF RXESR=DENSITY ERR
5742  025404  001406                            BEQ     IET14           ;SET, THEN
5743  025406  012737  000020  002520            MOV     #DENDSK,ERRNBR  ;SET ERR NBR=DISK DEN ERR
5744  025414  004737  003060                    CALL    ERROR           ;CALL ERROR
5745  025420  000416                            BR      XT14            ;BR TO EXIT
5746  025422  032777  000010  154722    IET14:  BIT     #ACLOW,@RXDB    ;IF RXESR NOT=INITIALIZE DONE BIT
5747  025430  001006                            BNE     LET14           ;SET, THEN
5748  025432  012737  000050  002520            MOV     #ACLOWF,ERRNBR  ;SET ERR NBR=NO INIT DONE-BIT
5749  025440  004737  003060                    CALL    ERROR           ;CALL ERROR
5750  025444  000404                            BR      XT14            ;BR TO EXIT
5751  025446  004737  011340    LET14:  CALL    RDERCD          ;CALL READ ERROR CODE
5752  025452  004737  017724            CALL    ERRCHK          ;CALL ERROR CHECK
5753  025456                    XT14:   EXIT    TST
5754  025462                            REGTBL
5755  025462                            TTBL    REGCK,0
 (2)  025462  025264                                    T14TBL: .WORD   T14MSG
 (2)  025464  000001                                            .WORD   REGCK
 (2)  025466  000000                                            .WORD   0
 (2)  025470  177777                                            .WORD   -1
 (3)  025472                                            T14RTB:
 (3)  025472  177777                                            .WORD   -1
5756  025474                            FRUTBL  INFCTL
 (2)  025474                                            T14FTB:
 (2)  025474  006640                                            .WORD   INFCTL
 (2)  025476  177777                                            .WORD   -1
5757  025500                            ENDTST
```

```
5760                                                .SBTTL  TEST 15 -  PROGRAMMED INITIALIZE - LGC TST
 (2)  025502  000421                                        BR      BGNT15          ;BR TO BGN TST
 (2)  025504  050040  047522  051107                T15MSG: .ASCIZ  / PROGRAMMED INITIALIZE - LGC TST/
 (2)          025546                                        .EVEN
5761
5762                                                ;++
5763                                                ; TEST TO VERIFY THAT THE INTERFACE BOARD WILL COMPLETE A PROGRAMMED
5764                                                ; INITIALIZE.
5765                                                ;-------------------------------------------------------------------------
5766                                                ; BGNTST
5767                                                ;       IF LOGIC TEST
5768                                                ;       :  THEN-SETUP TEST IDENT
5769                                                ;       :       CALL PROGRAMMED INITIALIZE
5770                                                ;       :       CALL DEVICE STATE CK
5771                                                ;       :       CALL ERROR CHECK
5772                                                ;       :       NOP
5773                                                ;       ENDIF
5774                                                ; ENDTST
5775                                                ;-------------------------------------------------------------------------
5776                                                ; BOARD CALLOUT:
5777                                                ;       1.  INTERFACE
5778                                                ;       2.  CONTROLLER
5779                                                ;-------------------------------------------------------------------------
5780                                                ;--
5781
5782  025546                                        BGNT15: TSETUP
 (2)  025546  012737  025610  002466                        MOV     #T15TBL,TSTID   ;SETUP TEST ID TBL-TEST# 15
 (2)  025554  032737  000001  002324                IAT15:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  025562  001410                                        BEQ     XT15            ;BIT SET, THEN
 (2)  025564  004737  020736                                CALL    LTSTUP          ;CALL LOGIC TEST SETUP
5783  025570  004737  010440                                CALL    INTIAL          ;CALL PROG INITIALIZE
5784  025574  004737  017140                                CALL    DVSTCK          ;CALL DEVICE STATE CK
5785  025600  004737  017724                                CALL    ERRCHK          ;CALL ERROR CHECK
5786  025604                                        XT15:   EXIT    TST
5787
5788  025610                                                REGTBL  CSESIT
 (1)          015056                                                                 REGS1=CSESIT
5789  025610                                                TTBL    REGCK,0
 (2)  025610  025504                                                        T15TBL: .WORD   T15MSG
 (2)  025612  000001                                                                .WORD   REGCK
 (2)  025614  000000                                                                .WORD   0
 (2)  025616  177777                                                                .WORD   -1
 (3)  025620                                                                T15RTB:
 (3)  025620  015056                                                                .WORD   REGS1
 (3)  025622  177777                                                                .WORD   -1
5790  025624                                                FRUTBL  INFCTL
 (2)  025624                                                                T15FTB:
 (2)  025624  006640                                                                .WORD   INFCTL
 (2)  025626  177777                                                                .WORD   -1
5791  025630                                                ENDTST
```

```
5794                                    .SBTTL  TEST 16 -  POWER FAIL - LGC TST
 (2)  025632  000413                    BR      BGNT16          ;BR TO BGN TST
 (2)  025634  050040  053517  051105    T16MSG: .ASCIZ  / POWER FAIL - LGC TST/
 (2)                                    .EVEN
5795
5796                                    ;++
5797                                    ; TEST TO VERIFY THAT THE ACLOW CIRCUITS OPERATE AS EXPECTED.
5798                                    ;-------------------------------------------------------------------
5799                                    ; BGNTST
5800                                    ;       IF LOGIC TEST                                           [A]
5801                                    ;       :  THEN-SETUP TEST IDENT
5802                                    ;       :       IF MANUAL INTERVENTION ALLOWED                  [B]
5803                                    ;       :       :  THEN-ASK OPERATOR TO POWER DOWN RX02 ONLY
5804                                    ;       :       :       IF OPERATION COMPLETE                   [C]
5805                                    ;       :       :       :  THEN-CALL PROGRAMMED INITIALIZE
5806                                    ;       :       :       :       SETUP EXPECTED ERROR=AC LOW
5807                                    ;       :       :       :       SET NEG TEST FLAG=TEST FLAGS
5808                                    ;       :       :       :       CALL ERROR CHECK
5809                                    ;       :       :       :       ASK OPERATOR TO POWER UP RX02
5810                                    ;       :       :       :       IF OPERATION COMPLETE           [D]
5811                                    ;       :       :       :       :  THEN-CLEAR OUT EXPECTED ERROR
5812                                    ;       :       :       :       :       CLEAR NEG TEST FLAG=TEST FLAGS
5813                                    ;       :       :       :       :       CALL INITIAL
5814                                    ;       :       :       :       :       CALL ERROR CHECK
5815                                    ;       :       :       :       ENDIF
5816                                    ;       :       :       ENDIF
5817                                    ;       :       ENDIF
5818                                    ;       ENDIF
5819                                    ; ENDTST
5820                                    ;-------------------------------------------------------------------
5821                                    ; BOARD CALLOUT:
5822                                    ;       1.  INTERFACE
5823                                    ;-------------------------------------------------------------------
5824                                    ;--
```

```
                                                        TSETUP
5827   025662                                   BGNT16: MOV     #T16TBL,TSTID   ;SETUP TEST ID TBL-TEST# 16
 (2)   025662  012737  026102  002466          IAT16:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)   025670  032737  000001  002324                  BEQ     XT16            ;BIT SET, THEN
 (2)   025676  001477                                   CALL    LTSTUP          ;CALL LOGIC TEST SETUP
 (2)   025700  004737  020736                           CLR     TTEMP1          ;SET TEMP1=0
5828   025704  005037  002504                  IBT16:  MANUAL                  ;IF MANUAL INTERVENTION
5829   025710                                           BNCOMPLETE XT16         ;ALLOWED, THEN
5830   025712                                           PRINTF  #PWRMS,UNIT     ;PRINT MSG
5831   025714                                           GMANIL  PWDNRY,TTEMP1,1,YES
5832   025740
5833   025754  032737  000001  002504          ICT16:  BIT     #1,TTEMP1       ;IF RX02 IS
5834   025762  001445                                   BEQ     XT16            ;POWERED DOWN, THEN
5835   025764  004737  010440                           CALL    INTIAL          ;CALL INITIALIZE
5836   025770  012737  000050  002464                  MOV     #ACLOWF,NGTSER  ;SETUP EXPECTED ERROR=AC LOW
5837   025776  052737  004000  002476                  BIS     #NEGTST,FLAGST  ;SET NEG TEST FLAG=TEST FLAGS
5838   026004  004737  017724                           CALL    ERRCHK          ;CALL ERROR CHECK
5839   026010                                           PRINTF  #PWRMS,UNIT     ;PRINT MSG
5840   026034                                           GMANIL  PWUPRY,TTEMP1,1,YES
5841   026050  032737  000002  002504          IDT16:  BIT     #2,TTEMP1       ;IF RX02 IS
5842   026056  001407                                   BEQ     XT16            ;POWERED UP, THEN
5843   026060  042737  004000  002476                  BIC     #NEGTST,FLAGST  ;CLEAR NEG TEST FLAG=TEST FLAGS
5844   026066  004737  010440                           CALL    INTIAL          ;CALL INITIALIZE
5845   026072  004737  017724                           CALL    ERRCHK          ;
5846   026076                                   XT16:   EXIT    TST
5847   026102                                           REGTBL  CSESIT
 (1)             015056                                                          REGS1=CSESIT
5848   026102                                           TTBL    REGCK,0
 (2)   026102  025634                                                   T16TBL: .WORD   T16MSG
 (2)   026104  000001                                                           .WORD   REGCK
 (2)   026106  000000                                                           .WORD   0
 (2)   026110  177777                                                           .WORD   -1
 (3)   026112                                                           T16RTB:
 (3)   026112  015056                                                           .WORD   REGS1
 (3)   026114  177777                                                           .WORD   -1
5849   026116                                           FRUTBL  INTONL
 (2)   026116                                                           T16FTB:
 (2)   026116  006644                                                           .WORD   INTONL
 (2)   026120  177777                                                           .WORD   -1
5850
5851   026122  047045  040445  044440          PWRMS:  .ASCIZ  /%N%A IS FLOPPY SYSTEM CONTAINING UNIT #%O2/
5852   026175     040  050040  053517          PWDNRY: .ASCIZ  /  POWERED DOWN/
5853   026214  020040  047520  042527          PWUPRY: .ASCIZ  /  POWERED UP/
5854           026232                                   .EVEN
5855
5856   026232                                           ENDTST
```

```
5859                                            .SBTTL  TEST 17 -  CONTROLLER-INTERFACE - LGC TST
 (2)  026234  000420                            BR      BGNT17          ;BR TO BGN TST
 (2)  026236  041440  047117  051124            T17MSG: .ASCIZ  / CONTROLLER-INTERFACE - LGC TST/
 (2)                                                    .EVEN
5860
5861                                            ;++
5862                                            ; TEST TO VERIFY THAT THE INTERFACE BOARD STATE SEQUENCER IS FUNCTIONAL.
5863                                            ; ALSO TO VERIFY THE CONTROLLER-INTERFACE HANDSHAKE BY TRYING FUNCTIONS
5864                                            ; WITH MINIMUM READ/WRITE BOARD INVOLVEMENT.
5865                                            ;-------------------------------------------------------------------------
5866                                            ; BGNTST
5867                                            ;       IF LOGIC TEST
5868                                            ;       :  THEN-SETUP TEST IDENT
5869                                            ;       :       SET PROTOCAL CHECK (TEST SETUP SETS VIS TEST TABLE)
5870                                            ;       :       CALL READ ERROR CODE
5871                                            ;       :       CALL ERROR CHECK
5872                                            ;       :       CALL FILL BUFFER
5873                                            ;       :       CALL ERROR CHECK
5874                                            ;       :       CALL EMPTY BUFFER
5875                                            ;       :       CALL ERROR CHECK
5876                                            ;       :       CALL READ MAINT STATUS
5877                                            ;       :       CALL ERROR CHECK
5878                                            ;       ENDIF
5879                                            ; ENDTST
5880                                            ;-------------------------------------------------------------------------
5881                                            ; BOARD CALLOUT:
5882                                            ;       1.  CONTROLLER
5883                                            ;       2.  INTERFACE
5884                                            ;-------------------------------------------------------------------------
5885                                            ;--
```

```
 5888  026276                                          TSETUP                  ;
  (2)  026276  012737  026404  002466          BGNT17: MOV     #T17TBL,TSTID   ;SETUP TEST ID TBL-TEST# 17
  (2)  026304  032737  000001  002324          IAT17:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
  (2)  026312  001432                                  BEQ     XT17            ;BIT SET, THEN
  (2)  026314  004737  020736                          CALL    LTSTUP          ;CALL LOGIC TEST SETUP
 5889  026320  052737  000200  002500                  BIS     #RECTST,FLAGSP  ;SET READ ERROR CODE TEST=FLAGSP
 5890  026326  004737  011340                          CALL    RDERCD          ;CALL READ ERROR CODE
 5891  026332  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
 5892  026336  042737  000200  002500                  BIC     #RECTST,FLAGSP  ;CLEAR READ ERROR CODE TEST=FLAGSP
 5893  026344  004737  010510                          CALL    FILBUF          ;CALL FILL BUFFER
 5894  026350  004737  017724                          CALL    ERRCHK          ;CALL ERROR HECK
 5895  026354  004737  010626                          CALL    EMPBUF          ;CALL EMPTY BUFFER
 5896  026360  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
 5897  026364  005237  002470                          INC     TCMDCT          ;INCREMENT TST COMMAND CTR      **********
 5898  026370  004737  011266                          CALL    RDSTAT          ;CALL READ MAINTENANCE STATUS
 5899  026374  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
 5900  026400                                  XT17:   EXIT    TST
 5901
 5902  026404                                          REGTBL  CSESND,CSESRS
  (1)          015076                                                         REGS1=CSESND
  (1)          015066                                                         REGS2=CSESRS
 5903  026404                                          TTBL    REGCK,PROPRT
  (2)  026404  026236                                                 T17TBL: .WORD   T17MSG
  (2)  026406  000001                                                         .WORD   REGCK
  (2)  026410  000010                                                         .WORD   PROPRT
  (2)  026412  177777                                                         .WORD   -1
  (3)  026414                                                         T17RTB:
  (3)  026414  015076                                                         .WORD   REGS1
  (3)  026416  015066                                                         .WORD   REGS2
  (3)  026420  177777                                                         .WORD   -1
 5904  026422                                          FRUTBL  CTLINF
  (2)  026422                                                         T17FTB:
  (2)  026422  006646                                                         .WORD   CTLINF
  (2)  026424  177777                                                         .WORD   -1
 5905  026426                                          ENDTST
```

```
                                                .SBTTL  TEST 18 -  NPR - LGC TST
 (2)  026430  000410                                    BR      BGNT18          ;BR TO BGN TST
 (2)  026432  047040  051120  026440            T18MSG: .ASCIZ  / NPR - LGC TST/
 (2)          026452                                    .EVEN

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

```
5949  026452                                          TSETUP                  ;
 (2)  026452  012737  026752  002466          BGNT18: MOV     #T18TBL,TSTID   ;SETUP TEST ID TBL-TEST# 18
 (2)  026460  032737  000001  002324          IAT18:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  026466  001527                                  BEQ     XT18            ;BIT SET, THEN
 (2)  026470  004737  020736                          CALL    LTSTUP          ;CALL LOGIC TEST SETUP
5950  026474  012737  177777  002442                  MOV     #-1,XERUUT      ;SET READ ERROR CODE STORAGE=1'S
5951  026502  004737  011340                          CALL    RDERCD          ;CALL READ ERROR CODE
5952  026506  022737  177777  002442          IBT18:  CMP     #-1,XERUUT      ;IF READ ERROR CODE STORAGE=1'S
5953  026514  001005                                  BNE     EBT18           ;THEN
5954  026516  012737  000053  002520                  MOV     #NPRERR,ERRNBR  ;SET ERR NUMBER=NPR ERROR
5955  026524  004737  003060                          CALL    ERROR           ;CALL ERROR
5956  026530  042737  000200  002476          EBT18:  BIC     #RECFLG,FLAGST  ;CLEAR RED ERR COD FLG = FLAGS TST
5957  026536  012737  000200  002370                  MOV     #128.,WDCNT     ;SET DEVICE WORD COUNT=128
5958  026544  012737  000001  012660                  MOV     #1,PAT          ;SET DATA PAT=ALL ZEROS
5959  026552  004737  012306                          CALL    STDATP          ;CALL SET DATA PATTERN
5960  026556  012702  177777                          MOV     #-1,R2          ;SET R2=ALL 1'S
5961  026562  013737  002370  002504                  MOV     WDCNT,TTEMP1    ;SET TEMP1=WORD COUNT
5962  026570  006337  002504                          ASL     TTEMP1          ;DOUBLE IT FOR ADDRESSING WORDS IN MEM
5963  026574  162737  000004  002504                  SUB     #4,TTEMP1       ;ADJUST TO END OF BUFFER
5964  026602  013701  002504                          MOV     TTEMP1,R1       ;SET R1=TEMP1
5965  026606  010237  036622                          MOV     R2,DATBUF       ;SET DATA BUFFER BEGIN=1'S
5966  026612  110261  036622                          MOVB    R2,DATBUF(R1)   ;SET DATA BUFFER END=1'S
5967  026616  005201                                  INC     R1              ;BUMP INDEX
5968  026620  110261  036622                          MOVB    R2,DATBUF(R1)   ;SET DATA BUFFER END +1=1'S
5969  026624  012737  000400  002412                  MOV     #DENBIT,DENSTY  ;SET DENSITY CONTROL=DOUBLE DENSITY
5970  026632  004737  010510                          CALL    FILBUF          ;CALL FILL BUFFER
5971  026636  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
5972  026642  004737  010626                          CALL    EMPBUF          ;CALL EMPTY BUFFER
5973  026646  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
5974  026652  005737  036622          ICT18:  TST     DATBUF          ;IF DATA BUFFER BEGIN
5975  026656  001406                                  BEQ     ECT18           ;NOT=0, THEN
5976  026660  012737  000053  002520                  MOV     #NPRERR,ERRNBR  ;SETUP ERRNBR=NPR ERR
5977  026666  004737  003060                          CALL    ERROR           ;CALL ERROR
5978  026672  000425                                  BR      XT18            ;BR TO EXIT
5979  026674  013701  002504          ECT18:  MOV     TTEMP1,R1       ;SET R1=TEMP1
5980  026700  105761  036622          IDT18:  TSTB    DATBUF(R1)      ;IF DATA BUFFER END
5981  026704  001406                                  BEQ     EDT18           ;NOT=0, THEN
5982  026706  012737  000053  002520                  MOV     #NPRERR,ERRNBR  ;SETUP ERRNBR=NPR ERR
5983  026714  004737  003060                          CALL    ERROR           ;CALL EPROR
5984  026720  000412                                  BR      XT18            ;BR TO EXIT
5985  026722  005201                          EDT18:  INC     R1              ;BUMP INDEX
5986  026724  126127  036622  177777                  CMPB    DATBUF(R1),#-1  ;IF DATA BUFFER END +1
5987  026732  001405                                  BEQ     XT18            ;NOT=1'S, THEN
5988  026734  012737  000053  002520                  MOV     #NPRERR,ERRNBR  ;SETUP ERRNBR=NPR ERR
5989  026742  004737  003060                          CALL    ERROR           ;CALL ERROR
5990  026746                                  XT18:   EXIT    TST
5991  026752                                          REGTBL  CSESND
 (1)              015076                                                     REGS1=CSESND
5992  026752                                          TTBL    REGCK,0
 (2)  026752  026432                                                T18TBL: .WORD   T18MSG
 (2)  026754  000001                                                        .WORD   REGCK
 (2)  026756  000000                                                        .WORD   0
 (2)  026760  177777                                                        .WORD   -1
 (3)  026762                                                        T18RTB:
 (3)  026762  015076                                                        .WORD   REGS1
 (3)  026764  177777                                                        .WORD   -1
```

```
 5993  026766                                        FRUTBL  INFCTL
  (2)  026766                                                        T18FTB:
  (2)  026766  006640                                                        .WORD   INFCTL
  (2)  026770  177777                                                        .WORD   -1
 5994  026772                                        ENDTST
```

```
5997                                    .SBTTL - MOD U.SFT.NAT - ADDRESS NPR ADDRESS TEST
5998                                    ;-------------------------------------------------------------------
5999                                    ; BGNSUB        NAT
6000                                    ;       NOP
6001                                    ;       IF CTR < 2
6002                                    ;       : THEN-IF CTR=0
6003                                    ;       :       : THEN-CLEAR ADR
6004                                    ;       :       : ELSE-ADR=ADR+2
6005                                    ;       :       ENDIF
6006                                    ;       :       INCREMENT COUNTER
6007                                    ;       : ELSE-INCREMENT COUNTER
6008                                    ;       :       DOUBLE ADR (ADR=2XADR)
6009                                    ;       :       IF ADR > 40000
6010                                    ;       :       : THEN-SET DONE IN FLAGS
6011                                    ;       :       :       CLEAR CTR
6012                                    ;       :       :       CLEAR ADR
6013                                    ;       :       :       SET DO LOOP DONE FLAG
6014                                    ;       :       ENDIF
6015                                    ;       ENDIF
6016                                    ; ENDSUB
6017                                    ;-------------------------------------------------------------------
6018
6019  026774  000240                    NAT:    NOP                     ;
6020  026776  022737  000002  027100    IANAT:  CMP     #2,NATCTR       ;IF CTR
6021  027004  103014                            BHIS    LANAT           ;LESS THAN 2, THEN
6022  027006  005737  027100            IBNAT:  TST     NATCTR          ;IF CTR
6023  027012  001003                            BNE     LBNAT           ;EQUALS 0, THEN
6024  027014  005037  027102                    CLR     NATADR          ;CLEAR ADRS
6025  027020  000403                            BR      EBNAT           ;BR TO END 'B'
6026  027022  012737  000002  027102    LBNAT:  MOV     #2,NATADR       ;ELSE, SET ADR=2
6027  027030  005237  027100            EBNAT:  INC     NATCTR          ;INCREMENT COUNTER
6028  027034  000420                            BR      EANAT           ;BR TO END 'A'
6029  027036  005237  027100            LANAT:  INC     NATCTR          ;INCREMENT COUNTER
6030  027042  006337  027102                    ASL     NATADR          ;DOUBLE ADDRESS
6031  027046  022737  040000  027102    ICNAT:  CMP     #40000,NATADR   ;IF ADDRESS
6032  027054  101407                            BLOS    ECNAT           ;GREATER THAN 40000, THEN
6033  027056  005037  027100                    CLR     NATCTR          ;CLEAR COUNTER
6034  027062  005037  027102                    CLR     NATADR          ;CLEAR ADDRESS
6035  027066  052737  000010  002476            BIS     #DLPDN,FLAGST   ;SET DO LOOP DONE FLAG
6036  027074  000240                    ECNAT:  NOP                     ;
6037  027076  000207                    EANAT:  RETURN                  ;RETURN
6038                                    ;-------------------------------------------------------------------
6039  027100  000000                    NATCTR: 0                       ;COUNTER
6040  027102  000000                    NATADR: 0                       ;ADDRESS
6041                                    ;-------------------------------------------------------------------
```

```
6044                                            .SBTTL  TEST 19 -  NPR NON-EXISTENT MEM - LGC TST
 (2)  027104  000420                            BR      BGNT19          ;BR TO BGN TST
 (2)  027106  047040  051120  047040           T19MSG: .ASCIZ  / NPR NON-EXISTENT MEM - LGC TST/
 (2)                                            .EVEN
6045
6046                                            ;++
6047                                            ; TEST TO VERIFY THAT THE NPR NON-EXISTEND MEMORY LOGIC WILL TIME OUT
6048                                            ; WHEN GIVEN AN ILLEGAL ADDRESS.
6049                                            ;-------------------------------------------------------------------------
6050                                            ; BGNTST
6051                                            ;       IF LOGIC TEST
6052                                            ;       :  THEN-SETUP TEST IDENT
6053                                            ;       :       IF NOT FONZ WITH 124K
6054                                            ;       :       :  THEN-SETUP BUS TRAPS
6055                                            ;       :       :       SETUP NON EXISTENT ADDRESS
6056                                            ;       :       :       CALL READ ERROR CODE
6057                                            ;       :       :       IF RXCSR ERROR BIT OR RXESR NON-EXISTENT MEMORY BIT NOT
6058                                            ;       :       :       :  THEN-CALL LOGIC TEST ERROR
6059                                            ;       :       :       ENDIF
6060                                            ;       :       :       CLEAR ERROR SET BY TRAP
6061                                            ;       :       :       CLEAR BUS TRAP VECTOR
6062                                            ;       :       ENDIF
6063                                            ;       ENDIF
6064                                            ; ENDTST
6065                                            ;-------------------------------------------------------------------------
6066                                            ; BOARD CALLOUT:
6067                                            ;       1.  INTERFACE
6068                                            ;-------------------------------------------------------------------------
6069                                            ;--
```

```
6072 027146                                  TSETUP                          ;
 (2) 027146 012737 027316 002466    BGNT19: MOV     #T19TBL,TSTID    ;SETUP TEST ID TBL-TEST# 19
 (2) 027154 032737 000001 002324    IAT19:  BIT     #LOGICT,TSTMOD   ;IF TEST MODE=LOGIC TEST
 (2) 027162 001447                          BEQ     XT19             ;BIT SET, THEN
 (2) 027164 004737 020736                   CALL    LTSTUP           ;CALL LOGIC TEST SETUP
6073 027170 032737 010000 002500    IBT19:  BIT     #FONZFG,FLAGSP   ;IF FONZ 124K FLAG
6074 027176 001041                          BNE     XT19             ;NOT SET, THEN
6075 027200 005037 002452                   CLR     ABORT            ;CLEAR ABORT FLAG
6076 027204                                 SETVEC  #BTRP4,#TRAP,#PRI07
6077 027232 013737 002344 002364            MOV     NXMADR,RECADR    ;SETUP NON EXISTENT MEMORY ADR
6078 027240 004737 011340                   CALL    RDERCD           ;CALL READ ERROR CODE
6079 027244 012737 000052 002464            MOV     #NXMERR,NGTSER   ;SETUP EXPECTED NEG TEST ERR=NXM ERR
6080 027252 042737 000200 002476            BIC     #RECFLG,FLAGST   ;CLEAR READ ERR CODE FLAG (SU ERR CODE NOT EVALU
6081 027260 004737 017724                   CALL    ERRCHK           ;CALL ERROR CHECK
6082 027264 005037 002452                   CLR     ABORT            ;FLAG
6083 027270                                 CLRVEC  #BTRP4
6084 027276 004737 010440                   CALL    INTIAL           ;CALL PROG INITIALIZE
6085 027302                         XT19:   EXIT    TST
6086 027306                                 REGTBL
6087 027306                                 REGTB   1,4040,400,NXMBIT,173777        ;CHECK ERR BIT & NXM ERR SET
 (2) 027306 004040                                  T19RT1: .WORD   4040            ;RXCSR SHOULD BE
 (2) 027310 000400                                          .WORD   400             ;RXCSR DONT CARE
 (2) 027312 004000                                          .WORD   NXMBIT          ;RXESR SHOULD BE
 (2) 027314 173777                                          .WORD   173777          ;RXESR DONT CARE
6088 027316                                 TTBL    REGCK!NEGTST,0
 (2) 027316 027106                                          T19TBL: .WORD   T19MSG
 (2) 027320 004001                                                  .WORD   REGCK!NEGTST
 (2) 027322 000000                                                  .WORD   0
 (2) 027324 177777                                                  .WORD   -1
 (3) 027326                                                 T19RTB:
 (3) 027326 027306                                                  .WORD   T19RT1
 (3) 027330 177777                                                  .WORD   -1
6089 027332                                 FRUTBL  INTONL
 (2) 027332                                                 T19FTB:
 (2) 027332 006644                                                  .WORD   INTONL
 (2) 027334 177777                                                  .WORD   -1
6090 027336                                 ENDTST
```

```
6093                                            .SBTTL  TEST 20 -  INTERRUPT - LGC TST
 (2) 027340 000413                                      BR      BGNT20          ;BR TO BGN TST
 (2) 027342 044440 052116 051105                T20MSG: .ASCIZ  / INTERRUPT - LGC TST/
 (2)        027370                                      .EVEN
6094
6095                                            ;++
6096                                            ; TEST TO VERIFY THAT THE INTERRUPTS CAN BE SET AND THAT THE DEVICE
6097                                            ; RESPONDS AS EXPECTED.
6098                                            ;-------------------------------------------------------------------------
6099                                            ; BGNTST
6100                                            ;       IF LOGIC TEST
6101                                            ;       :  THEN-SETUP TEST IDENT
6102                                            ;       :       SET PROCESSOR PRIORITY-> -> NO INTERRUPTS
6103                                            ;       :       CAUSE RX INTERRUPT (WHEN PRIORITY LOWERED)
6104                                            ;       :       CALL WATCH DOG TO LOWER PRIORITY & WAIT FOR INTERRUPT
6105                                            ;       :       CALL ERROR
6106                                            ;       :       CLEAR RX INTERRUPT BIT
6107                                            ;       :       NOP
6108                                            ;       ENDIF
6109                                            ; ENDTST
6110                                            ;-------------------------------------------------------------------------
6111                                            ; BOARD CALLOUT:
6112                                            ;       1.  INTERFACE
6113                                            ;-------------------------------------------------------------------------
6114                                            ;--
6115 027370                                             TSETUP                  ;
 (2) 027370 012737 027462 002466                BGNT20: MOV     #T20TBL,TSTID   ;SETUP TEST ID TBL-TEST# 20
 (2) 027376 032737 000001 002324                IAT20:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2) 027404 001424                                      BEQ     XT20            ;BIT SET, THEN
 (2) 027406 004737 020736                               CALL    LTSTUP          ;CALL LOGIC TEST SETUP
6116 027412 005037 012024                               CLR     DX              ;SET WATCH DOG MULTIPLIER=0
6117 027416                                             SETPRI  #PRI07          ;SET PROCESSOR PRI=NO INTERRUPTS
6118 027424 052777 000100 152716                        BIS     #100,@RXCS      ;CAUSE RX TO INTERRUPT-WHEN PRI LOWERED
6119 027432 004737 011662                               CALL    WATCH           ;CALL WATCH DOG-LOWER PRI & WAIT FOR INTERRUPT
6120 027436 004737 003060                               CALL    ERROR           ;CALL ERROR
6121 027442 042777 000100 152700                        BIC     #100,@RXCS      ;CLEAR RX INTERRUPT BIT
6122 027450 012737 000010 012024                        MOV     #10,DX          ;RESET WATCH DOG MULTIPLIER
6123 027456                                     XT20:   EXIT    TST
6124 027462                                             REGTBL
6125 027462                                             TTBL    0,0
 (2) 027462 027342                                                      T20TBL: .WORD   T20MSG
 (2) 027464 000000                                                              .WORD   0
 (2) 027466 000000                                                              .WORD   0
 (2) 027470 177777                                                              .WORD   -1
 (3) 027472                                                             T20RTB:
 (3) 027472 177777                                                              .WORD   -1
6126 027474                                             FRUTBL  INTONL
 (2) 027474                                                             T20FTB:
 (2) 027474 006644                                                              .WORD   INTONL
 (2) 027476 177777                                                              .WORD   -1
6127 027500                                             ENDTST
```

```
 6130                                           .SBTTL  TEST 21 -  PRIORITY LVL - LGC TST
  (2)  027502  000414                                   BR      BGNT21          ;BR TO BGN TST
  (2)  027504  050040  044522  051117          T21MSG: .ASCIZ  / PRIORITY LVL - LCC TST/
  (2)                                                  .EVEN
 6131
 6132                                           ;++
 6133                                           ; TEST TO VERIFY THAT THE DEVICE PRIORITY IS SET TO THE CORRECT LEVEL.
 6134                                           ;-------------------------------------------------------------------------
 6135                                           ; BGNTST
 6136                                           ;       IF LOGIC TEST
 6137                                           ;       :  THEN-SETUP TEST IDENT
 6138                                           ;       :       LOWER WATCH DOG TIMEOUT MULTIPLIER
 6139                                           ;       :       SETUP PROCESSOR PRIORITY=7 (PRESET VALUE)
 6140                                           ;       :       BGNDO
 6141                                           ;       :       :  SET PROCESSOR PRIORITY (PRESET VALUE)
 6142                                           ;       :       :  SET DEVICE INTERRUPT BIT TO ENABLE INTERRUPT
 6143                                           ;       :       :  IF INTERRUPT OR ERROR OCCURRED
 6144                                           ;       :       :  :  THEN-SET DO LOOP DONE BIT -> FLAGS
 6145                                           ;       :       :  :  ELSE-LOWER SETUP PROCESSOR PRIORITY
 6146                                           ;       :       :  :       CLEAR DEVICE INTERRUPT BIT
 6147                                           ;       :       :  ENDIF
 6148                                           ;       :       DOUNTIL DO LOOP DONE BIT SET, PROCESSOR PRI=0 OR NO DONE BIT ESR
 6149                                           ;       :       IF SETUP PROCESSOR PRI NOT=DEVICE PRIORITY
 6150                                           ;       :       :  THEN-CALL LOGIC TEST ERROR
 6151                                           ;       :       ENDIF
 6152                                           ;       ENDIF
 6153                                           ; ENDTST
 6154                                           ;-------------------------------------------------------------------------
 6155                                           ; BOARD CALLOUT:
 6156                                           ;       1.  INTERFACE
 6157                                           ;-------------------------------------------------------------------------
 6158                                           ;--
```

```
6161  027534                                   TSETUP                          ;
 (2)  027534  012737  030106  002466  BGNT21:  MOV     #T21TBL,TSTID   ;SETUP TEST ID TBL-TEST# 21
 (2)  027542  032737  000001  002324  IAT21:   BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  027550  001511                           BEQ     XT21            ;BIT SET, THEN
 (2)  027552  004737  020736                   CALL    LTSTUP          ;CALL LOGIC TEST SETUP
6162  027556  004737  010440                   CALL INTIAL             ;CALL PROG INITIALIZE
6163  027562  012737  000001  012024           MOV     #1,DX           ;SET WATCH DOG MULTIPLIER=1
6164  027570                                   SETPRI  #PRI07          ;SET PROCESSOR PRI=07 (NO INTERRUPTS)
6165  027576  005005                           CLR     R5              ;SET PRIORITY TABLE INDEX
6166  027600  005037  002520          BBT21:   CLR     ERRNBR          ;CLEAR ERROR NUMBER INDICATOR
6167  027604  116537  021741  002416           MOVB    PRITAB+7(R5),PRIORT ;SET PROCESSOR PRIORITY TO NEW LEVEL
6168  027612  013737  002416  002504           MOV     PRIORT,TTEMP1   ;SETUP TEMP1 = PROCESSOR PRI
6169  027620  062737  000040  002504           ADD     #40,TTEMP1      ;NOW SETUP FOR COMPARE, I.E. ONE PRI LVL HIGHER
6170  027626  052777  000100  152514           BIS     #100,@RXCS      ;SET RX INTERRUPT BIT,AS PROCESSOR PRI LOWERED,
6171  027634  004737  011662                   CALL    WATCH           ;CALL WATCH DOG TO WAIT FOR INTERRUPT
6172  027640  022737  000015  002520  ICT21:   CMP     #DNNINT,ERRNBR  ;IF INTERRUPT OR ERROR
6173  027646  001404                           BEQ     ECT21           ;OCCURRED, THEN
6174  027650  052737  000010  002476           BIS     #DLPDN,FLAGST   ;SET DO LOOP DONE FLAG
6175  027656  000404                           BR      UBT21           ;BR TO DOUNTIL 'B'
6176  027660  005305                  ECT21:   DEC     R5              ;SET INDEX TO  NEXT LOWER PROCESSOR PRI
6177  027662  042777  000100  152460  EDT21:   BIC     #100,@RXCS      ;CLEAR DEVICE INTERRUPT BIT
6178  027670  020527  177770          UBT21:   CMP     R5,#-8.         ;DO UNTIL PROCESSOR PRI TABLE ALL DONE
6179  027674  001404                           BEQ     IET21           ;OR
6180  027676  032737  000010  002476           BIT     #DLPDN,FLAGST   ;DOUNTIL FLAGST DO LOOP DONE FLAG
6181  027704  001735                           BEQ     BBT21           ;SET
6182  027706  005737  002520          IET21:   TST     ERRNBR          ;IF INTERRUPT OCCURRED
6183  027712  001026                           BNE     LET21           ;THEN
6184  027714  032737  000400  002500  IFT21:   BIT     #LSIFLG,FLAGSP  ;IF FLAGSP=LSI FLAG
6185  027722  001024                           BNE     XT21            ;NOT SET, THEN
6186  027724  023737  002504  002356  IGT21:   CMP     TTEMP1,RXPRI    ;IF SETUP PROCESSOR PRIORITY & RX PRIORITY
6187  027732  001420                           BEQ     XT21            ;DONT MATCH
6188  027734  012737  000054  002520           MOV     #PRILEV,ERRNBR  ;SETUP ERR NBR=PRI LEV ERR
6189  027742  004737  003060                   CALL    ERROR           ;CALL ERROR
6190  027746  013703  002416                   MOV     PRIORT,R3       ;SETUP INTERRUPT PRI LEV FOR PRT
6191  027752  013702  002356                   MOV     RXPRI,R2        ;SETUP RX PRI LEV FOR PRINT
6192  027756  012701  030006                   MOV     #PRIMSG,R1      ;SETUP PRI LEV MSG
6193  027762  004737  002756                   CALL    PRTX2S          ;PRINT MSG
6194  027766  000402                           BR      XT21            ;BR TO TEXT EXIT
6195  027770  004737  003060          LET21:   CALL    ERROR           ;CALL ERROR
6196  027774  012737  000010  012024  XT21:    MOV     #10,DX          ;RESET WATCHDOG MULTIPLIER
6197  030002                                   EXIT    TST
6198  030006  047045  051445  022466  PRIMSG:  .ASCIZ  /%N%S6%A RX SET AT PRI LEV=%03%N%S6%A INTERRUPTED AT PRI LEV=%03
6199                                           .EVEN
6200  030106                                   REGTBL
6201  030106                                   TTBL    0,0
 (2)  030106  027504                                           T21TBL: .WORD   T21MSG
 (2)  030110  000000                                                   .WORD   0
 (2)  030112  000000                                                   .WORD   0
 (2)  030114  177777                                                   .WORD   -1
 (3)  030116                                                   T21RTB:
 (3)  030116  177777                                                   .WORD   -1
6202  030120                                   FRUTBL  INTONL
 (2)  030120                                                   T21FTB:
 (2)  030120  006644                                                   .WORD   INTONL
 (2)  030122  177777                                                   .WORD   -1
6203  030124                                   ENDTST
```

```
6206                                            .SBTTL  TEST 22 -  INITIALIZE CONTROL - LGC TST
 (2)  030126  000417                                    BR      BGNT22          ;BR TO BGN TST
 (2)  030130  044440  044516  044524            T22MSG: .ASCIZ  / INITIALIZE CONTROL - LGC TST/
 (2)                                                    .EVEN
6207
6208                                            ;++
6209                                            ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE INITIALIZE.
6210                                            ;-------------------------------------------------------------------------
6211                                            ; BGNTST
6212                                            ;       IF LOGIC TEST
6213                                            ;       :  THEN-SETUP TEST IDENT
6214                                            ;       :       ISSUE DEVICE PROGRAMMED INITIALIZE
6215                                            ;       :       CALL ERRCHK
6216                                            ;       ENDIF
6217                                            ; ENDTST
6218                                            ;-------------------------------------------------------------------------
6219                                            ; BOARD CALLOUT:
6220                                            ;       1.  CONTROLLER
6221                                            ;       2.  INTERFACE
6222                                            ;-------------------------------------------------------------------------
6223                                            ;--
6224  030166                                            TSETUP                  ;
 (2)  030166  012737  030224  002466            BGNT22: MOV     #T22TBL,TSTID   ;SETUP TEST ID TBL-TEST# 22
 (2)  030174  032737  000001  002324            IAT22:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  030202  001406                                    BEQ     XT22            ;BIT SET, THEN
 (2)  030204  004737  020736                            CALL    LTSTUP          ;CALL LOGIC TEST SETUP
6225  030210  004737  010440                            CALL    INITIAL         ;CALL INITIALIZE
6226  030214  004737  017724                            CALL    ERRCHK          ;CALL ERROR CHECK
6227  030220                                    XT22:   EXIT    TST
6228  030224                                            REGTBL  CEINIT
 (1)          015046                                                            REGS1=CEINIT
6229  030224                                            TTBL    REGCK,RGPRT
 (2)  030224  030130                                                    T22TBL: .WORD   T22MSG
 (2)  030226  000001                                                            .WORD   REGCK
 (2)  030230  000004                                                            .WORD   RGPRT
 (2)  030232  177777                                                            .WORD   -1
 (3)  030234                                                            T22RTB:
 (3)  030234  015046                                                            .WORD   REGS1
 (3)  030236  177777                                                            .WORD   -1
6230  030240                                            FRUTBL  CTLINF
 (2)  030240                                                            T22FTB:
 (2)  030240  006646                                                            .WORD   CTLINF
 (2)  030242  177777                                                            .WORD   -1
6231  030244                                            ENDTST
```

```
6234                                            .SBTTL  TEST 23 -  DATA BUF INTEGRITY - LGC TST
 (2)  030246  000417                            BR      BGNT23          ;BR TO BGN TST
 (2)  030250  042040  052101  020101            T23MSG: .ASCIZ  / DATA BUF INTEGRITY - LGC TST/
 (2)                                                    .EVEN
6235
6236                                            ;++
6237                                            ; TEST TO VERIFY ALL BITS OF DATA BUFFER, VARIOUS PATTERNS WILL BE USED.
6238                                            ;-------------------------------------------------------------------------
6239                                            ; BGNTST
6240                                            ;       IF LOGIC TEST
6241                                            ;       :  THEN-SETUP TEST IDENT
6242                                            ;       :       SETUP RANDOM DATA PATTERN
6243                                            ;       :       NOP
6244                                            ;       :       BGNDO
6245                                            ;       :       :  CALL DATA PATTERN SETUP
6246                                            ;       :       :  CALL FILL BUFFER
6247                                            ;       :       :  IF NO ERROR (ESCAPE TEST)
6248                                            ;       :       :  :  THEN-CALL EMPTY BUFFER
6249                                            ;       :       :  :       IF NO ERROR (ESCAPE TEST)
6250                                            ;       :       :  :       :  THEN-SET EMPTY BUFFER FLAG
6251                                            ;       :       :  :       :       CALL DATA CHECK
6252                                            ;       :       :  :       :       ADVANCE PATTERN COUNT
6253                                            ;       :       :  :       :       GET NEW PATTERN #
6254                                            ;       :       :  :       :       IF FOUR PATTERNS DONE
6255                                            ;       :       :  :       :       :  THEN-SET DO LOOP DONE
6256                                            ;       :       :  :       :       ENDIF
6257                                            ;       :       :  :       ENDIF
6258                                            ;       :       :  ENDIF
6259                                            ;       :       DOUNTIL DO LOOP DONE FLAG SET
6260                                            ;       :       NOP
6261                                            ;       ENDIF
6262                                            ; ENDTST
6263                                            ;-------------------------------------------------------------------------
6264                                            ; BOARD CALLOUT:
6265                                            ;       1.  CONTROLLER
6266                                            ;       2.  INTERFACE
6267                                            ;-------------------------------------------------------------------------
6268                                            ;--
```

```
6271  030306                                  TSETUP                          ;
 (2)  030306  012737  030430  002466  BGNT23:  MOV     #T23TBL,TSTID          ;SETUP TEST ID TBL-TEST# 23
 (2)  030314  032737  000001  002324  IAT23:   BIT     #LOGICT,TSTMOD         ;IF TEST MODE=LOGIC TEST
 (2)  030322  001440                           BEQ     XT23                   ;BIT SET, THEN
 (2)  030324  004737  020736                   CALL    LTSTUP                 ;CALL LOGIC TEST SETUP
6272  030330  012737  000001  012660           MOV     #1,PAT                 ;SET DATA PATTERN = 0'S
6273  030336  004737  012306          BBT23:   CALL    STDATP                 ;CALL SET DATA PATTERN
6274  030342  004737  010510                   CALL    FILBUF                 ;CALL FILL BUFFER
6275  030346                                   ESCAPE  TST                    ;IF NO ERROR, THEN
6276  030352  004737  010626                   CALL    EMPBUF                 ;CALL EMPTY BUFFER
6277  030356                                   ESCAPE  TST                    ;IF NO ERROR, THEN
6278  030362  004737  013246                   CALL    DATACK                 ;CALL DATA CHECK
6279  030366  005237  012660                   INC     PAT                    ;ADVANCE TO NEXT DATA PATTERN
6280  030372  022737  000010  012660  ICT23:   CMP     #8.,PAT                ;IF ALL DATA PATTERNS
6281  030400  001003                           BNE     UBT23                  ;DONE, THEN
6282  030402  052737  000010  002476           BIS     #DLPDN,FLAGST          ;SET FLAGST=DO_LOOP_DONE_FLAG
6283  030410  032737  000010  002476  UBT23:   BIT     #DLPDN,FLAGST          ;DOUNTIL FLAGST-DO_LOOP_DONE_FLAG
6284  030416  001747                           BEQ     BBT23                  ;IS SET
6285  030420  005037  012660                   CLR     PAT                    ;RESET DATA PATTERN
6286  030424                          XT23:    EXIT    TST
6287  030430                                   REGTBL
6288  030430                                   TTBL    EMBUFF,0
 (2)  030430  030250                                           T23TBL: .WORD   T23MSG
 (2)  030432  000020                                                   .WORD   EMBUFF
 (2)  030434  000000                                                   .WORD   0
 (2)  030436  177777                                                   .WORD   -1
 (3)  030440                                                   T23RTB:
 (3)  030440  177777                                                   .WORD   -1
6289  030442                                   FRUTBL  CTLINF
 (2)  030442                                                   T23FTB:
 (2)  030442  006646                                                   .WORD   CTLINF
 (2)  030444  177777                                                   .WORD   -1
6290  030446                                   ENDTST
```

```
6293                                    .SBTTL  TEST 24 -  WRD CNT INTEGRITY - LGC TST
 (2)  030450  000417                    BR      BGNT24          ;BR TO BGN TST
 (2)  030452  053440  042122  041440    T24MSG: .ASCIZ  / WRD CNT INTEGRITY - LGC TST/
 (2)          030510                    .EVEN
6294
6295                                    ;++
6296                                    ; TEST TO VERIFY ALL BITS OF WORD COUNT REGISTER AND CHECK THAT EXCEEDING
6297                                    ; THE WORD COUNT FOR DISKETTE DENSITY WILL BE DETECTED.
6298                                    ;-------------------------------------------------------------------------
6299                                    ; BGNTST
6300                                    ;       IF LOGIC TEST
6301                                    ;       : THEN-SETUP TEST IDENT
6302                                    ;       :       SET DENSITY CONTROL=DOUBLE
6303                                    ;       :       SET BUFFER LENGTH=128.
6304                                    ;       :       BGNDO
6305                                    ;       :       CALL FILL BUFFER
6306                                    ;       :       : IF NO ERROR (ESCAPE TEST)
6307                                    ;       :       : : THEN-CALL READ ERROR CODE
6308                                    ;       :       : :       IF NO ERROR (ESCAPE TEST)
6309                                    ;       :       : :       : THEN-IF WORD COUNTS NOT EQUAL
6310                                    ;       :       : :       :       : THEN-SETUP WORD COUNT ERROR
6311                                    ;       :       : :       :       :       CALL ERROR
6312                                    ;       :       : :       :       : ELSE-UPDATE WORD COUNT
6313                                    ;       :       : :       :       :       IF WORD COUNT=0
6314                                    ;       :       : :       :       :       : THEN-SET DO LOOP DONE FLAG
6315                                    ;       :       : :       :       :       ENDIF
6316                                    ;       :       : :       :       ENDIF
6317                                    ;       :       : :       ENDIF
6318                                    ;       :       : ENDIF
6319                                    ;       :       DOUNTIL DO LOOP DONE FLAG SET
6320                                    ;       :       NOP
6321                                    ;       ENDIF
6322                                    ; ENDTST
6323                                    ;-------------------------------------------------------------------------
6324                                    ; BOARD CALLOUT:
6325                                    ;       1.  CONTROLLER
6326                                    ;-------------------------------------------------------------------------
6327                                    ;--
```

```
6330  030510                                          TSETUP                   ;
 (2)  030510  012737  030670  002466         BGNT24:  MOV     #T24TBL,TSTID    ;SETUP TEST ID TBL-TEST# 24
 (2)  030516  032737  000001  002324         IAT24:   BIT     #LOGICT,TSTMOD   ;IF TEST MODE=LOGIC TEST
 (2)  030524  001457                                  BEQ     XT24             ;BIT SET, THEN
 (2)  030526  004737  020736                          CALL    LTSTUP           ;CALL LOGIC TEST SETUP
6331  030532  012737  000400  002412                  MOV     #DENBIT,DENSTY   ;SET DENSITY CONTROL=DOUBLE
6332  030540  012737  000200  002370                  MOV     #128.,WDCNT      ;SET WORD COUNT=128.
6333  030546  004737  010510                 BBT24:   CALL    FILBUF           ;CALL FILL BUFFER
6334  030552                                          ESCAPE  TST              ;IF NO ERROR THEN
6335  030556  004737  011340                          CALL    RDERCD           ;CALL READ ERROR CODE
6336  030562                                          ESCAPE  TST              ;IF NO ERROR THEN
6337  030566  105737  002443                 ICT24:   TSTB    WC               ;IF WORD COUNT
6338  030572  001420                                  BEQ     LCT24            ;NOT EQUAL 0, THEN
6339  030574  012737  000023  002520                  MOV     #WCERR,ERRNBR    ;SETUP ERR NBR=WORD COUNT ERROR
6340  030602  005037  002440                          CLR     REGACT           ;CLEAR REG ACTUAL
6341  030606  113737  002443  002440                  MOVB    WC,REGACT        ;SETUP WORD COUNT ACTUAL
6342  030614  005037  002436                          CLR     REGEXP           ;SETUP WORD COUNT EXPECTED
6343  030620  004737  003060                          CALL    ERROR            ;CALL ERROR
6344  030624  052737  000010  002476                  BIS     #DLPDN,FLAGST    ;SET FLAGST=DO LOOP DONE FLAG
6345  030632  000410                                  BR      UBT24            ;BR TO DOUNTIL 'B'
6346  030634  005337  002370                 LCT24:   DEC     WDCNT            ;DECREMENT WORD COUNT
6347  030640  005737  002370                 IDT24:   TST     WDCNT            ;IF WORD COUNT
6348  030644  001003                                  BNE     UBT24            ;EQUALS ZERO, THEN
6349  030646  052737  000010  002476                  BIS     #DLPDN,FLAGST    ;SET FLAGST=DO_LOOP_DONE_FLAG
6350  030654  032737  000010  002476         UBT24:   BIT     #DLPDN,FLAGST    ;DOUNTIL FLAGST=DO_LOOP_DONE_FLAG
6351  030662  001731                                  BEQ     BBT24            ;SET
6352  030664                                 XT24:    EXIT    TST
6353  030670                                          REGTBL
6354  030670                                          TTBL    0,RGPRT
 (2)  030670  030452                                                 T24TBL: .WORD   T24MSG
 (2)  030672  000000                                                         .WORD   0
 (2)  030674  000004                                                         .WORD   RGPRT
 (2)  030676  177777                                                         .WORD   -1
 (3)  030700                                                         T24RTB:
 (3)  030700  177777                                                         .WORD   -1
6355  030702                                          FRUTBL  CTLINF
 (2)  030702                                                         T24FTB:
 (2)  030702  006646                                                         .WORD   CTLINF
 (2)  030704  177777                                                         .WORD   -1
6356  030706                                          ENDTST
```

```
6359                                            .SBTTL  TEST 25 -  CONTROLLER-READ+WRITE ELECT - LGC TST
 (2)  030710  000424                                   BR      BGNT25          ;BR TO BGN TST
 (2)  030712  041440  047117  051124             T25MSG: .ASCIZ  / CONTROLLER-READ+WRITE ELECT - LGC TST/
 (2)          030762                                    .EVEN
6360
6361                                            ;++
6362                                            ; TEST TO VERIFY MINIMAL CONTROLLER BOARD-READ/WRITE ELECTRONICS BOARD
6363                                            ; INTERFACE VIA INITIALIZE OF A SELECTED DRIVE.
6364                                            ;-------------------------------------------------------------------------
6365                                            ; BGNTST
6366                                            ;       IF LOGIC TEST
6367                                            ;       :  THEN-SETUP TEST IDENT
6368                                            ;       :       NOP
6369                                            ;       :       ISSUE PROGRAMMED INITIALIZE
6370                                            ;       :       CALL ERROR CK
6371                                            ;       :       CALL READ ERROR CODE
6372                                            ;       :       IF NO ERROR (ESCAPE TEST)
6373                                            ;       :       :  THEN-CALL ERROR CK
6374                                            ;       :       ENDIF
6375                                            ;       :       NOP
6376                                            ;       ENDIF
6377                                            ; ENDTST
6378                                            ;-------------------------------------------------------------------------
6379                                            ; BOARD CALLOUT:
6380                                            ;       1.  CONTROLLER
6381                                            ;       2.  R/W ELECTRONICS
6382                                            ;-------------------------------------------------------------------------
6383                                            ;--
```

```
  6386  030762                                      TSETUP                          ;
   (2)  030762  012737  031054  002466     BGNT25:  MOV     #T25TBL,TSTID           ;SETUP TEST ID TBL-TEST# 25
   (2)  030770  032737  000001  002324     IAT25:   BIT     #LOGICT,TSTMOD          ;IF TEST MODE=LOGIC TEST
   (2)  030776  001424                              BEQ     XT25                    ;BIT SET, THEN
   (2)  031000  004737  020736                      CALL    LTSTUP                  ;CALL LOGIC TEST SETUP
  6387  031004  004737  010440                      CALL    INTIAL                  ;CALL INITIALIZE
  6388  031010  004737  017724                      CALL    ERRCHK                  ;CALL ERROR CHECK
  6389  031014  005237  002470                      INC     TCMDCT                  ;INCREMENT TST CMD CTR   *****
  6390  031020  052737  000200  002500              BIS     #RECTST,FLAGSP          ;SET READ ERROR CODE TEST=FLAGSP
  6391  031026  004737  011340                      CALL    RDERCD                  ;CALL READ ERROR CODE
  6392  031032                                      ESCAPE  TST                     ;IF NO ERROR
  6393  031036  004737  017724                      CALL    ERRCHK                  ;CALL ERROR CHECK
  6394  031042  042737  000200  002500              BIC     #RECTST,FLAGSP          ;CLEAR READ ERROR CODE TEST=FLAGSP
  6395  031050                             XT25:    EXIT    TST
  6396  031054                                      REGTBL  CEINIT,CSESND
   (1)          015046                                                          REGS1=CEINIT
   (1)          015076                                                          REGS2=CSESND
  6397  031054                                      TTBL    REGCK,0
   (2)  031054  030712                                              T25TBL:     .WORD   T25MSG
   (2)  031056  000001                                                          .WORD   REGCK
   (2)  031060  000000                                                          .WORD   0
   (2)  031062  177777                                                          .WORD   -1
   (3)  031064                                                      T25RTB:
   (3)  031064  015046                                                          .WORD   REGS1
   (3)  031066  015076                                                          .WORD   REGS2
   (3)  031070  177777                                                          .WORD   -1
  6398  031072                                      FRUTBL  CTLRWE
   (2)  031072                                                      T25FTB:
   (2)  031072  006651                                                          .WORD   CTLRWE
   (2)  031074  177777                                                          .WORD   -1
  6399  031076                                      ENDTST
```

```
 6402                                           .SBTTL  TEST 26 -  READ SECTOR-PRT:1 - LGC TST
  (2)  031100  000417                                  BR      BGNT26          ;BR TO BGN TST
  (2)  031102  051040  040505  020104           T26MSG: .ASCIZ  / READ SECTOR-PRT:1 - LGC TST/
  (2)          031140                                  .EVEN
 6403
 6404                                           ;++
 6405                                           ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A READ SECTOR IN
 6406                                           ; BOTH DENSITIES AND RETURN A VALID ERROR CODE.
 6407                                           ;-------------------------------------------------------------------
 6408                                           ; BGNTST
 6409                                           ;       IF LOGIC TEST
 6410                                           ;       :  THEN-SETUP TEST IDENT
 6411                                           ;       :       CALL DEVICE DENSITY CK
 6412                                           ;       :       SET DENSITY CONTROL=DISK DEN
 6413                                           ;       :       CALL READ SECTOR
 6414                                           ;       :       CALL READ ERROR CODE
 6415                                           ;       :       IF NO COMMAND ERRORS
 6416                                           ;       :       :  THEN-CALL ERROR CK
 6417                                           ;       :       :       CALL COMPLIMENT DENSITY
 6418                                           ;       :       :       CALL READ SECTOR
 6419                                           ;       :       :       CALL READ ERROR CODE
 6420                                           ;       :       :       IF NO COMMAND ERRORS
 6421                                           ;       :       :       :  THEN-CALL ERROR CK
 6422                                           ;       :       :       ENDIF
 6423                                           ;       :       NOP
 6424                                           ;       :       ENDIF
 6425                                           ;       ENDIF
 6426                                           ; ENDTST
 6427                                           ;-------------------------------------------------------------------
 6428                                           ; BOARD CALLOUT:
 6429                                           ;       1.  CONTROLLER
 6430                                           ;       2.  R/W ELECTRONICS
 6431                                           ;-------------------------------------------------------------------
 6432                                           ;--
```

```
6435  031140                                          TSETUP                  ;
 (2)  031140  012737  031256  002466        BGNT26: MOV     #T26TBL,TSTID   ;SETUP TEST ID TBL-TEST# 26
 (2)  031146  032737  000001  002324        IAT26:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  031154  001436                                BEQ     XT26            ;BIT SET, THEN
 (2)  031156  004737  020736                        CALL    LTSTUP          ;CALL LOGIC TEST SETUP
6436  031162  004737  017350                        CALL    DENCHK          ;CALL DENSITY CHECK
6437  031166  004737  020472                        CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
6438  031172  004737  011062                        CALL    READ            ;CALL READ SECTOR
6439  031176  004737  011340                        CALL    RDERCD          ;CALL READ ERROR CODE
6440  031202                                         ESCAPE  TST             ;IF NO COMMAND ERRORS, THEN
6441  031206  004737  017724                        CALL    ERRCHK          ;CALL ERROR CHECK
6442  031212  004737  020430                        CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
6443  031216  052737  004000  002476                BIS     #NEGTST,FLAGST  ;SET FLAGST=NEG TEST FLAG
6444  031224  012737  000030  002464                MOV     #DENERR,NGTSER  ;SETUP NEGTEST SET ERROR=DEN ERROR
6445  031232  004737  011062                        CALL    READ            ;CALL READ SECTOR
6446  031236  004737  011340                        CALL    RDERCD          ;CALL READ ERROR CODE
6447  031242                                         ESCAPE  TST             ;IF NO COMMAND ERRORS, THEN
6448  031246  004737  017724                        CALL    ERRCHK          ;CALL ERROR CHECK
6449  031252                                 XT26:   EXIT    TST
6450  031256                                         REGTBL  CSESAL
 (1)          015036                                                         REGS1=CSESAL
6451  031256                                         TTBL    REGCK,0
 (2)  031256  ;1102                                                 T26TBL: .WORD   T26MSG
 (2)  031260  000001                                                        .WORD   REGCK
 (2)  031262  000000                                                        .WORD   0
 (2)  031264  177777                                                        .WORD   -1
 (3)  031266                                                        T26RTB:
 (3)  031266  015036                                                        .WORD   REGS1
 (3)  031270  177777                                                        .WORD   -1
6452  031272                                         FRUTBL  CTLRWE
 (2)  031272                                                        T26FTB:
 (2)  031272  006651                                                        .WORD   CTLRWE
 (2)  031274  177777                                                        .WORD   -1
6453  031276                                         ENDTST
```

```
6456                                            .SBTTL  TEST 27 -  POSITIONING - LGC TST
 (2)  031300  000414                            BR      BGNT27          ;BR TO BGN TST
 (2)  031302  050040  051517  052111           T27MSG: .ASCIZ  / POSITIONING - LGC TST/
 (2)          031332                                    .EVEN
6457
6458                                            ;++
6459                                            ; TEST TO VERIFY THAT THE DRIVE WILL READ THE HEADERS ON ALL TRACKS OF
6460                                            ; THE DEIVE AS EXPECTED.
6461                                            ;-------------------------------------------------------------------------
6462                                            ; BGNTST
6463                                            ;       IF LOGIC TEST
6464                                            ;       :  THEN-SETUP TEST IDENT
6465                                            ;       :       SET TRACK INIT FLAG
6466                                            ;       :       SET SECTOR=10
6467                                            ;       :       BGNDO
6468                                            ;       :       :  CALL GET TRACK
6469                                            ;       :       :  CALL READ ERROR CODE
6470                                            ;       :       :  CALL READ SECTOR
6471                                            ;       :       :  IF NO COMMAND ERRORS (ESCAPE TST)
6472                                            ;       :       :  :  THEN-CALL ERROR CHECK
6473                                            ;       :       :  :       CALL TRACKS ERROR CK
6474                                            ;       :       :  :       CLEAR TRACK INIT FLAG
6475                                            ;       :       :  :       NOP
6476                                            ;       :       :  ENDIF
6477                                            ;       :       DOUNTIL TRACKS DONE, ABORT FLAG SET, OR TRACK ERRORS=10
6478                                            ;       :       NOP
6479                                            ;       ENDIF
6480                                            ; ENDTST
6481                                            ;-------------------------------------------------------------------------
6482                                            ; BOARD CALLOUT:
6483                                            ;       1.  CONTROLLER
6484                                            ;       2.  R/W ELECTRONICS
6485                                            ;-------------------------------------------------------------------------
6486                                            ;--
```

```
6489  031332                                        TSETUP                         ;
 (2)  031332  012737  031446  002466     BGNT27:   MOV     #T27TBL,TSTID      ;SETUP TEST ID TBL-TEST# 27
 (2)  031340  032737  000001  002324     IAT27:    BIT     #LOGICT,TSTMOD     ;IF TEST MODE=LOGIC TEST
 (2)  031346  001435                               BEQ     XT27               ;BIT SET, THEN
 (2)  031350  004737  020736                       CALL    LTSTUP             ;CALL LOGIC TEST SETUP
6490  031354  012737  000400  002510               MOV     #ITK!RTK,TKSCFG    ;SET TRK/SEC FLAG-->TRACK=INIT & RANDOM
6491  031362  004737  017350                       CALL    DENCHK             ;CALL DENSITY CHECK
6492  031366  004737  020472                       CALL    SDENC              ;CALL SET DENSITY CONTROL=DENSITY STATUS
6493  031372  012737  000010  002376               MOV     #10,SECTOR         ;SET SECTOR=10
6494  031400  004737  012662             BBT27:    CALL    GETTRK             ;CALL GET TRACK
6495  031404  004737  011062                       CALL    READ               ;CALL READ SECTOR
6496  031410  004737  011340                       CALL    RDERCD             ;CALL READ ERROR CODE
6497  031414                                       ESCAPE  TST                ;IF NO COMMAND ERRORS, THEN
6498  031420  004737  017516                       CALL    TKERCK             ;CALL TRACK ERROR CHECK
6499  031424  042737  000400  002510               BIC     #ITK,TKSCFG        ;CLEAR INT TRK FLAG
6500  031432  032737  001000  002476     UBT27:    BIT     #TRKDON,FLAGST     ;DO UNTIL FLAGST-TRACK DONE FLAG
6501  031440  001757                               BEQ     BBT27              ;SET,
6502  031442                             XT27:     EXIT    TST
6503  031446                                       REGTBL  CSESAL
 (1)          015036                                                          REGS1=CSESAL
6504  031446                                       TTBL    REGCK,0
 (2)  031446  031302                                                 T27TBL:  .WORD   T27MSG
 (2)  031450  000001                                                          .WORD   REGCK
 (2)  031452  000000                                                          .WORD   0
 (2)  031454  177777                                                          .WORD   -1
 (3)  031456                                                         T27RTB:
 (3)  031456  015036                                                          .WORD   REGS1
 (3)  031460  177777                                                          .WORD   -1
6505  031462                                       FRUTBL  CTLRWE
 (2)  031462                                                         T27FTB:
 (2)  031462  006651                                                          .WORD   CTLRWE
 (2)  031464  177777                                                          .WORD   -1
6506  031466                                       ENDTST
```

```
6509                                            .SBTTL  TEST 28 -  WRITE SECTOR-PRT:1 - LGC TST
 (2)  031470  000417                                   BR      BGNT28          ;BR TO BGN TST
 (2)  031472  053440  044522  042524           T28MSG: .ASCIZ  / WRITE SECTOR-PRT:1 - LGC TST/
 (2)                                                   .EVEN
6510
6511                                            ;++
6512                                            ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A WRITE SECTOR IN
6513                                            ; BOTH DENSITIES AND RETURN A VALID ERROR CODE.
6514                                            ;-------------------------------------------------------------------------
6515                                            ; BGNTST
6516                                            ;       IF LOGIC TEST
6517                                            ;       :  THEN-SETUP TEST IDENT
6518                                            ;       :       CALL DEVICE DENSITY CHECK
6519                                            ;       :       SET DENSITY CONTROL=DISK DEN
6520                                            ;       :       CALL WRITE SECTOR
6521                                            ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
6522                                            ;       :       :  THEN-CALL ERROR CHECK
6523                                            ;       :       :       CALL COMPLIMENT DENSITY CONTROL
6524                                            ;       :       :       CALL WRITE SECTOR
6525                                            ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
6526                                            ;       :       :       :  THEN-CALL ERROR CHECK
6527                                            ;       :       :       ENDIF
6528                                            ;       :       NOP
6529                                            ;       :       ENDIF
6530                                            ;       :       NOP
6531                                            ;       ENDIF
6532                                            ; ENDTST
6533                                            ;-------------------------------------------------------------------------
6534                                            ; BOARD CALLOUT:
6535                                            ;       1.  CONTROLLER
6536                                            ;       2.  R/W ELECTRONICS
6537                                            ;-------------------------------------------------------------------------
6538                                            ;--
```

```
6541  031530                                    TSETUP                             ;
 (2)  031530  012737  031642  002466   BGNT28:  MOV      #T28TBL,TSTID      ;SETUP TEST ID TBL-TEST# 28
 (2)  031536  032737  000001  002324   IAT28:   BIT      #LOGICT,TSTMOD     ;IF TEST MODE=LOGIC TEST
 (2)  031544  001434                            BEQ      XT28               ;BIT SET, THEN
 (2)  031546  004737  020736                    CALL     LTSTUP             ;CALL LOGIC TEST SETUP
6542  031552  004737  017350                    CALL     DENCHK             ;CALL DENSITY CHECK
6543  031556  004737  020472                    CALL     SDENC              ;CALL SET DENSITY CONTROL=DENSITY STATUS
6544  031562  004737  010744                    CALL     WRITE              ;CALL WRITE SECTOR
6545  031566                                    ESCAPE   TST                ;IF NO COMMAND ERROR, THEN
6546  031572  004737  017724                    CALL     ERRCHK             ;CALL ERROR CHECK
6547  031576  004737  020430                    CALL     CDENC              ;CALL COMPLIMENT DENSITY CONTROL
6548  031602  052737  004000  002476            BIS      #NEGTST,FLAGST     ;SET FLAGST-NEG TEST FLAG
6549  031610  012737  000030  002464            MOV      #DENERR,NGTSER     ;SETUP NEG TEST ERR ERR=DENSITY ERR
6550  031616  004737  010744                    CALL     WRITE              ;CALL WRITE
6551  031622  004737  011340                    CALL     RDERCD             ;CALL READ ERROR CODE
6552  031626                                    ESCAPE   TST                ;IF NO COMMAND ERROR
6553  031632  004737  017724                    CALL     ERRCHK             ;CALL ERROR CHECK
6554  031636                           XT28:    EXIT     TST
6555  031642                                    REGTBL   CSESAL
 (1)          015036                                                        REGS1=CSESAL
6556  031642                                    TTBL     REGCK,0
 (2)  031642  031472                                              T28TBL:  .WORD   T28MSG
 (2)  031644  000001                                                       .WORD   REGCK
 (2)  031646  000000                                                       .WORD   0
 (2)  031650  177777                                                       .WORD   -1
 (3)  031652                                                      T28RTB:
 (3)  031652  015036                                                       .WORD   REGS1
 (3)  031654  177777                                                       .WORD   -1
6557  031656                                    FRUTBL   CTLRWE
 (2)  031656                                                      T28FTB:
 (2)  031656  006651                                                       .WORD   CTLRWE
 (2)  031660  177777                                                       .WORD   -1
6558  031662                                    ENDTST
```

```
6561                                            .SBTTL  TEST 29 -  DELETED DATA WRITE PRT:1 - LGC TST
 (2)  031664  000422                             BR      BGNT29          ;BR TO BGN TST
 (2)  031666  042040  046105  052105             T29MSG: .ASCIZ  / DELETED DATA WRITE PRT:1 - LGC TST/
 (2)                                                     .EVEN
6562
6563                                            ;++
6564                                            ; TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISKETTE
6565                                            ; HEADER AND RETRIEVE THIS DATA ON A KNOWN GOOD DISKETTE.
6566                                            ;-------------------------------------------------------------------------
6567                                            ; BGNTST
6568                                            ;       IF LOGIC TEST
6569                                            ;       :  THEN-SETUP TEST IDENT
6570                                            ;       :       CALL DEVICE DENSITY CK
6571                                            ;       :       SET DENSITY CONTROL=DENSITY STATUS
6572                                            ;       :       SET DELETED DATA FLAG (BIT#3-CMD)
6573                                            ;       :       CALL WRITE SECTOR
6574                                            ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
6575                                            ;       :       :  THEN-CALL READ SECTOR
6576                                            ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
6577                                            ;       :       :       :  THEN-IF RXESR-DELETED DATA BIT NOT SET
6578                                            ;       :       :       :       :  THEN-SET ERROR NUMBER=DELETED DATA ERR
6579                                            ;       :       :       :       :       CALL ERROR
6580                                            ;       :       :       :       ENDIF
6581                                            ;       :       :       ENDIF
6582                                            ;       :       ENDIF
6583                                            ;       ENDIF
6584                                            ; ENDTST
6585                                            ;-------------------------------------------------------------------------
6586                                            ; BOARD CALLOUT:
6587                                            ;       1.  CONTROLLER
6588                                            ;       2.  R/W ELECTRONICS
6589                                            ;-------------------------------------------------------------------------
6590                                            ;--
```

```
6593 031732                                 TSETUP                    ;
 (2) 031732 012737 032056 002466    BGNT29: MOV    #T29TB',TSTID      ;SETUP TEST ID TBL-TEST# 29
 (2) 031740 032737 000001 002324    IAT29:  BIT    #LOGICT,TSTMOD     ;IF TEST MODE=LOGIC TEST
 (2) 031746 001441                          BEQ    XT29               ;BIT SET, THEN
 (2) 031750 004737 020736                   CALL   LTSTUP             ;CALL LOGIC TEST SETUP
6594 031754 004737 017350                   CALL   DENCHK             ;CALL DEVICE DENSITY CHECK
6595 031760 004737 020472                   CALL   SDENC              ;CALL SET DENSITY CONTROL=DENSITY STATUS
6596 031764 012737 000010 002402            MOV    #DLDCMD,DELDAT     ;SET DELETED DATA FLAG
6597 031772 004737 010744                   CALL   WRITE              ;CALL WRITE SECTOR
6598 031776                         IBT29:  ESCAPE TST                ;IF NO COMMAND ERROR, THEN
6599 032002 004737 017724                   CALL   ERRCHK             ;CALL ERROR CHECK
6600 032006 004737 011062                   CALL   READ               ;CALL READ SECTOR
6601 032012                         ICT29:  ESCAPE TST                ;IF NO COMMAND ERROR, THEN
6602 032016 032777 000100 150326    IDT29:  BIT    #DLDBIT,@RXDB      ;IF RXESR-DELETED DATA BIT
6603 032024 001006                          BNE    LCT29              ;NOT SET, THEN
6604 032026 012737 000032 002520            MOV    #DLDTER,ERRNBR     ;SETUP ERROR NUMBER=DELETED DATA ERROR
6605 032034 004737 003060                   CALL   ERROR              ;CALL ERROR
6606 032040 000404                          BR     XT29               ;EXIT TST
6607 032042 005037 002402           LCT29:  CLR    DELDAT             ;CLEAR DEL DATA MODE
6608 032046 004737 010744                   CALL   WRITE              ;CALL WRITE SECTOR - CLR DATA FIELD
6609 032052                         XT29:   EXIT   TST
6610 032056                                 REGTBL CSESAL
 (1)        015036                                                    REGS1=CSESAL
6611 032056                                 TTBL   REGCK,0
 (2) 032056 031666                                         T29TBL: .WORD   T29MSG
 (2) 032060 000001                                                 .WORD   REGCK
 (2) 032062 000000                                                 .WORD   0
 (2) 032064 177777                                                 .WORD   -1
 (3) 032066                                                T29RTB:
 (3) 032066 015036                                                 .WORD   REGS1
 (3) 032070 177777                                                 .WORD   -1
6612 032072                                 FRUTBL CTLRWE
 (2) 032072                                                T29FTB:
 (2) 032072 006651                                                 .WORD   CTLRWE
 (2) 032074 177777                                                 .WORD   -1
6613 032076                                 ENDTST
```

```
6616                                            .SBTTL  TEST 30 -  SET DENSITY - LGC TST
 (2)  032100  000414                                    BR      BGNT30          ;BR TO BGN TST
 (2)  032102  051440  052105  042040           T30MSG: .ASCIZ  / SET DENSITY - LGC TST/
 (2)          032132                                    .EVEN
6617
6618                                            ;++
6619                                            ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE SET DENSITY IN BOTH
6620                                            ; DENSITIES.  THE VALID WORD WILL ALSO BE CHECKED.  ALSO TO VERIFY THAT
6621                                            ; THE DRIVE WILL READ IN THE NEW DENSITY WITHOUT ERROR.
6622                                            ;-----------------------------------------------------------------------
6623                                            ; BGNTST
6624                                            ;       IF LOGIC TEST
6625                                            ;       :  THEN-SETUP TEST IDENT
6626                                            ;       :       CALL DEVICE DENSITY CHECK
6627                                            ;       :       SAVE DEVICE DENSITY
6628                                            ;       :       SET DENSITY CONTROL=SINGLE DEN
6629                                            ;       :       CALL SET DENSITY
6630                                            ;       :       IF NO COMMAND ERROR (ESCAPE TST)
6631                                            ;       :       :  THEN-CALL ERROR CHECK
6632                                            ;       :       :       SET VALIDITY WORD=ASCII 'K'
6633                                            ;       :       :       CALL SET DENSITY
6634                                            ;       :       :       CALL READ ERROR CODE
6635                                            ;       :       :       IF NO COMMAND ERROR (ESCAPE TST)
6636                                            ;       :       :       :  THEN-SET FLAGST NEG TEST FLAG
6637                                            ;       :       :       :       SETUP EXPECTED ERR=S.D. KEY WD ERR
6638                                            ;       :       :       :       CALL ERROR CHECK
6639                                            ;       :       :       :       SET DENSITY CONTROL=DOUBLE DENSITY
6640                                            ;       :       :       :       SET VALIDITY WORD=ASCII 'I'
6641                                            ;       :       :       :       CALL SET DENSITY
6642                                            ;       :       :       :       IF NO COMMAND ERROR (ESCAPE TST)
6643                                            ;       :       :       :       :  THEN-CALL ERROR CHECK
6644                                            ;       :       :       :       :       CALL DEVICE DENSITY CHECK
6645                                            ;       :       :       :       :       IF DEVICE DENSITY NOT=SET DENSITY
6646                                            ;       :       :       :       :       :  THEN-SET ERR MSG=DENSITY NOT SET
6647                                            ;       :       :       :       :       :       CALL ERROR CHECK
6648                                            ;       :       :       :       :       ENDIF
6649                                            ;       :       :       :       :       IF SAVED DEVICE DENSITY=DOUBLE DENSITY
6650                                            ;       :       :       :       :       :  THEN-SET DENSITY CONTROL=SINGLE DEN
6651                                            ;       :       :       :       :       ENDIF
6652                                            ;       :       :       :       ENDIF
6653                                            ;       :       :       ENDIF
6654                                            ;       :       ENDIF
6655                                            ;       ENDIF
6656                                            ; ENDTST
6657                                            ;-----------------------------------------------------------------------
6658                                            ; BOARD CALLOUT:
6659                                            ;       1.  CONTROLLER
6660                                            ;       2.  R/W ELECTRONICS
6661                                            ;-----------------------------------------------------------------------
6662                                            ;--
```

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 6665  032132                                   TSETUP                    ;
  (2)  032132  012737  032356  002466   BGNT30: MOV     #T30TBL,TSTID     ;SETUP TEST ID TBL-TEST# 30
  (2)  032140  032737  000001  002324   IAT30:  BIT     #LOGICT,TSTMOD    ;IF TEST MODE=LOGIC TEST
  (2)  032146  001501                           BEQ     XT30              ;BIT SET, THEN
  (2)  032150  004737  020736                   CALL    LTSTUP            ;CALL LOGIC TEST SETUP
 6666  032154  004737  017350                   CALL    DENCHK            ;CALL DENSITY CHECK
 6667  032160  013737  002414  002506           MOV     DENSTA,TSAVE1     ;SAVE DEVICE DENSITY
 6668  032166  005037  002412                   CLR     DENSTY            ;SET DENSITY CONTROL=SINGLE DENSITY
 6669  032172  004737  011172                   CALL    SETDN             ;CALL SET DENSITY
 6670  032176                                   ESCAPE  TST               ;IF NO COMMAND ERROR, THEN
 6671  032202  004737  017724                   CALL    ERRCHK            ;CALL ERROR CHECK
 6672  032206  012737  000113  002372           MOV     #'K,VARIFY        ;SET VALIDITY WORD=ASCII "K"
 6673  032214  004737  011172                   CALL    SETDN             ;CALL SET DENSITY
 6674  032220  004737  011340                   CALL    RDERCD            ;CALL READ ERROR CODE
 6675  032224                                   ESCAPE  TST               ;IF NO COMMAND ERROR
 6676  032230  052737  004000  002476           BIS     #NEGTST,FLAGST    ;SET FLAGST-NEG TEST FLAG
 6677  032236  012737  000036  002464           MOV     #SDKYWD,NGTSER    ;SETUP EXPECTED ERROR=SET DEN KEYWORD ERROR
 6678  032244  004737  017724                   CALL    ERRCHK            ;CALL ERROR CHECK
 6679  032250  012737  000400  002412           MOV     #DENBIT,DENSTY    ;SET DENSITY CONTROL=DOUBLE DENSITY
 6680  032256  012737  000111  002372           MOV     #'I,VARIFY        ;SET VALIDITY WORD=ASCII "I"
 6681  032264  042737  004000  002476           BIC     #NEGTST,FLAGST    ;CLEAR FLAGST-NEG TEST FLAG
 6682  032272  004737  011172                   CALL    SETDN             ;CALL SET DENSITY
 6683  032276                                   ESCAPE  TST               ;IF NO COMMAND ERROR, THEN
 6684  032302  004737  017724                   CALL    ERRCHK            ;CALL ERROR CHECK
 6685  032306  004737  017350                   CALL    DENCHK            ;CALL DENSITY CHECK
 6686  032312  023737  002414  002412           CMP     DENSTA,DENSTY     ;IF DENSITY DID
 6687  032320  001405                           BEQ     IBT30             ;NOT SET, THEN
 6688  032322  012737  000035  002520           MOV     #STDNER,ERRNBR    ;SET ERROR NBR=DENSITY DIDN'T SET ERROR
 6689  032330  004737  003060                   CALL    ERROR             ;CALL ERROR
 6690  032334  005737  002506           IBT30:  TST     TSAVE1            ;IF SAVED DENSITY
 6691  032340  001404                           BEQ     XT30              ;EQUALS DOUBLE DEN, THEN
 6692  032342  005037  002412                   CLR     DENSTY            ;SET DENSITY CONTROL=SINGLE DEN
 6693  032346  004737  011172                   CALL    SETDN             ;CALL SET DENSITY
 6694  032352                           XT30:   EXIT    TST
 6695  032356                                   REGTBL  CSESAL
  (1)          015036                                                     REGS1=CSESAL
 6696  032356                                   TTBL    REGCK,0
  (2)  032356  032102                                           T30TBL:   .WORD   T30MSG
  (2)  032360  000001                                                     .WORD   REGCK
  (2)  032362  000000                                                     .WORD   0
  (2)  032364  177777                                                     .WORD   -1
  (3)  032366                                                   T30RTB:
  (3)  032366  015036                                                     .WORD   REGS1
  (3)  032370  177777                                                     .WORD   -1
 6697  032372                                   FRUTBL  CTLRWE
  (2)  032372                                                   T30FTB:
  (2)  032372  006651                                                     .WORD   CTLRWE
  (2)  032374  177777                                                     .WORD   -1
 6698  032376                                   ENDTST
```

```
6701                                            .SBTTL  TEST 31 -  SECTOR ADR - LGC TST
 (2)  032400  000413                                    BR      BGNT31          ;BR TO BGN TST
 (2)  032402  051440  041505  047524             T31MSG: .ASCIZ  / SECTOR ADR - LGC TST/
 (2)                                                    .EVEN
6702
6703                                            ;++
6704                                            ; TEST TO VERIFY THAT THE CONTROLLER WILL HANDLE ALL LEGAL AND ILLEGAL
6705                                            ; SECTOR ADDRESSES PROPERLY.
6706                                            ;-------------------------------------------------------------------------
6707                                            ; BGNTST
6708                                            ;       IF LOGIC TEST
6709                                            ;       :  THEN-SETUP TEST IDENT
6710                                            ;       :       SET TRACK ADR=0
6711                                            ;       :       SET SECTOR LEGAL FALG
6712                                            ;       :       SET SECTOR INIT
6713                                            ;       :       BGNDO
6714                                            ;       :       :  CALL GET SECTOR ADR
6715                                            ;       :       :  CALL READ SECTOR
6716                                            ;       :       :  CALL READ ERROR CODE
6717                                            ;       :       :  IF FINI FLAG NOT SET
6718                                            ;       :       :  :  THEN-
6719                                            ;       :       :  :     IF SECTOR ADR NOT=TARGET SECTOR ADR
6720                                            ;       :       :  :     :  THEN-SETUP TO PRINT ERROR
6721                                            ;       :       :  :     :       CALL ERROR
6722                                            ;       :       :  :     :  ELSE-CALL ERROR CK
6723                                            ;       :       :  :     ENDIF
6724                                            ;       :       :  ENDIF
6725                                            ;       :       DOUNTIL SECTORS DONE FLAG SET OR ABORT FLAG SET
6726                                            ;       :       CLEAR SECTORS DONE FLAG
6727                                            ;       :       SET DONE TIME OUT MULTIPLIER=1C0
6728                                            ;       :       SET NEG TEST FLAG
6729                                            ;       :       BGNDO
6730                                            ;       :       :  CALL READ SECTOR
6731                                            ;       :       :  CALL READ ERROR CODE
6732                                            ;       :       :  IF FINI FLAG NOT SET
6733                                            ;       :       :  :  THEN-IF SECTOR ADR NOT=TARGET SECTOR ADR
6734                                            ;       :       :  :        :  THEN-SET ERR=SECTOR ADR ERROR
6735                                            ;       :       :  :        :       CALL ERROR
6736                                            ;       :       :  :        :  ELSE-CALL ERROR CHECK
6737                                            ;       :       :  :        ENDIF
6738                                            ;       :       :  ENDIF
6739                                            ;       :       DOUNTIL SECTORS DONE FLAG SET OR FINI FLAG SET
6740                                            ;       :       NOP
6741                                            ;       ENDIF
6742                                            ; ENDTST
6743                                            ;-------------------------------------------------------------------------
6744                                            ; BOARD CALLOUT:
6745                                            ;       1.  CONTROLLER
6746                                            ;-------------------------------------------------------------------------
6747                                            ;--
```

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6750  032430                                          TSETUP                  ;
 (2)  032430  012737  032730  002466          BGNT31: MOV     #T31TBL,TSTID   ;SETUP TEST ID TBL-TEST# 31
 (2)  032436  032737  000001  002324          IAT31:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  032444  001527                                  BEQ     XT31            ;BIT SET, THEN
 (2)  032446  004737  020736                          CALL    LTSTUP          ;CALL LOGIC TEST SETUP
6751  032452  004737  010440                          CALL    INTIAL          ;CALL INITAILIZE
6752  032456  004737  017350                          CALL    DENCHK          ;CALL DENSITY CHECK
6753  032462  004737  020472                          CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
6754  032466  012737  001002  002510                  MOV     #ISC!SSC,TKSCFG ;SETUP SECTOR FLAGS=INITIALIZE & SEQUENCE
6755  032474  004737  013104                  BBT31:  CALL    GETSEC          ;CALL GET SECTOR
6756  032500  004737  011062                          CALL    READ            ;CALL READ SECTOR
6757  032504  004737  011340                          CALL    RDERCD          ;CALL READ ERROR CODE
6758  032510  005737  002454                  ICT31:  TST     FIN             ;IF FINI FLAG
6759  032514  001024                                  BNE     UBT31           ;NOT SET, THEN
6760  032516  123737  002376  002447          IDT31:  CMPB    SECTOR,TSEC     ;IF SECTOR ADR & DEVICE TARGET SECTOR
6761  032524  001416                                  BEQ     LDT31           ;NOT =, THEN
6762  032526  012737  000042  002520                  MOV     #SECAER,ERRNBR  ;SETUP ERR NBR=SECTOR ADDRESS ERROR
6763  032534  052737  000002  002500                  BIS     #SCPRT,FLAGSP   ;SET FLAGSP=-PRINT SECTOR ADDRESS FLAG
6764  032542  004737  003060                          CALL    ERROR           ;CALL ERROR
6765  032546  042737  000002  002500                  BIC     #SCPRT,FLAGSP   ;CLEAR FLAGSP-PRINT SECTOR ADDRESS FLAG
6766  032554  004737  010440                          CALL    INTIAL          ;CALL INITAILIZE
6767  032560  000402                                  BR      UBT31           ;BR TO DOUNTIL 'B'
6768  032562  004737  017724                  LDT31:  CALL    ERRCHK          ;CALL ERROR CHECK
6769  032566  005737  002452                  UBT31:  TST     ABORT           ;DOUNTIL ABORT FLAG
6770  032572  001004                                  BNE     EBT31           ;SET OR
6771  032574  032737  002000  002476                  BIT     #SECDON,FLAGST  ;FLAGST-SECTOR DONE FLAG
6772  032602  001734                                  BEQ     BBT31           ;SET
6773  032604  042737  002000  002476          EBT31:  BIC     #SECDON,FLAGST  ;CLEAR FLAGST-SECTOR DONE FLAG
6774  032612  052737  004000  002476                  BIS     #NEGTST,FLAGST  ;SET FLAGST-NEG TEST FLAG
6775  032620  012737  000003  002464                  MOV     #RDERR,NGTSER   ;SETUP EXPECTED ERROR=READ ERROR (SECTOR NOT FOU
6776  032626  012737  000100  002474                  MOV     #100,DNWTMT     ;SET DONE WAIT MULTIPLIER SO NO TIME OUT
6777  032634  012737  000000  002376                  MOV     #0,SECTOR       ;SET SECTOR ADR=0
6778  032642  004737  011062                  BET31:  CALL    READ            ;CALL READ SECTOR
6779  032646  004737  011340                          CALL    RDERCD          ;CALL READ ERROR CODE
6780  032652  005737  002454                  IFT31:  TST     FIN             ;IF FINI FLAG
6781  032656  001017                                  BNE     EFT31           ;NOT SET, THEN
6782  032660  123737  002376  002447          IGT31:  CMPB    SECTOR,TSEC     ;IF SECTOR ADR AND TARGET SECTOR
6783  032666  001411                                  BEQ     LGT31           ;NOT EQUAL, THEN
6784  032670  052737  000002  002500                  BIS     #SCPRT,FLAGSP   ;SET FLAGSP=-PRINT SECTOR ADDRESS FLAG
6785  032676  012737  000042  002520                  MOV     #SECAER,ERRNBR  ;SETUP ERR NBR=SECTOR ADDRESS ERROR
6786  032704  004737  003060                          CALL    ERROR           ;CALL ERROR
6787  032710  000402                                  BR      EFT31           ;CALL TO END 'G'
6788  032712  004737  017724                  LGT31:  CALL    ERRCHK          ;CALL ERROR CHECK
6789  032716  012737  000012  002474          EFT31:  MOV     #12,DNWTMT      ;RESET DONE WAIT MUTIPLIER TO NORMAL
6790  032724                                  XT31:   EXIT    TST
6791  032730                                          REGTBL  CSESAL
 (1)              015036                                                     REGS1=CSESAL
6792  032730                                          TTBL    REGCK,0
 (2)  032730  032402                                                 T31TBL: .WORD   T31MSG
 (2)  032732  000001                                                         .WORD   REGCK
 (2)  032734  000000                                                         .WORD   0
 (2)  032736  177777                                                         .WORD   -1
 (3)  032740                                                         T31RTB:
 (3)  032740  015036                                                         .WORD   REGS1
 (3)  032742  177777                                                         .WORD   -1
6793  032744                                          FRUTBL  CTLRWE
```

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    (2)  032744                                                    T31FTB:
    (2)  032744  006651                                                    .WORD   CTLRWE
    (2)  032746  177777                                                    .WORD   -1
  6794   032750                                  ENDTST
```

```
 6797                                   .SBTTL  TEST 32 -  TRACK ADR - LGC TST
  (2)  032752  000413                           BR      BGNT32          ;BR TO BGN TST
  (2)  032754  052040  040522  045503  T32MSG: .ASCIZ  / TRACK ADR - LGC TST/
  (2)          033002                           .EVEN
 6798
 6799                                   ;++
 6800                                   ; TEST TO VERIFY THAT THE CONTROLLER WILL HANDLE ALL LEGAL AND ILLEGAL
 6801                                   ; TRACK ADDRESSES PROPERLY.
 6802                                   ;-------------------------------------------------------------------------
 6803                                   ; BGNTST
 6804                                   ;       IF LOGIC TEST
 6805                                   ;       : THEN-SETUP TEST IDENT
 6806                                   ;       :       SET TRACK INIT & SEQUENCE FLAGS
 6807                                   ;       :       BGNDO
 6808                                   ;       :       : BGNDO
 6809                                   ;       :       : :  CALL GET TRACK ADR
 6810                                   ;       :       : :  CLEAR TRACK INIT FLAG
 6811                                   ;       :       : :  CALL READ SECTOR
 6812                                   ;       :       : :  CALL READ ERROR CODE
 6813                                   ;       :       : :  IF FINI FLAG NOT SET
 6814                                   ;       :       : : : THEN-
 6815                                   ;       :       : : :    IF TRACK ADR NOT=TARGET TRACK ADR
 6816                                   ;       :       : : :    : THEN-CALL LOGIC TEST ERROR
 6817                                   ;       :       : : :    ENDIF
 6818                                   ;       :       : : :    IF ILLEGAL FLAG NOT SET
 6819                                   ;       :       : : :    : THEN-IF TRACK ADR NOT=UNIT TRACK ADR
 6820                                   ;       :       : : :    :       : THEN-SETUP TRACK ADR ERR & CALL ERROR
 6821                                   ;       :       : : :    :       : ELSE-IF ERROR CODE=40
 6822                                   ;       :       : : :    :       :       : THEN-CALL LOGIC TEST ERROR
 6823                                   ;       :       : : :    :       :       ENDIF
 6824                                   ;       :       : : :    :       ENDIF
 6825                                   ;       :       : : :    : ELSE-IF TRACK ADR=UNIT TRACK ADR
 6826                                   ;       :       : : :    :       : THEN-SETUP TRACK ADR ERR & CALL ERROR
 6827                                   ;       :       : : :    :       : ELSE-IF ERROR CODE NOT=40
 6828                                   ;       :       : : :    :       :       : THEN-CALL LOGIC TEST ERROR
 6829                                   ;       :       : : :    :       :       ENDIF
 6830                                   ;       :       : : :    :       ENDIF
 6831                                   ;       :       : : :    ENDIF
 6832                                   ;       :       : : ENDIF
 6833                                   ;       :       : DOUNTIL TRACKS DONE FLAG SET OR ABORT FLAG SET
 6834                                   ;       :       : SET TRACK INIT FLAG
 6835                                   ;       :       : IF TRACKS LEGAL FLAG SET
 6836                                   ;       :       : : THEN-SET TRACKS ILLEGAL FLAG
 6837                                   ;       :       : : ELSE-SET TRACKS LEGAL FLAG
 6838                                   ;       :       : ENDIF
 6839                                   ;       :       DOUNTIL TRACKS LEGAL FLAG SET
 6840                                   ;       ENDIF
 6841                                   ; ENDTST
 6842                                   ;-------------------------------------------------------------------------
 6843                                   ; BOARD CALLOUT:
 6844                                   ;       1.  CONTROLLER
 6845                                   ;-------------------------------------------------------------------------
 6846                                   ;--
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033002                                    TSETUP                        ;
033002 012737 033336 002466     BGNT32:  MOV    #T32TBL,TSTID         ;SETUP TEST ID TBL-TEST# 32
033010 032737 000001 002324     IAT32:   BIT    #LOGICT,TSTMOD        ;IF TEST MODE=LOGIC TEST
033016 001545                            BEQ    XT32                  ;BIT SET, THEN
033020 004737 020736                     CALL   LTSTUP                ;CALL LOGIC TEST SETUP
033024 004737 017350                     CALL   DENCHK                ;CALL DENSITY CHECK
033030 004737 020472                     CALL   SDENC                 ;CALL SET DENSITY CONTROL=DENSITY STATUS
033034 012737 000401 002510              MOV    #ITK!STK,TKSCFG       ;SET INITIALIZE & SEQUENCE TRACKS FLAG (TRACK/SE
033042 000240                   BBT32:   NOP                          ;
033044 004737 012662            BCT32:   CALL   GETTRK                ;CALL GET TRACK ADR
033050 042737 000401 002510              BIC    #ITK!STK,TKSCFG       ;CLEAR INITIALIZE TRACKS FLAG
033056 004737 011062                     CALL   READ                  ;CALL READ SECTOR
033062 004737 011340                     CALL   RDERCD                ;CALL READ ERROR CODE
033066 005737 002454            IDT32:   TST    FIN                   ;IF FINI FLAG
033072 001062                            BNE    UCT32                 ;NOT SET, THEN
033074 123737 002374 002446     IET32:   CMPB   TRACK,TTRK            ;IF TRACK ADR & TARGET TRACK
033102 001405                            BEQ    EET32                 ;NOT EQUAL, THEN
033104 012737 000041 002520              MOV    #TRKAER,ERRNBR        ;SETUP ERR NBR=TRACK ADDRESS ERROR
033112 004737 003060                     CALL   ERROR                 ;CALL ERROR
033116 013705 002420            EET32:   MOV    DRVOFF,R5             ;SET R5=DRIVE BYTE OFFSET
033122 032737 010000 002476     IFT32:   BIT    #ILLGAL,FLAGST        ;IF ILLEGAL FLAG
033130 001024                            BNE    IIT32                 ;NOT SET, THEN
033132 123765 002374 002444     IGT32:   CMPB   TRACK,CTKO(R5)        ;IF TRACK ADR & CURRENT TRACK OF SELECTED DRV (R
033140 001406                            BEQ    IHT32                 ;NOT EQUAL, THEN
033142 012737 000041 002520              MOV    #TRKAER,ERRNBR        ;SETUP ERR NBR=TRACK ADDRESS ERROR
033150 004737 003060                     CALL   ERROR                 ;CALL ERROR
033154 000431                            BR     UCT32                 ;BR TO DOUNTIL 'C'
033156 122737 000040 002442     IHT32:   CMPB   #40,XERUUT            ;IF ERR CODE
033164 001025                            BNE    UCT32                 ;SET=40, THEN
033166 012737 000021 002520              MOV    #RECERR,ERRNBR        ;SETUP ERRNBR=READ ERR CODE-ERR WRG
033174 004737 003060                     CALL   ERROR                 ;CALL ERROR
033200 000417                            BR     UCT32                 ;BR TO DOUNTIL 'C'
033202 123765 002374 002444     IIT32:   CMPB   TRACK,CTKO(R5)        ;IF TRACK ADR & CURRENT TRACK OF SELECTED DRV (R
033210 001004                            BNE    IJT32                 ;EQUAL, THEN
033212 012737 000041 002520              MOV    #TRKAER,ERRNBR        ;SETUP ERR NBR=TRACK ADR ERROR
033220 000407                            BR     UCT32                 ;BR TO DOUNTIL 'C'
033222 122737 000040 002442     IJT32:   CMPB   #40,XERUUT            ;IF ERR CODE NOT
033230 001403                            BEQ    UCT32                 ;SET=40
033232 012737 000021 002520              MOV    #RECERR,ERRNBR        ;SETUP ERR NBR=READ ERR CODE-ERR WRG
033240 005737 002454            UCT32:   TST    FIN                   ;DOUNTIL FINI FLAG
033244 001004                            BNE    ECT32                 ;SET OR
033246 032737 001000 002476              BIT    #TRKDON,FLAGST        ;TRACKS DONE FLAG
033254 001673                            BEQ    BCT32                 ;SET
033256 042737 001000 002476     ECT32:   BIC    #TRKDON,FLAGST        ;CLEAR TRACKS DONE FLAG
033264 005037 002510                     CLR    TKSCFG                ;CLR TRACK FLAGS
033270 052737 000004 002510              BIS    #ILTK,TKSCFG          ;SETUP ILLEGAL TRACKS FLAG
033276 032737 010000 002476     IKT32:   BIT    #ILLGAL,FLAGST        ;IF ILLEGAL FLAG
033304 001004                            BNE    LKT32                 ;NOT SET, THEN
033306 052737 010000 002476              BIS    #ILLGAL,FLAGST        ;SET ILLEGAL FLAG
033314 000403                            BR     UBT32                 ;BR TO DOUNTIL 'C'
033316 042737 010000 002476     LKT32:   BIC    #ILLGAL,FLAGST        ;CLEAR ILLEGAL FLAG
033324 032737 010000 002476     UBT32:   BIT    #ILLGAL,FLAGST        ;DOUNTIL ILLEGAL FLAG CLEAR
033332                          XT32:    EXIT   TST
033336                                   REGTBL
033336                                   TTBL   0,0
033336 032754                                          T32TBL: .WORD   T32MSG
```

```
   (2)  033340  000000                                                .WORD   0
   (2)  033342  000000                                                .WORD   0
   (2)  033344  177777                                                .WORD   -1
   (3)  033346                                                T32RTB:
   (3)  033346  177777                                                .WORD   -1
  6900  033350                                 FRUTBL  CTLONL
   (2)  033350                                                T32FTB:
   (2)  033350  006654                                                .WORD   CTLONL
   (2)  033352  177777                                                .WORD   -1
  6901  033354                                 ENDTST
```

```
 6904                                           .SBTTL  TEST 33 -  READ SECTOR-PRT:2 - LGC TST
  (2)  033356  000417                                   BR      BGNT33          ;BR TO BGN TST
  (2)  033360  051040  040505  020104            T33MSG: .ASCIZ  / READ SECTOR-PRT:2 - LGC TST/
  (2)          033416                                   .EVEN
 6905
 6906                                           ;++
 6907                                           ; TEST TO VERIFY THAT THE CONTROLLER WILL COMPLETE A READ SECTOR IN
 6908                                           ; BOTH DENSITIES & RETURN A VALID ERROR CODE. SIMILAR TO
 6909                                           ; READ SECTOR PRT:1, BUT WITH DISKETTE IN OPPOSITE DENSITY.
 6910                                           ;-------------------------------------------------------------------------
 6911                                           ; BGNTST
 6912                                           ;       IF LOGIC TEST
 6913                                           ;       :  THEN-SETUP TEST IDENT
 6914                                           ;       :       CALL DEVICE DENSITY CK
 6915                                           ;       :       SET DENSITY CONTROL=DISK DEN
 6916                                           ;       :       CALL READ SECTOR
 6917                                           ;       :       CALL READ ERROR CODE
 6918                                           ;       :       IF NO COMMAND ERRORS
 6919                                           ;       :       :  THEN-CALL ERROR CK
 6920                                           ;       :       :       CALL COMPLIMENT DENSITY
 6921                                           ;       :       :       CALL READ SECTOR
 6922                                           ;       :       :       CALL READ ERROR CODE
 6923                                           ;       :       :       IF NO COMMAND ERRORS
 6924                                           ;       :       :       :  THEN-CALL ERROR CK
 6925                                           ;       :       :       ENDIF
 6926                                           ;       :       NOP
 6927                                           ;       ENDIF
 6928                                           ; ENDTST
 6929                                           ;-------------------------------------------------------------------------
 6930                                           ; BOARD CALLOUT:
 6931                                           ;       1.  CONTROLLER
 6932                                           ;       2.  R/W ELECTRONICS
 6933                                           ;-------------------------------------------------------------------------
 6934                                           ;--
 6935
```

```
 6938  033416                                          TSETUP
  (2)  033416  012737  033534  002466          BGNT33: MOV     #T33TBL,TSTID   ;SETUP TEST ID TBL-TEST# 33
  (2)  033424  032737  000001  002324          IAT33:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
  (2)  033432  001436                                  BEQ     XT33            ;BIT SET, THEN
  (2)  033434  004737  020736                          CALL    LTSTUP          ;CALL LOGIC TEST SETUP
 6939  033440  004737  017350                          CALL    DENCHK          ;CALL DENSITY CHECK
 6940  033444  004737  020472                          CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
 6941  033450  004737  011062                          CALL    READ            ;CALL READ SECTOR
 6942  033454  004737  011340                          CALL    RDERCD          ;CALL READ ERROR CODE
 6943  033460                                          ESCAPE  TST             ;IF NO COMMAND ERRORS, THEN
 6944  033464  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
 6945  033470  004737  020430                          CALL    CDENC           ;CALL COMPLIMENT DENSITY CONTROL
 6946  033474  052737  004000  002476                  BIS     #NEGTST,FLAGST  ;SET FLAGST=NEG TEST FLAG
 6947  033502  012737  000030  002464                  MOV     #DENERR,NGTSER  ;SETUP NEGTEST SET ERROR=DEN ERROR
 6948  033510  004737  011062                          CALL    READ            ;CALL READ SECTOR
 6949  033514  004737  011340                          CALL    RDERCD          ;CALL READ ERROR CODE
 6950  033520                                          ESCAPE  TST             ;IF NO COMMAND ERRORS, THEN
 6951  033524  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
 6952  033530                                  XT33:   EXIT    TST
 6953  033534                                          REGTBL  CSESAL
  (1)          015036                                                         REGS1=CSESAL
 6954  033534                                          TTBL    REGCK,0
  (2)  033534  03??60                                                  T33TBL: .WORD   T33MSG
  (2)  033536  000001                                                          .WORD   REGCK
  (2)  033540  000000                                                          .WORD   0
  (2)  033542  177777                                                          .WORD   -1
  (3)  033544                                                          T33RTB:
  (3)  033544  015036                                                          .WORD   REGS1
  (3)  033546  177777                                                          .WORD   -1
 6955  033550                                          FRUTBL  CTLRWE
  (2)  033550                                                          T33FTB:
  (2)  033550  006651                                                          .WORD   CTLRWE
  (2)  033552  177777                                                          .WORD   -1
 6956
 6957  033554                                          ENDTST
```

```
 6960                                           .SBTTL  TEST 34 -  WRITE SECTOR-PRT:2 - LGC TST
  (2)  033556  000417                                   BR      BGNT34          ;BR TO BGN TST
  (2)  033560  053440  044522  042524            T34MSG: .ASCIZ  / WRITE SECTOR-PRT:2 - LGC TST/
  (2)                                                   .EVEN
 6961
 6962                                           ;++
 6963                                           ; TEST TOVERIFY THAT THE CONTROLLER WILL COMPLETE A WRITE SECTOR IN
 6964                                           ; BOTH DENSITIES & RETURN A VALID ERROR CODE, SIMILAR TO WRITE
 6965                                           ; SECTOR PRT:1, BUT WITH DISKETTE IN OPPOSITE DENSITY.
 6966                                           ;-------------------------------------------------------------------
 6967                                           ; BGNTST
 6968                                           ;       IF LOGIC TEST
 6969                                           ;       :  THEN-SETUP TEST IDENT
 6970                                           ;       :       CALL DEVICE DENSITY CHECK
 6971                                           ;       :       SET DENSITY CONTROL=DISK DEN
 6972                                           ;       :       CALL WRITE SECTOR
 6973                                           ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
 6974                                           ;       :       :  THEN-CALL ERROR CHECK
 6975                                           ;       :       :       CALL COMPLIMENT DENSITY CONTROL
 6976                                           ;       :       :       CALL WRITE SECTOR
 6977                                           ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
 6978                                           ;       :       :       :  THEN-CALL ERROR CHECK
 6979                                           ;       :       :       ENDIF
 6980                                           ;       :       NOP
 6981                                           ;       :       ENDIF
 6982                                           ;       :       NOP
 6983                                           ;       ENDIF
 6984                                           ; ENDTST
 6985                                           ;-------------------------------------------------------------------
 6986                                           ; BOARD CALLOUT:
 6987                                           ;       1.  CONTROLLER
 6988                                           ;       2.  R/W ELECTRONICS
 6989                                           ;-------------------------------------------------------------------
 6990                                           ;--
 6991
```

```
6994  033616                                     TSETUP
 (2)  033616  012737  033730  002466     BGNT34: MOV     #T34TBL,TSTID    ;SETUP TEST ID TBL-TEST# 34
 (2)  033624  032737  000001  002324     IAT34:  BIT     #LOGICT,TSTMOD   ;IF TEST MODE=LOGIC TEST
 (2)  033632  001434                             BEQ     XT34             ;BIT SET, THEN
 (2)  033634  004737  020736                     CALL    LTSTUP           ;CALL LOGIC TEST SETUP
6995
6996  033640  004737  017350                     CALL    DENCHK           ;CALL DENSITY CHECK
6997  033644  004737  020472                     CALL    SDENC            ;CALL SET DENSITY CONTROL=DENSITY STATUS
6998  033650  004737  010744                     CALL    WRITE            ;CALL WRITE SECTOR
6999  033654                                     ESCAPE  TST              ;IF NO COMMAND ERROR, THEN
7000  033660  004737  017724                     CALL    ERRCHK           ;CALL ERROR CHECK
7001  033664  004737  020430                     CALL    CDENC            ;CALL COMPLIMENT DENSITY CONTROL
7002  033670  052737  004000  002476             BIS     #NEGTST,FLAGST   ;SET FLAGST-NEG TEST FLAG
7003  033676  012737  000030  002464             MOV     #DENERR,NGTSER   ;SETUP NEG TEST ERR ERR=DENSITY ERR
7004  033704  004737  010744                     CALL    WRITE            ;CALL WRITE
7005  033710  004737  011340                     CALL    RDERCD           ;CALL READ ERROR CODE
7006  033714                                     ESCAPE  TST              ;IF NO COMMAND ERROR
7007  033720  004737  017724                     CALL    ERRCHK           ;CALL ERROR CHECK
7008  033724                             XT34:   EXIT    TST
7009  033730                                     REGTBL  CSESAL
 (1)          015036                                                      REGS1=CSESAL
7010  033730                                     TTBL    REGCK,0
 (2)  033730  033560                                             T34TBL:  .WORD   T34MSG
 (2)  033732  000001                                                      .WORD   REGCK
 (2)  033734  000000                                                      .WORD   0
 (2)  033736  177777                                                      .WORD   -1
 (3)  033740                                                     T34RTB:
 (3)  033740  015036                                                      .WORD   REGS1
 (3)  033742  177777                                                      .WORD   -1
7011  033744                                     FRUTBL  CTLRWE
 (2)  033744                                                     T34FTB:
 (2)  033744  006651                                                      .WORD   CTLRWE
 (2)  033746  177777                                                      .WORD   -1
7012
7013  033750                                     ENDTST
```

```
 7016                                   .SBTTL  TEST 35 -  DELETED DATA WRITE PRT:2 - LGC TST
  (2)  033752  000422                             BR      BGNT35          ;BR TO BGN TST
  (2)  033754  042040  046105  052105  T35MSG: .ASCIZ  / DELETED DATA WRITE PRT:2 - LGC TST/
  (2)                                            .EVEN
 7017
 7018                                   ;++
 7019                                   ; TEST TO VERIFY THAT THE DEVICE SET A DELETED DATA MARK ON THE DISKETTE
 7020                                   ; HEADER AND RETRIEVE THIS DATA ON A KNOWN GOOD DISKETTE.  THIS IS DONE
 7021                                   ; IN OPPOSITE DENSITY OF TEST 1.
 7022                                   ;-------------------------------------------------------------------------
 7023                                   ; BGNTST
 7024                                   ;       IF LOGIC TEST
 7025                                   ;       :  THEN-SETUP TEST IDENT
 7026                                   ;       :       CALL DEVICE DENSITY CK
 7027                                   ;       :       SET DENSITY CONTROL=DENSITY STATUS
 7028                                   ;       :       SET DELETED DATA FLAG (BIT#3-CMD)
 7029                                   ;       :       CALL WRITE SECTOR
 7030                                   ;       :       IF NO COMMAND ERROR (ESCAPE TEST)
 7031                                   ;       :       :  THEN-CALL READ SECTOR
 7032                                   ;       :       :       IF NO COMMAND ERROR (ESCAPE TEST)
 7033                                   ;       :       :       :  THEN-IF RXESR-DELETED DATA B.T NOT SET
 7034                                   ;       :       :       :       :  THEN-SET ERROR NUMBER=DELETED DATA ERR
 7035                                   ;       :       :       :       :       CALL ERROR
 7036                                   ;       :       :       :       ENDIF
 7037                                   ;       :       :       ENDIF
 7038                                   ;       :       ENDIF
 7039                                   ;       ENDIF
 7040                                   ; ENDTST
 7041                                   ;-------------------------------------------------------------------------
 7042                                   ; BOARD CALLOUT:
 7043                                   ;       1.  CONTROLLER
 7044                                   ;       2.  R/W ELECTRONICS
 7045                                   ;-------------------------------------------------------------------------
 7046                                   ;--
 7047
```

```
                                                        TSETUP
7050  034020
 (2)  034020  012737  034150  002466          BGNT35: MOV     #T35TBL,TSTID   ;SETUP TEST ID TBL-TEST# 35
 (2)  034026  032737  000001  002324          IAT35:  BIT     #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  034034  001443                                  BEQ     XT35            ;BIT SET, THEN
 (2)  034036  004737  020736                          CALL    LTSTUP          ;CALL LOGIC TEST SETUP
7051  034042  004737  017350                          CALL    DENCHK          ;CALL DEVICE DENSITY CHECK
7052  034046  004737  020472                          CALL    SDENC           ;CALL SET DENSITY CONTROL=DENSITY STATUS
7053  034052  012737  000010  002402                  MOV     #DLDCMD,DELDAT  ;SET DELETED DATA FLAG
7054  034060  004737  010744                          CALL    WRITE           ;CALL WRITE SECTOR
7055  034064  004737  011340                          CALL    RDERCD          ;CALL READ ERROR CODE
7056  034070                                  IBT35:  ESCAPE  TST             ;IF NO COMMAND ERROR, THEN
7057  034074  004737  017724                          CALL    ERRCHK          ;CALL ERROR CHECK
7058  034100  004737  011062                          CALL    READ            ;CALL READ SECTOR
7059  034104                                  ICT35:  ESCAPE  TST             ;IF NO COMMAND ERROR, THEN
7060  034110  032777  000100  146234          IDT35:  BIT     #DLDBIT,@RXDB   ;IF RXESR-DELETED DATA BIT
7061  034116  001006                                  BNE     LDT35           ;NOT SET, THEN
7062  034120  012737  000032  002520                  MOV     #DLDTER,ERRNBR  ;SETUP ERROR NUMBER=DELETED DATA ERROR
7063  034126  004737  003060                          CALL    ERROR           ;CALL ERROR
7064  034132  000404                                  BR      XT35            ;BR TO EXIT TST
7065  034134  005037  002402                  LDT35:  CLR     DELDAT          ;CLEAR DELETED DATA MODE
7066  034140  004737  010744                          CALL    WRITE           ;CALL WRITE SECTOR - CLR DEL DAT FIELD
7067  034144                                  XT35:   EXIT    TST
7068  034150                                          REGTBL  CSESAL
 (1)          015036                                                         REGS1=CSESAL
7069  034150                                          TTBL    REGCK,0
 (2)  034150  033754                                                  T35TBL: .WORD   T35MSG
 (2)  034152  000001                                                          .WORD   REGCK
 (2)  034154  000000                                                          .WORD   0
 (2)  034156  177777                                                          .WORD   -1
 (3)  034160                                                          T35RTB:
 (3)  034160  015036                                                          .WORD   REGS1
 (3)  034162  177777                                                          .WORD   -1
7070  034164                                          FRUTBL  CTLRWE
 (2)  034164                                                          T35FTB:
 (2)  034164  006651                                                          .WORD   CTLRWE
 (2)  034166  177777                                                          .WORD   -1
7071
7072  034170                                          ENDTST
```

```
 7075                                          .SBTTL  TEST 36 -  DISKETTE & DENSITY DATA CHECK - LGC TST
  (2)  034172  000425                                  BR      BGNT36          ;BR TO BGN TST
  (2)  034174  042040  051511  042513          T36MSG: .ASCIZ  / DISKETTE & DENSITY DATA CHECK - LGC TST/
  (2)          034246                                  .EVEN
 7076
 7077                                          ;++
 7078                                          ; TEST TO VERIFY WITH A KNOWN GOOD DISKETTE THAT THE DEVICE WILL READ
 7079                                          ; AND WRITE TO THE DISKETTE WITHOUT DATA ERRORS.  BOTH DENSITIES WILL
 7080                                          ; BE DONE.
 7081                                          ;-------------------------------------------------------------------
 7082                                          ; BGNTST
 7083                                          ;       IF LOGIC TEST
 7084                                          ;       : THEN-SETUP TEST IDENT
 7085                                          ;       :       CALL DENSITY CHECK
 7086                                          ;       :       CALL SETUP DENSITY CONTROL=DENSITY STATUS
 7087                                          ;       :       CLEAR DO FLAG
 7088                                          ;       :       BGNDO
 7089                                          ;       :       : SET DATA PATTERN=RANDOM
 7090                                          ;       :       : CALL DATA PATTERN GENERATOR
 7091                                          ;       :       : SET TRACK & SECTOR INITIALIZE FLAG
 7092                                          ;       :       : SET TRACK & SECTOR=SEQUENCE MODE
 7093                                          ;       :       : BGNDO
 7094                                          ;       :       : : CALL GET TRACK & GET SECTOR
 7095                                          ;       :       : : CALL FILL BUFFER
 7096                                          ;       :       : : CALL WRITE SECTOR
 7097                                          ;       :       : : SETUP TO CLEAR RX INTERNAL BUFFER
 7098                                          ;       :       : : CALL FILL BUFFER-CLEAR INTERNAL BUFFER
 7099                                          ;       :       : : SETUP DATA BUFFER
 7100                                          ;       :       : : CALL READ SECTOR
 7101                                          ;       :       : : CALL EMPTY BUFFER
 7102                                          ;       :       : : CALL DATA CHECK
 7103                                          ;       :       : : IF ERROR
 7104                                          ;       :       : :   THEN-CALL DATA ANYLSIS ERROR
 7105                                          ;       :       : : ENDIF
 7106                                          ;       :       : DOUNTIL TRACK & SECTOR DONE OR DATA ERRORS=10
 7107                                          ;       :       : CALL CHANGE DENSITY
 7108                                          ;       :       : SET DENSITY CONTROL=DENSITY STATUS
 7109                                          ;       :       : INCREMENT DO FLAG
 7110                                          ;       :       DOUNTIL DO FLAG=2 OR ABORT FLAG SET
 7111                                          ;       :       NOP
 7112                                          ;       ENDIF
 7113                                          ; ENDTST
 7114                                          ;-------------------------------------------------------------------
 7115                                          ; BOARD CALLOUT:
 7116                                          ;       1.  CONTROLLER
 7117                                          ;       2.  R/W ELECTRONICS
 7118                                          ;-------------------------------------------------------------------
 7119                                          ;--
```

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7122
7123  034246                                        TSETUP
 (2)  034246  012737  034504  002466  BGNT36: MOV   #T36TBL,TSTID   ;SETUP TEST ID TBL-TEST# 36
 (2)  034254  032737  000001  002324  IAT36:  BIT   #LOGICT,TSTMOD  ;IF TEST MODE=LOGIC TEST
 (2)  034262  001506                          BEQ   XT36            ;BIT SET, THEN
 (2)  034264  004737  020736                  CALL  LTSTUP          ;CALL LOGIC TEST SETUP
7124  034270  005037  002504                  CLR   TTEMP1          ;CLEAR COUNTER (TEST TEMP #1)
7125  034274  004737  017350                  CALL  DENCHK          ;CALL DENSITY CHECK
7126  034300  004737  020472                  CALL  SDENC           ;CALL SETUP DENSITY CONTROL=DENSITY STATUS
7127  034304  005037  012660          BBT36:  CLR   PAT             ;SETUP DATA PATTERN=RANDOM
7128  034310  004737  012306                  CALL  STDATP          ;CALL SET DATA PATTERN
7129  034314  052737  001400  002510          BIS   #ITK!ISC,TKSCFG ;SET TRACK & SECTOR INITIALIZE FLAGS
7130  034322  052737  000003  002510          BIS   #STK!SSC,TKSCFG ;SET TRACK & SECTOR SEQUENCE MODE FLAGS
7131  034330  004737  012662          BCT36:  CALL  GETTRK          ;CALL GET TRACK
7132  034334  004737  013104                  CALL  GETSEC          ;CALL GET SECTOR
7133  034340  004737  010510                  CALL  FILBUF          ;CALL FULL BUFFER
7134  034344  004737  010744                  CALL  WRITE           ;CALL WRITE SECTOR
7135  034350  004737  013642                  CALL  CLRDAT          ;CALL CLEAR DATA BUFFER
7136  034354  012737  036622  002362          MOV   #DATBUF,FILADR  ;SETUP TO CLEAR RX INTERNAL BUFFER
7137  034362  004737  010510                  CALL  FILBUF          ;CLEAR THE BUFFER
7138  034366  012737  036222  002362          MOV   #DATPAT,FILADR  ;SETUP DATA BUFFER ADDRESS
7139  034374  004737  011062                  CALL  READ            ;CALL READ SECTOR
7140  034400  004737  010626                  CALL  EMPBUF          ;CALL EMPTY BUFFER
7141  034404  004737  013246                  CALL  DATACK          ;CALL DATA CHECK
7142  034410  022737  000012  013520  UCT36:  CMP   #10.,DAERCT     ;DOUNTIL DATA ERROR COUNT
7143  034416  001410                          BEQ   ECT36           ;EQUALS 10, OR
7144  034420  032737  001000  002476          BIT   #TRKDON,FLAGST  ;TRACKS DONE FLAG
7145  034426  001740                          BEQ   BCT36           ;SET, AND
7146  034430  032737  002000  002476          BIT   #SECDON,FLAGST  ;SECTORS DONE FLAG
7147  034436  001734                          BEQ   BCT36           ;SET
7148  034440  004737  020430          ECT36:  CALL  CDENC           ;CALL COMPLIMENT DENSITY CONTROL
7149  034444  004737  011172                  CALL  SETDN           ;CALL SET DENSITY
7150  034450  005237  002504                  INC   TTEMP1          ;INCREMENT COUNTER
7151  034454  012737  000100  002370          MOV   #64.,WDCNT      ;SET WORD COUNT
7152  034462  005737  002454          UBT36:  TST   FIN             ;DOUNTIL FIN FLAG
7153  034466  001004                          BNE   XT36            ;SET OR
7154  034470  022737  000002  002504          CMP   #2,TTEMP1       ;COUNT
7155  034476  001302                          BNE   BBT36           ;EAUALS 2
7156  034500                          XT36:   EXIT  TST
7157
7158  034504                          REGTBL  CSESAL
 (1)              015036                                  REGS1=CSESAL
7159  034504                          TTBL    REGCK,0
 (2)  034504  034174                                  T36TBL: .WORD   T36MSG
 (2)  034506  000001                                          .WORD   REGCK
 (2)  034510  000000                                          .WORD   0
 (2)  034512  177777                                          .WORD   -1
 (3)  034514                                          T36RTB:
 (3)  034514  015036                                          .WORD   REGS1
 (3)  034516  177777                                          .WORD   -1
7160  034520                          FRUTBL  CTLRWE
 (2)  034520                                          T36FTB:
 (2)  034520  006651                                          .WORD   CTLRWE
 (2)  034522  177777                                          .WORD   -1
7161
7162  034524                                  ENDTST
```

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7170  034526                                  ENDMOD
7171
```

```
 7174                                   .NLIST  BEX,ME
 7175                                   .TITLE PARAMETER CODING
 7186
 7187                                   .SBTTL  HARDWARE PARAMETER CODING SECTION
 7215
 7216  034526                                   BGNMOD
 7217
 7218                                   ;++
 7219                                   ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
 7220                                   ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
 7221                                   ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 7222                                   ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
 7223                                   ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 7224                                   ; WITH THE OPERATOR.
 7225                                   ;--
 7226
 7227  034526                                   BGNHRD
 7228
 7229  034530                                   GPRMA   MSG1,0,0,0,177777,YES
 7230  034540                                   GPRMA   MSG2,2,0,0,177777,YES
 7231  034550                                   GPRMD   MSG3,4,0,177777,0.,1.,YES
 7232  034562                                   GPRMD   MSG4,6,0,177777,0.,1.,YES
 7233  034574                                   GPRMD   MSG4A,10,0,177777,0,7,YES
 7234
 7240  034606                                   ENDHRD
 7241                                   ;-------------------------------------------------------------------------
 7242  034606  054122  041040  051525  MSG1:   .ASCIZ  /RX BUS ADR/
 7243  034621     126  041505  047524  MSG2:   .ASCIZ  /VECTOR ADR/
 7244  034634  051104  053111  020105  MSG3:   .ASCIZ  /DRIVE #   /
 7245  034647     105  050130  053440  MSG4:   .ASCIZ  /EXP WRD-CR/
 7246  034662  051102  046055  053105  MSG4A:  .ASCIZ  /BR-LEVEL  /
 7247          034676                           .EVEN
 7248                                   ;-------------------------------------------------------------------------
 7249
 7256
```

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 7259                                        .SBTTL  SOFTWARE PARAMETER CODING SECTION
 7260
 7261                                        ;++
 7262                                        ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
 7263                                        ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
 7264                                        ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 7265                                        ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
 7266                                        ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 7267                                        ; WITH THE OPERATOR.
 7268                                        ;--
 7269
 7270  034676                                        BGNSFT
 7271
 7272  034700                                        GPRML   MSG6,2,1,YES
 7273  034706                                        XFERF   1$
 7274  034710                                        GPRML   MSG7,2,2,YES
 7275  034716                                1$:     GPRML   MSG8,4,LOGICT,YES
 7276  034724                                        GPRML   MSG9,4,FUNCTT,YES
 7277  034732                                        GPRMD   MSG10,0,0,177777,1,177777,YES
 7278  034744                                        GPRMA   MSG14,24,0,0,177777,YES
 7279  034754                                        GPRMD   MSG15,26,0,030000,0,3,YES
 7280  034766                                        GPRML   MSG17,2,100,YES
 7281  034774                                        XFERF   6$
 7282  034776                                        GPRML   MSG20,12,20,YES
 7283  035004                                6$:     GPRML   MSG5,12,SIDFLG,YES
 7290  035012                                        ENDSFT
 7291                                        ;-----------------------------------------------------------------------
 7292          000015                                CR==15                  ;CARRIAGE RETURN
 7293          000012                                LF==12                  ;LINE FEED
 7294  035012  054105  040520  051516        MSG5:   .ASCIZ  /EXPANSION WORD TYPE <CR> /
 7295  035044  042524  052123  044040        MSG6:   .ASCIZ  /TEST HELP /
 7296  035057     104  040511  047107        MSG7:   .ASCII  /DIAGNOSTIC MODES ARE:/<CR><LF>
 7297  035106  020040  020040  020040                .ASCII  /       LOGIC TEST, FUNCTION TEST, OR BOTH/<CR><LF>
 7298  035160  020040  026440  052506                .ASCII  /   -FUNCTION TESTS (1-10)/<CR><LF>
 7299  035213     040  020040  020040                .ASCII  /       ACT AS QUICK VERIFY & REPORT FAILING FUNCTIONS/<CR><LF>
 7300  035301     040  020040  046055                .ASCII  /   -LOGIC TESTS (11-36)/<CR><LF>
 7301  035332  020040  020040  020040                .ASCII  /       ANALYZE FAILURE & GIVE ERROR INFO/<CR><LF>
 7302  035403     040  020040  020040                .ASCII  /       REPORT FIELD REPLACEABLE UNITS "FRU'S"/<CR><LF>
 7303  035461     040  020040  020040                .ASCII  /        ->DEVICE FATAL THRESHOLD LEVEL (DVTL) IS SET = 1/<CR><LF
 7304  035552  020040  020040  020040                .ASCII  /          "DVTL" = NO. OF HARD ERRS THAT CAUSE DEVICE FATAL ERR/<
 7308  035651     124  050131  020105                .ASCIZ  /TYPE "CR" TO CONTINUE/
 7309  035677     114  043517  041511        MSG8:   .ASCIZ  /LOGIC TEST MODE    /
 7310  035722  052506  041516  044524        MSG9:   .ASCIZ  /FUNCTION TEST MODE/
 7311  035745     110  051101  020104        MSG10:  .ASCIZ  /HARD ERR -> DEVICE FATAL THRESHOLD LVL/
 7312  036014  047516  026516  054105        MSG14:  .ASCIZ  /NON-EXISTANT MEM ADR (NXM TST)/
 7313  036053     105  052130  047105        MSG15:  .ASCIZ  /EXTENDED ADR BITS: 13 & 12 (NPR-NXM TST)/
 7314  036124  042524  052123  041440        MSG17:  .ASCIZ  /TEST CONTROL FLAGS /
 7315  036150  020040  050040  044522        MSG20:  .ASCIZ  /   PRINT ONLY 10 DATA ERRORS & CONTINUE /
 7316                                        ;-----------------------------------------------------------------------
 7317          036222                                .EVEN
```

```
 7320
 7321                                   .SBTTL  -    RX02 FILL BUFFER AREA
 7322
 7323                                   ;-------------------------------------------------------------------
 7324  036222  000400                   DATPAT:
 7327                                   ;------------------------------------------------ ------------------
 7328
 7329                                   .SBTTL  -    RX02 EMPTY BUFFER AREA
 7330
 7331                                   ;-------------------------------------------------------------------
 7332  036622  000400                   DATBUF:
 7335  037222  000000                           .WORD   0
 7336  037224  000000                           .WORD   0
 7337                                   ;-------------------------------------------------------------------
 7344                                   .SBTTL  -    PATCH AREA
 7345                                   ;-------------------------------------------------------------------
 7346  037226  000000                   PATCH:  0                       ;PATCH AREA
 7347          037630                   .=.+400
 7348                                   ;-------------------------------------------------------------------
 7349  037630                                   LASTAD
  (3)  037634                           L$LAST::
 7350  037634                                   ENDMOD
 7351
 7352  037634                                   BGNSETUP        2
 7353  037634                                   BGNPTAB
 7354  037640  177170                           177170
 7355  037642  000264                           264
 7356  037644  000000                           0
 7357  037646  000000                           0
 7358  037650  000005                           5
 7359  037652                                   ENDPTAB
 7360  037652                                   BGNPTAB
 7361  037656  177170                           177170
 7362  037660  000264                           264
 7363  037662  000001                           1
 7364  037664  000000                           0
 7365  037666  000005                           5
 7366  037670                                   ENDPTAB
 7367  037670                                   ENDSETUP
 7368          000001                   .END
```

```
ABORT   002452          1797#   2046*   2741*   4811*   4892    5080*   5084    5113*   6075*   6082*   6769
ACLOW = 000010          1586#   4208    5746
ACLOWD= 000037          1647#
ACLOWF= 000050          1653#   3952    4210    5748    5836
ADR   = 000020 G        1566#
ADRTST  022066          4970*   5079#
ADSCMS  007760          2652    2657    2661#
ADTKMS  010257          2691    2700    2705    2711    2719#
ALGO2E= 000040          1648#
ASSEMB= 000010          1100
AWDN    012032          2927*   2951*   3288*   3314*   3379#
AWTR    012110          2977*   2981*   3013*   3017*   3050*   3054*   3085*   3089*   3120*   3180*   3410#
BACDB   013652          3718#   3721
BADCK   013276          3662#   3696
BADWRD  014702          3790*   3811*   3883    3886    3922#
BAUWCH  011700          3336#   3348
BBT10   024314          5513#   5518
BBT21   027600          6166#   6181
BBT23   030336          6273#   6284
BBT24   030546          6333#   6351
BBT27   031400          6494#   6501
BBT31   032474          6755#   6772
BBT32   033042          6853#
BBT36   034304          7127#   7155
BBT7    023460          5356#   5374
BCGSC   013202          3635    3642#   3645
BCT32   033044          6854#   6887
BCT36   034330          7131#   7145    7147
BET31   032642          6778#
BGNT1   022364          5124    5144#
BGNT10  024254          5486    5509#
BGNT11  024412          5527    5560#
BGNT12  024650          5589    5622#
BGNT13  025074          5645    5678#
BGNT14  025316          5704    5732#
BGNT15  025546          5760    5782#
BGNT16  025662          5794    5827#
BGNT17  026276          5859    5888#
BGNT18  026452          5908    5949#
BGNT19  027146          6044    6072#
BGNT2   022514          5158    5177#
BGNT20  027370          6093    6115#
BGNT21  027534          6130    6161#
BGNT22  030166          6206    6224#
BGNT23  030306          6234    6271#
BGNT24  030510          6293    6330#
BGNT25  030762          6359    6386#
BGNT26  031140          6402    6435#
BGNT27  031332          6456    6489#
BGNT28  031530          6509    6541#
BGNT29  031732          6561    6593#
BGNT3   022650          5191    5207#
BGNT30  032132          6616    6665#
BGNT31  032430          6701    6750#
BGNT32  033002          6797    6849#
BGNT33  033416          6904    6938#
```

```
BGNT34  033616            6960    6994#
BGNT35  034020            7016    7050#
BGNT36  034246            7075    7123#
BGNT4   022766            5218    5235#
BGNT5   023102            5246    5264#
BGNT6   023230            5276    5299#
BGNT7   023414            5317    5351#
BGNT8   023664            5381    5404#
BGNT9   024036            5423    5458#
BITCNT  014672            3896*   3899    3909*   3912    3914*   3918#
BITLIM  014674            3793*   3814*   3912    3919#
BITOFF  014676            3792*   3813*   3889    3891*   3894    3920#
BIT0  = 000001 G          1566#   1589    1592    1597    1687    1705
BIT00 = 000001 G          1566#
BIT01 = 000002 G          1566#
BIT02 = 000004 G          1566#
BIT03 = 000010 G          1566#
BIT04 = 000020 G          1566#
BIT05 = 000040 G          1566#
BIT06 = 000100 G          1566#
BIT07 = 000200 G          1566#
BIT08 = 000400 G          1566#
BIT09 = 001000 G          1566#
BIT1  = 000002 G          1566#   1588    1593    1598    1688    1706
BIT10 = 002000 G          1566#   1580    1696    1720
BIT11 = 004000 G          1566#   1573    1579    1697    1719
BIT12 = 010000 G          1566#   1594    1698    1712    3342
BIT13 = 020000 G          1566#   1699    3352    4446
BIT14 = 040000 G          1566#   1572    1700    1713    2038    2570    4057
BIT15 = 100000 G          1566#   1571    1701    1714
BIT2  = 000004 G          1566#   1587    1601    1689    1707    2105
BIT3  = 000010 G          1566#   1570    1586    1690    1708
BIT4  = 000020 G          1566#   1578    1585    1691    1718    3354    3390    3430
BIT5  = 000040 G          1566#   1577    1584    1692    4239    4272
BIT6  = 000100 G          1566#   1583    1693    1709
BIT7  = 000200 G          1566#   1576    1582    1694    1710
BIT8  = 000400 G          1566#   1575    1581    1595    1711
BIT9  = 001000 G          1566#   1574    1596    1695
BOE   = 000400 G          1566#
BRONPT  012372            3493*   3501*   3507#
BTRK    002451            1793#   4078
BTRP4 = 000004            1590#   5081    5083    6076    6083
BTRP6 = 000006            1591#
BYTCNT  013514            3659*   3660*   3694*   3695    3700#
BYTNUM  013516            3661*   3662    3689    3693*   3701#
CABLES= 000010            1673#
CDENC   020430            4516#   5363*   5371*   5469*   6442*   6547*   6945*   7001*   7148*
CDERCK  011544            2928*   2986*   3022*   3125*   3189*   3256#
CDMS    010177            2698    2716#
CEINIT= 015046            3993#   6228    6396
CKBITS  014522            3795*   3816*   3882#
CKERR = 020000            1699#
CLRCR   021122            4600*   4621*   4666#
CLRDAT  013642            3697*   3716#   7135*
CLRDEV  010472            2949#
CLRERR  010300            2051*   2735#
```

```
CLRRGS  017124          4068* 4175#
CMD     002400          1761# 2925* 2926  2975* 2976  3011* 3012  3049  3084  3119  3151  3177* 3178*
                        3179  3210* 3211* 3229  3230* 3232* 3233* 3284  3425  3841  3843* 3844* 3845
                        3851* 3854  4053  4055  4057  4061  4342  4666*
CMDERR= 000020          1718# 2021  2587  3424
CMDMSG  007164          2576  2594# 4063
CMDM0   007237          2594  2604#
CMDM1   007255          2595  2605#
CMDM2   007274          2596  2606#
CMDM3   007313          2597  2607#
CMDM4   007331          2598  2608#
CMDM5   007347          2599  2609#
CMDM6   007374          2600  2610#
CMDM7   007430          2601  2611#
CMDM8   007452          2572  2612# 4059
CMDPE   007502          2585  2613#
CMERMS  007216          2578  2603#
CMFTMS  007204          2567  2602#
CMPWRD  014700          3791* 3812* 3882  3921#
CONTRL= 000002          1670# 2478  2484  2487  2490  2525  2526  2527  2528  2529  2530  2531  2532
                        2533  2534  2535  2536  2537  2538  2539  2540
CONTSW= 000022          1678#
CR    = 000015  G       7292# 7296  7297  7298  7299  7300  7301  7302  7303  7304
CRCERB= 000001          1589#
CRCERR= 000004          1619# 3949  4037
CSERTB  014776          3794  3965#
CSESAL= 015036          3992# 5376  5418  5481  5521  6450  6503  6555  6610  6695  6791  6953  7009
                        7068  7158
CSESIT= 015056          3994# 5788  5847
CSESND= 015076          3996# 5902  5991  6396
CSESRS= 015066          3995# 5902
CSONLY= 015026          3991# 5153  5186  5213  5241  5271  5312
CSRCHK  013750          3777#
CSRCMP  014260          3773* 3781* 3782  3784  3791  3827#
CSRERR= 000033          1643# 2018  3965  3966  3967  3968  3969  3970  3971  3972  3973  3974  3975
                        3976  5573  5580  5687  5694
CSRMSK  014262          3774* 3779  3780  3828#
CSRSET  014270          3780* 3781  3831# 3855* 3856*
CTK0    002444          1788# 2697  4071  4348  6867  6877
CTK1    002445          1789# 2695  4072  4355
CTLINF= 006646          2483# 5904  6230  6289  6355
CTLONL= 006654          2489# 6900
CTLRWE= 006651          2486# 6398  6452  6505  6557  6612  6697  6793  6955  7011  7070  7160
C$AU  = 000052          1100# 4990
C$AUTO= 000061          1100# 4971
C$BRK = 000022          1100# 3344  3383  3417
C$BSEG= 000004          1100#
C$BSUB= 000002          1100#
C$CEFG= 000045          1100#
C$CLCK= 000062          1100#
C$CLEA= 000012          1100# 4916
C$CLOS= 000035          1100#
C$CLP1= 000006          1100#
C$CVEC= 000036          1100# 4908  5083  6083
C$DCLN= 000044          1100# 3265  4215  4296  4812
C$DODU= 000051          1100# 3264  4214  4295  5089
```

```
C$DRPT= 000024  1100#
C$DU  = 000053  1100#  4948
C$EDIT= 000003  1100#  1146
C$ERDF= 000055  1100#
C$ERHR= 000056  1100#
C$ERRO= 000060  1100#  2129
C$FRSF= 000054  1100#  5088
C$ERSO= 000057  1100#
C$ESCA= 000010  1100#  6275  6277  6334  6336  6392  6440  6447  6497  6545  6552  6598  6601
                6670  6675  6683  6943  6950  6999  7006  7056  7059
C$ESEG= 000005  1100#
C$ESUB= 000003  1100#
C$ETST= 000001  1100#  5155  5188  5215  5243  5273  5314  5378  5420  5483  5523  5586  5642
                5701  5757  5791  5856  5905  5994  6090  6127  6203  6231  6290  6356  6399
                6453  6506  6558  6613  6698  6794  6901  6957  7013  7072  7162
C$EXIT= 000032  1100#  5152  5185  5212  5240  5270  5311  5375  5417  5480  5520  5582  5639
                5697  5753  5786  5846  5900  5990  6085  6123  6197  6227  6286  6352  6395
                6449  6502  6554  6609  6694  6790  6897  6952  7008  7067  7156
C$GETB= 000026  1100#
C$GETW= 000027  1100#
C$GMAN= 000043  1100#  5832  5840
C$GPHR= 000042  1100#  4804
C$GPLO= 000030  1100#
C$GPRI= 000040  1100#
C$INIT= 000011  1100#  4831
C$INLP= 000020  1100#
C$MANI= 000050  1100#  5829
C$MEM = 000031  1100#
C$MSG = 000023  1100#  1920  1924  1928  2213
C$OPEN= 000034  1100#
C$PNTB= 000014  1100#  1930  1933  1936  1939  1942
C$PNTF= 000017  1100#  4810  5831  5839
C$PNTS= 000016  1100#
C$PNTX= 000015  1100#  1945  1948  1951  1954  1957
C$QIO = 000377  1100#
C$RDBU= 000007  1100#  4784
C$REFG= 000047  1100#  4777  4779  4782  4794  4798
C$RESE= 000033  1100#  3313  4909  5145  5561  5623  5679  5733
C$REVI= 000003  1100#  1146
C$RFLA= 000021  1100#  4775
C$RPT = 000025  1100#  4747
C$SEFG= 000046  1100#
C$SPRI= 000041  1100#  3334  3356  6117  6164
C$SVEC= 000037  1100#  4808  5081  6076
C$TPRI= 000013  1100#
DAERCT  013520  3657*  3667*  3668  3702#  7142
DATABF= 000055  1658#
DATACK  013246  3657#  5309*  6278*  7141*
DATASB  013522  3672*  3690  3703#
DATAWS  013524  3673*  3691  3704#
DATA0   012430  3508  3516#
DATA1   012446  3509  3522#
DATBUF  036622  3664  3716  4643  5965*  5966*  5968*  5974  5980  5986  7136  7332#
DATBYT  012656  3516*  3522*  3525*  3537*  3540*  3543*  3547*  3550*  3554*  3565  3566  3577#
DATCK = 000004  1689#
DATER = 000005  1620#  3677
```

```
DATPAT  036222          3502    3605    3663    4645    7138    7324#
DBRERR= 000034          1644#   3630    5637
DDCFLG= 000002          1688#   4519    4523    4533    4536    4646    5208    5236    5265    5300
DELDAT  002402          1762#   3046    3867    4672*   5408*   5413*   6596*   6607*   7053*   7065*
DENBIT= 000400          1575#   3177    3863    4281    4522    4648    5969    6331    6679
DENCHK  017350          4271#   5352*   5406*   5459*   5511*   6436*   6491*   6542*   6594*   6660*   6685*   6752*   6850*
                        6939*   6996*   7051*   7125*
DENDSK= 000020          1631#   3954    4293    4487    5743
DENERR= 000030          1585#   1640#   3953    4041    5365    5741    6444    6549    6947    7003
DENMIX= 000031          1641#
DENSTA  002414          1767#   4281*   4283*   4291    4530    4531    6667    6686
DENSTY  002412          1766#   3232    4517    4520*   4522*   4530*   4648*   4651*   5969*   6331*   6668*   6679*   6686
                        6692*
DFPTBL  002276 G        1185#
DIAGMC= 000000          1100
DISKET= 000014          1675#   2529    2530    2531    2532    2535    2536    2539
DISKSP= 000030          1681#
DLDBIT= 000100          1583#   3873    6602    7060
DLDCMD= 000010          1570#   5408    6596    7053
DLDERR= 000007          1622#
DLDTER= 000032          1642#   3955    6604    7062
DLPDN = 000010          1690#   6035    6174    6180    6282    6283    6344    6349    6350
DLY     012026          3336    3360#
DMSG1   013561          3686    3707#
DMSG1B  013526          3681    3706#
DMSG2   013615          3688    3708#
DNBIT = 000040          1577#   3309    3339    3349    3381    3413    3428    4206
DNFLAG  012030          3333*   3337    3361#   3474*
DNNINT= 000015          1628#   3351    6172
DNNOTR= 000063          1664#   3432
DNWTMT  002474          1807#   3387    6776*   6789*
DOOROP= 000026          1680#
DRIVE   002406          1764#   2693    3210    4346    4860*   4864*
DRIVE1= 000400          1581#   3844    3862
DRVDEN= 000040          1584#   3865    4279    4287
DRVOFF  002420          1769#   4861*   4865*   6864
DRVPRT  002514          1817#   4574    4862*   4866*
DRVRDY= 000200          1582#   4237
DRVWRG= 000027          1639#   3957
DRV1  = 000020          1578#   3860    4864
DUMSG1  022012          4946    4950#
DVDNCK  011634          2970*   3006*   3042*   3078*   3113*   3145*   3172*   3308#
DVFERR= 004000          1719#
DVRDYE= 000025          1637#   3956    4240
DVRYCK  017310          4235#   4271*
DVSTCK  017140          4203#   5149*   5563*   5784*
DVTL    002320          1218#   2108
DX      012024          3335    3359#   6116*   6122*   6163*   6196*
EADDC   017514          4273    4278    4292    4297#
EADRC   017346          4238    4242#
EADSC   017220          4205    4207    4209    4216#
EAERR   003256          2037    2039    2041#
EAFRU   005506          2381    2388    2398#
EANAT   027076          6028    6037#
EAPCE   007106          2574    2577#
EARCR   014240          3763    3821#
```

```
EASRC   014400            3648    3850    3854#
EATKE   017712            4341    4343    4349    4351    4354    4356    4358    4362    4364    4366    4370#
EBCMD = 000002            1606#
EBDCK   013470            3666    3671    3693#
EBDDC   017434            4282    4284#
EBGEN   015152            4009    4013#
EBGTK   013062            3603    3615#
EBI1    021720            4871    4874#
EBNAT   027030            6025    6027#
EBRCR   013716            3767    3769#
EBTKP   010062            2696    2698#
EBT11   024532            5571    5575#
EBT12   024744            5628    5632#
EBT13   025176            5684    5689#
EBT18   026530            5953    5956#
EBT31   032604            6770    6773#
ECERNB  020164            4014*   4422    4424*   4440    4444    4450*   4455#   4504
ECERNT  015164            4012    4021#
ECERR   003230            2033    2035#
ECNAT   027074            6032    6036#
ECSTA   015330            4060    4064#
ECTAB   016044            4103    4112#
ECT18   026674            5975    5979#
ECT21   027660            6173    6176#
ECT32   033256            6885    6888#
ECT36   034440            7143    7148#
EC0     016116            4114    4117    4119    4123    4128    4138#
EC1     016136            4112    4139#
EC11    016407            4120    4147#
EC12    016451            4121    4148#
EC13    016477            4122    4149#
EC14    016550            4150#
EC15    016567            4124    4151#
EC16    016640            4125    4152#
EC17    016670            4126    4153#
EC2     016175            4113    4140#
EC20    016716            4127    4154#
EC22    016753            4129    4156#
EC23    017013            4130    4157#
EC24    017033            4131    4158#
EC25    017052            4132    4159#
EC4     016234            4115    4142#
EC5     016274            4116    4143#
EC7     016337            4118    4145#
EDECK   020122            4428    4443    4445#
EDGSC   013236            3647    3649#
EDSRC   014462            3864    3866#
EDT18   026722            5981    5985#
EDT21   027662            6177#
EEECK   020072            4439#
EEFRU   005604            2401    2416#
EESRC   014516            3868    3872    3874#
EET32   033116            6861    6864#
EFENV   003466            2104    2106    2109    2112#
EFERR   003330            2011    2047    2051#
EFFRU   005576            2410    2414#
```

```
EFT31   032716          6781    6787    6789#
EF.CON= 000036 G        1566#   4777
EF.NEW= 000035 G        1566#   4798
EF.PWR= 000034 G        1566#   4779
EF.RES= 000037 G        1566#   4794
EF.STA= 000040 G        1566#   4782
EGFRU   005554          2407    2409#
EGSRC   014330          3842    3845#
EIECK   020070          4436    4438#
EMBUFF= 000020          1691#   3679    5308    5310    6288
EMDCK   013444          3675    3688#
EMPADR  002360          1752#   3020    4643*
EMPBUF  010626          3006#   5238*   5306*   5895*   5972*   6276*   7140*
EMPERR= 000013          1626#
ENDCK   013434          3680    3685    3686#
ENDDCK  013506          3697#
ENDLD   012652          3569    3574#
ENDXER  016012          4101    4106#
END131  012612          3519    3532    3546    3557    3560#
EPECK   020140          4447    4449#
ERIDNT  003502 G        2014    2205#   2739
ERMSTB  003534          2209    2211    2219#
ERMS0   003706          2219    2220    2227    2228    2237    2248    2254    2255    2256    2257    2258    2271    2277#
ERMS10  004015          2229    2287#
ERMS11  004035          2230    2288#
ERMS12  004056          2231    2289#
ERMS13  004112          2232    2290#
ERMS14  004146          2233    2291#
ERMS15  004177          2234    2292#
ERMS16  004226          2235    2293#
ERMS17  004264          2236    2294#
ERMS19  004314          2238    2296#
ERMS2   003717          2221    2279#
ERMS20  004333          2239    2297#
ERMS21  004356          2240    2298#
ERMS22  004402          2241    2299#
ERMS23  004434          2242    2300#
ERMS24  004467          2243    2301#
ERMS25  004503          2244    2302#
ERMS26  004532          2245    2303#
ERMS27  004553          2246    2304#
ERMS28  004564          2247    2305#
ERMS29  004575          2306#
ERMS3   003731          2222    2280#
ERMS30  004625          2249    2307#
ERMS31  004655          2250    2308#
ERMS32  004670          2251    2309#
ERMS33  004711          2252    2310#
ERMS34  004733          2253    2311#
ERMS4   003742          2223    2281#
ERMS40  004756          2259    2317#
ERMS41  004777          2260    2318#
ERMS42  005027          2261    2319#
ERMS43  005054          2262    2320#
ERMS44  005102          2263    2321#
ERMS45  005125          2264    2322#
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ERMS46  005153          2265    2323#
ERMS47  005202          2266    2324#
ERMS48  005230          2267    2325#
ERMS49  005260          2268    2326#
ERMS5   003752          2224    2282#
ERMS50  005307          2269    2327#
ERMS51  005337          2270    2328#
ERMS6   003763          2225    2283#
ERMS7   003774          2226    2284#
ERNBEV  003344          2013*   2091#
ERNTCK  020170          4423*   4434*   4477#
ERRBIT= 100000          1571#   4204    4419    5734
ERRBLK  002524 G        1828#   2014*   2739*
ERRCHK  017724          4411#   5148*   5151*   5179*   5183*   5211*   5239*   5269*   5305*   5307*   5360*   5362*   5367*
                        5369*   5410*   5412*   5415*   5462*   5465*   5468*   5471*   5473*   5476*   5479*   5516*   5752*
                        5785*   5838*   5845*   5891*   5894*   5896*   5899*   5971*   5973*   6081*   6226*   6388*   6393*
                        6441*   6448*   6546*   6553*   6599*   6671*   6678*   6684*   6768*   6788*   6944*   6951*   7000*
                        7007*   7057*
ERRCMD  002422          1771#   2569    3425*
ERRCTR  003342          2044*   2045    2050*   2056#
ERRFLG= 100000          1701#   2742    3796    3817    4010    4425
ERRMSG  002522 G        1828#   4499    4602*   4623*
ERRNBR  002520 G        1828#   2010    2012    2018    2092    2096    2100    2206    2737*   3146    3173    3259    3341*
                        3351*   3355*   3389*   3426*   3432*   3677*   4210*   4240*   4293*   4352*   4359*   4367*   4427
                        4442*   4444*   5573*   5580*   5630*   5637*   5687*   5694*   5738*   5743*   5748*   5954*   5976*
                        5982*   5988*   6166*   6172    6182    6188*   6339*   6604*   6688*   6762*   6785*   6862*   6869*
                        6874*   6879*   6883*   7062*
ERRNST= 000016          1629#
ERROLD  003340          2042    2048*   2055#
ERROR   003060          2009#   3263*   3678*   4211*   4241*   4294*   4353*   4361*   4369*   4451*   5574*   5581*   5631*
                        5638*   5688*   5695*   5739*   5744*   5749*   5955*   5977*   5983*   5989*   6120*   6189*   6195*
                        6343*   6605*   6689*   6764*   6786*   6863*   6870*   6875*   7063*
ERRREG  015444          4081*   4084#
ERRSAV  003336          2012*   2042    2048    2049*   2054#
ERRTYP  002516 G        1828#   2094*   2098*   2102*   2103    2110*   2738*
ERTKMS  010241          2709    2718#
ESERTB  014746          3815    3949#
ESRCHK  014112          3800#
ESRCMP  014264          3775*   3804*   3805    3812    3829#
ESRMSK  014266          3776*   3802    3803    3830#
ESRSET  014272          3803*   3804    3832#   3840*   3859*   3862*   3865*   3873*
EVL     = 000004 G      1566#
EXMS    010156          2650    2689    2715#
EXTADR  002366          1755#   2975    3011    3178
E$END   = 002100        1100#
E$LOAD= 000035          1100#   1146
FBCMD   = 000000        1605#
FILADR  002362          1753#   2984    4645*   7136*   7138*
FILBUF  010510          2970#   5210*   5304*   5893*   5970*   6274*   6333*   7133*   7137*
FILERR= 000012          1625#
FIN     002454          1798#   2378    2740*   2971    2978    2982    3007    3014    3018    3043    3051    3055    3079
                        3086    3090    3114    3121    3181    3185    3257    3391*   3423*   3762    4277    4667*   6758
                        6780    6858    6884    7152
FLAGSP  002500          1810#   2016    2026    2029    2032    2404    2582    3658*   3674    3676*   3849    4360*   4368*
                        4371*   4417    4452*   4498    4635*   4781*   4786*   4789*   4791*   4792*   4796*   5181*   5184*
                        5565    5889*   5892*   6073    6184    6390*   6394*   6763*   6765*   6784*
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FLAGST  002476  1809#  2024   2384   2647   2686   2742*  3187*  3261   3594*  3598*  3617*  3633*  3640*
                3679   3799*  3820*  4010*  4065   4080*  4344   4350   4357   4365   4412   4415   4425
                4481   4497   4519*  4523*  4533*  4536*  4601*  4603*  4622*  4634*  4646   5208*  5236*
                5265*  5300*  5308*  5310*  5358*  5364*  5517   5837*  5843*  5956*  6035*  6080*  6174*
                6180   6282*  6283   6344*  6349*  6350   6443*  6500   6548*  6676*  6681*  6771   6773*
                6774*  6865   6886   6888*  6891   6893*  6895*  6896   6946*  7002*  7144   7146
FLGDRS  002502  1811#  2105   4775*
FLOAT0  012456  3510   3525#
FLOAT1  012524  3511   3540#
FONZFG= 010000  1712#  4789   6073
FRUM0A  005713  2406   2443#
FRUM0B  005746  2408   2444#
FRUM00  005650  2398   2442#
FRUM1   006001  2424   2445#
FRUM10  006361  2433   2454#
FRUM11  006426  2434   2455#
FRUM12  006451  2435   2456#
FRUM13  006504  2436   2457#
FRUM14  006544  2437   2458#
FRUM2   006035  2425   2446#
FRUM3   006070  2426   2447#
FRUM4   006120  2427   2448#
FRUM5   006140  2428   2449#
FRUM6   006173  2429   2450#
FRUM7   006221  2430   2451#
FRUM8   006255  2431   2452#
FRUM9   006324  2432   2453#
FRUS1 = 000000  5120#
FRUTAD  005610  2380*  2387*  2397*  2400   2402   2411   2414*  2419#
FRUTBM  005612  2412   2423#
FTERCT  014274  3788*  3809*  3833#
FTSTUP  020700  4599#  5144*  5177*  5207*  5235*  5264*  5299*  5351*  5404*  5458*  5509*
FUNCT = 000000  5122#  5124   5144   5158   5177   5191   5207   5218   5235   5246   5264   5276   5299
                5317   5351   5381   5404   5423   5458   5486   5509   5526#  5527   5560   5589   5622
                5645   5678   5704   5732   5760   5782   5794   5827   5859   5888   5908   5949   6044
                6072   6093   6115   6130   6161   6206   6224   6234   6271   6293   6330   6359   6386
                6402   6435   6456   6489   6509   6541   6561   6593   6616   6665   6701   6750   6797
                6849   6904   6938   6960   6994   7016   7050   7075   7123
FUNCTT= 000002  1593#  3786   3807   5144   5177   5207   5235   5264   5299   5351   5404   5458   5509
                7276
FUNTST= 000040  1692#  2024   4601   4622
F$AU  = 000015  1100#  4983   4990
F$AUTO= 000020  1100#  4969   4971
F$BGN = 000040  1100#  1127   1205   1245   1559   1918   1922   1926   2205   4689   4733   4740   4768
                4907   4935   4969   4983   5003   5054   5124   5152   5155   5158   5185   5188   5191
                5212   5215   5218   5240   5243   5246   5270   5273   5276   5311   5314   5317   5375
                5378   5381   5417   5420   5423   5480   5483   5486   5520   5523   5527   5582   5586
                5589   5639   5642   5645   5697   5701   5704   5753   5757   5760   5786   5791   5794
                5846   5856   5859   5900   5905   5908   5990   5994   6044   6085   6090   6093   6123
                6127   6130   6197   6203   6206   6227   6231   6234   6275   6277   6286   6290   6293
                6334   6336   6352   6356   6359   6392   6395   6399   6402   6440   6447   6449   6453
                6456   6497   6502   6506   6509   6545   6552   6554   6558   6561   6598   6601   6609
                6613   6616   6670   6675   6683   6694   6698   6701   6790   6794   6797   6897   6901
                6904   6943   6950   6952   6957   6960   6999   7006   7008   7013   7016   7056   7059
                7067   7072   7075   7156   7162   7170   7216   7227   7270   7350   7352   7353   7359
                7360   7366   7367
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PARAMETER CODING MACY11 30(1046) 12-APR-82 13:23 PAGE 147-9
CZRXFB.P11 09-APR-82 15:14 CROSS REFERENCE TABLE -- USER SYMBOLS SEQ 0183

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F$CLEA= 000007   1100#  4907  4916
F$DU  = 000016   1100#  4935  4948
F$END = 000041   1100#  1127  1245  1559  1920  1924  1928  2213  4689  4733  4747  4831  4916
                 4948   4971  4990  5003  5054  5124  5152  5155  5158  5185  5188  5191  5212
                 5215   5218  5240  5243  5246  5270  5273  5276  5311  5314  5317  5375  5378
                 5381   5417  5420  5423  5480  5483  5486  5520  5523  5527  5582  5586  5589
                 5639   5642  5645  5697  5701  5704  5753  5757  5760  5786  5791  5794  5846
                 5856   5859  5900  5905  5908  5990  5994  6044  6085  6090  6093  6123  6127
                 6130   6197  6203  6206  6227  6231  6234  6275  6277  6286  6290  6293  6334
                 6336   6352  6356  6359  6392  6395  6399  6402  6440  6447  6449  6453  6456
                 6497   6502  6506  6509  6545  6552  6554  6558  6561  6598  6601  6609  6613
                 6616   6670  6675  6683  6694  6698  6701  6790  6794  6797  6897  6901  6904
                 6943   6950  6952  6957  6960  6999  7006  7008  7013  7016  7056  7059  7067
                 7072   7075  7156  7162  7170  7216  7240  7290  7350  7352  7353  7359  7360
                 7366   7367
F$HARD= 000004   1100#  7227  7240  7273  7281
F$HW  = 000013   1100#  1185  1196
F$INIT= 000006   1100#  4768  4831
F$JMP = 000050   1100#  5152  5185  5212  5240  5270  5311  5375  5417  5480  5520  5582  5639
                 5697   5753  5786  5846  5900  5990  6085  6123  6197  6227  6286  6352  6395
                 6449   6502  6554  6609  6694  6790  6897  6952  7008  7067  7156
F$MOD = 000000   1100#  1127  1245  1559  4689  4733  5003  5054  7170  7216  7350
F$MSG = 000011   1100#  1918  1920  1922  1924  1926  1928  2205  2213
F$PROT= 000021   1100#  1205  1209
F$PWR = 000017   1100#
F$RPT = 000012   1100#  4740  4747
F$SEG = 000003   1100#
F$SOFT= 000005   1100#  7270  7273  7281  7290
F$SRV = 000010   1100#
F$SUB = 000002   1100#
F$SW  = 000014   1100#  1217  1236
F$TEST= 000001   1100#  5124  5155  5158  5188  5191  5215  5218  5243  5246  5273  5276  5314
                 5317   5378  5381  5420  5423  5483  5486  5523  5527  5586  5589  5642  5645
                 5701   5704  5757  5760  5791  5794  5856  5859  5905  5908  5994  6044  6090
                 6093   6127  6130  6203  6206  6231  6234  6290  6293  6356  6359  6399  6402
                 6453   6456  6506  6509  6558  6561  6613  6616  6698  6701  6794  6797  6901
                 6904   6957  6960  7013  7016  7072  7075  7162

GETREG  012244   2929*  2987*  3023*  3059*  3094*  3126*  3153*  3188*  3451#  5147*
GETSEC  013104   3628#  5514*  6755*  7132*
GETTRK  012662   3585#  5513*  6494*  6854*  7131*
GTECEN  015106   4003#  4421*
GTECOF  017106   2386*  4011*  4102*  4165#
G$CNTO= 000200   1100#
G$DELM= 000372   1100#
G$DISP= 000003   1100#
G$EXCP= 000400   1100#
G$HILI= 000002   1100#
G$LOLI= 000001   1100#
G$NO  = 000000   1100#
G$OFFS= 000400   1100#  5832  5840  7229  7230  7231  7232  7233  7272  7274  7275  7276  7277
                 7278   7279  7280  7282  7283
G$OFSI= 000376   1100#  5832  5840  7229  7230  7231  7232  7233  7272  7274  7275  7276  7277
                 7278   7279  7280  7282  7283
G$PRMA= 000001   1100#  7229  7230  7278
G$PRMD= 000002   1100#  7231  7232  7233  7277  7279
G$PRML= 000000   1100#  5832  5840  7272  7274  7275  7276  7280  7282  7283
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G$RADA= 000140           1100#
G$RADB= 000000           1100#
G$RADD= 000040           1100#
G$RADL= 000120           1100#   5832    5840    7272    7274    7275    7276    7280    7282    7283
G$RADO= 000020           1100#   7229    7230    7231    7232    7233    7277    7278    7279
G$XFER= 000004           1100#   7273    7281
G$YES = 000010           1100#   5832    5840    7229    7230    7231    7232    7233    7272    7274    7275    7276    7277
                         7278    7279    7280    7282    7283
HDRPRT= 000100           1693#   1709#   3658    3674    3676
HDSFDG= 000056           1659#   4039
HELP  = 000000           1085#   1095    1117    1136    1149    1172    1191    1230    1251#   1287    1722    1854    1860
                         1881    1891    1899    2058    2460    2465    2754    2760    2765    2771    2776    2782    2790
                         2797    2802    2808    2817    2824    2830    2837    2843    2850    2859    2867    2874    2881
                         4695#   4741    4749    4822    4839    4910    4917    4936    4952    4984    4992    5010#   7164
                         7178#   7235    7250    7284    7338
HETLCT  0C3472           2107*   2108    2111*   2115#
HOE   = 100000 G         1566#
HRDERR= 040000           1700#
IACDC   020432           4517#
IADDC   017402           4277#
IADID   020614           4577#
IADRC   017316           4237#
IADSC   017144           4204#
IAECK   017726           4412#
IAENC   020172           4478#
IAENV   003346           2092#
IAERR   003154           2022    2024#
IAFRU   005406           2378#
IAGEN   015110           4004#
IAGSC   013106           3629#
IAGTK   012664           3586#
IAI1    021622           4858#
IANAT   026776           6020#
IAPCE   007056           2570#
IARCR   013672           3762#
IASCP   007676           2647#
IASDC   020500           4531#
IASRC   014340           3847#
IASTA   015334           4056    4065#
IATKE   017520           4340#
IATKP   010006           2686#
IAT1    022372           5144#
IAT10   024262           5509#
IAT11   024420           5560#
IAT12   024656           5622#
IAT13   025102           5678#
IAT14   025324           5732#
IAT15   025554           5782#
IAT16   025670           5827#
IAT17   026304           5888#
IAT18   026460           5949#
IAT19   027154           6072#
IAT2    022522           5177#
IAT20   027376           6115#
IAT21   027542           6161#
IAT22   030174           6224#
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IAT23   030314          6271#
IAT24   030516          6330#
IAT25   030770          6386#
IAT26   031146          6435#
IAT27   031340          6489#
IAT28   031536          6541#
IAT29   031740          6593#
IAT3    022656          5207#
IAT30   032140          6665#
IAT31   032436          6750#
IAT32   033010          6849#
IAT33   033424          6938#
IAT34   033624          6994#
IAT35   034026          7050#
IAT36   034254          7123#
IAT4    022774          5235#
IAT5    023110          5264#
IAT6    023236          5299#
IAT7    023422          5351#
IAT8    023672          5404#
IAT9    024044          5458#
IBDCK   013312          3665#
IBDDC   017410          4279#
IBDSC   017152          4206#
IBE   = 010000 G        1566#
IBECK   017742          4413    4415#
IBEMB   010672          3014#
IBENC   020204          4481#
IBENV   003364          2093    2096#
IBERR   003140          2017    2019    2021#
IBFLB   010554          2978#
IBFRU   005424          2379    2382#
IBGEN   015116          4006#
IBGSC   013140          3630    3634#
IBGTK   012770          3600#
IBI1    021666          4863    4867#
IBNAT   027006          6022#
IBPCE   007122          2580#
IBREC   011414          3181#
IBRED   011124          3086#
IBSDN   011234          3121#
IBSRC   014416          3857#
IBSTA   015270          4055#
IBTKE   017540          4344#
IBTKP   010042          2693#
IBT11   024502          5568    5570#
IBT12   024714          5627#
IBT13   025140          5683#
IBT14   025342          5734#
IBT16   025710          5829#
IBT18   026506          5952#
IBT19   027170          6073#
IBT29   031776          6598#
IBT30   032334          6687    6690#
IBT35   034070          7056#
IBUWCH  011704          3337#   3346
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ICDSC   017160            4208#
ICECK   020012            4416    4418    4420    4425#
ICEMB   010712            3018#
ICENC   020214            4483#
ICERR   003214            2030    2032#
ICFLB   010574            2982#
ICGTK   012742            3587    3595#
ICNAT   027046            6031#
ICPCE   007130            2582#
ICREC   011434            3185#
ICRED   011144            3090#
ICSRC   014432            3858    3860#
ICSTA   015276            4057#
ICTKE   017550            4346#
ICT11   024546            5577#
ICT12   024756            5634#
ICT13   025210            5691#
ICT14   025352            5736#
ICT16   025754            5833#
ICT18   026652            5974#
ICT21   027640            6172#
ICT23   030372            6280#
ICT24   030566            6337#
ICT29   032012            6601#
ICT31   032510            6758#
ICT35   034104            7059#
ICUWCH  011712            3339#
ICWRT   011034            3055#
ID      002336 G          1225#   3589    3606
IDCOMP  013020            3606#
IDDDC   017354            4272#
IDDSMS  020642            4580    4584#
IDECK   020022            4427#
IDENC   020226            4484    4487#
IDENT1  015446            4049    4086#
IDENV   003404            2097    2100#
IDERR   003242            2025    2038#
IDGSC   013224            3646#
IDSRC   014446            3861    3863#
IDSSMS  020657            4575    4585#
IDTKE   017556            4348#
IDT11   024454            5565#
IDT14   025376            5737    5741#
IDT16   026050            5841#
IDT18   026700            5980#
IDT24   030640            6347#
IDT29   032016            6602#
IDT31   032516            6760#
IDT32   033066            6858#
IDT35   034110            7060#
IDU   = 000040 G          1566#
IEDCK   013322            3668#
IEERR   003164            2026#
IER   = 020000 G          1566#
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IESRC   014466          3867#
IETKE   017566          4350#
IET14   025422          5742    5746#
IET21   027706          6179    6182#
IET32   033074          6860#
IEUWCH  011752          3349#
IFDCK   013332          3670#
IFENV   003420          2095    2099    2101    2103#
IFERR   003062          2010#
IFFRU   005524          2402#
IFSRC   014346          3849#
IFTKE   017612          4347    4355#
IFT21   027714          6184#
IFT31   032652          6780#
IFT32   033122          6865#
IGENV   003430          2105#
IGERR   003200          2027    2029#
IGFRU   005532          2404#
IGSRC   014304          3841#
IGTKE   017622          4357#
IGT21   027724          6186#
IGT31   032660          6782#
IGT32   033132          6867#
IHENV   003444          2107#
IHTKE   017654          4345    4363#
IHT32   033156          6868    6872#
IIECK   020056          4435#
IIERR   003124          2018#
IITKE   017662          4365#
IIT32   033202          6866    6877#
IJERR   003114          2016#
IJT32   033222          6878    6881#
IKERR   003260          2042#
IKT32   033276          6891#
ILERR   003274          2045#
ILLERC= 000017          1630#   4008    4024    4027    4029    4033    4038
ILLGAL= 010000          1698#   6865    6891    6893    6895    6896
ILTK  = 000004          1601#   3595    6890
IMDCK   013352          3674#
IMECK   020074          4432    4440#
INDCK   013402          3679#
INECK   017752          4417#
INFCTL= 006640          2477#   5756    5790    5993
INIT    021214          4770#
INITDN= 000004          1587#   5736
INITER  021462          4803    4810#
INITTK  013102          3621#
INTERF= 000000          1669#   2478    2481    2484    2527    2529    2538    2539    2540
INTERT  002404          1763#   3233
INTER1  021530          4810    4836#
INTFCB= 000024          1679#   2478    2490
INTFSW= 000016          1676#
INTIAL  010440          2925#   5150*   5178*   5783*   5835*   5844*   6084*   6162*   6225*   6387*   6751*   6766*
INTNDN= 000014          1627#   3341
INTONL= 006644          2480#   5585    5641    5700    5849    6089    6126    6202
INTRHD  012276          3474#   4808
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INTTBL  021742          4806* 4891#
IOECK   017762          4419#
IPECK   020124          4446#
ISC     = 001000        1596# 3629  3631  6754  7129
ISR     = 000100 G      1566#
ITK     = 000400        1595# 3586  3588  5510  6490  6499  6852  6855  7129
IXE     = 004000 G      1566#
I$AU    = 000041        1100# 4983# 4990#
I$AUTO= 000041          1100# 4969# 4971#
I$CLN = 000041          1100# 4907# 4916#
I$DU  = 000041          1100# 4935# 4948#
I$HRD = 000041          7227# 7240#
I$INIT= 000041          1100# 4768# 4831#
I$MOD = 000041          1100# 1127# 1245# 1559# 4689# 4733# 5003# 5054# 7170# 7216# 7350#
I$MSG = 000041          1100# 1918# 1920# 1922# 1924# 1926# 1928# 2205# 2213#
I$PROT= 000040          1100# 1205#
I$PTAB= 000041          1100# 7353# 7359# 7360# 7366#
I$PUR = 000041          1100#
I$RPT = 000041          1100# 4740# 4747#
I$SEG = 000041          1100# 5124  5158  5191  5218  5246  5276  5317  5381  5423  5486  5527  5589
                        5645  5704  5760  5794  5859  5908  6044  6093  6130  6206  6234  6293  6359
                        6402  6456  6509  6561  6616  6701  6797  6904  6960  7016  7075
I$SETU= 000041          1100# 7352# 7353  7360  7367#
I$SFT = 000041          7270# 7290#
I$SRV = 000041          1100#
I$SUB = 000041          1100# 5124  5158  5191  5218  5246  5276  5317  5381  5423  5486  5527  5589
                        5645  5704  5760  5794  5859  5908  6044  6093  6130  6206  6234  6293  6359
                        6402  6456  6509  6561  6616  6701  6797  6904  6960  7016  7075
I$TST = 000041          1100# 5124# 5152  5155# 5158# 5185  5188# 5191# 5212  5215# 5218# 5240  5243#
                        5246# 5270  5273# 5276# 5311  5314# 5317# 5375  5378# 5381# 5417  5420# 5423#
                        5480  5483# 5486# 5520  5523# 5527# 5582  5586# 5589# 5639  5642# 5645# 5697
                        5701# 5704# 5753  5757# 5760# 5786  5791# 5794# 5846  5856# 5859# 5900  5905#
                        5908# 5990  5994# 6044# 6085  6090# 6093# 6123  6127# 6130# 6197  6203# 6206#
                        6227  6231# 6234# 6275  6277  6286  6290# 6293# 6334  6336  6352  6356# 6359#
                        6392  6395  6399# 6402# 6440  6447  6449  6453# 6456# 6497  6502  6506# 6509#
                        6545  6552  6554  6558# 6561# 6598  6601  6609  6613# 6616# 6670  6675  6683
                        6694  6698# 6701# 6790  6794# 6797# 6897  6901# 6904# 6943  6950  6952  6957#
                        6960# 6999  7006  7008  7013# 7016# 7056  7059  7067  7072# 7075# 7156  7162#
J$JMP = 000167          1100#
LACDC   020454          4518  4522#
LAI1    021644          4859  4864#
LANAT   027036          6021  6029#
LAPCE   007076          2571  2575#
LASDC   020524          4532  4536#
LATKP   010130          2687  2708#
LBDDC   017430          4280  4283#
LBFRU   005456          2383  2385  2389#
LBGEN   015134          4007  4010#
LBGTK   013006          3596  3601  3604# 3608  3611  3613
LBI1    021704          4868  4872#
LBNAT   027022          6023  6026#
LBTKP   010056          2694  2697#
LBUWCH  011740          3338  3344#
LCMD    002424          1772# 3229* 3851  4340
LCSTA   015314          4058  4061#
LCT24   030634          6338  6346#
```

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LCT29   032042          6603    6607#
LDT11   024474          5566    5569#
LDT31   032562          6761    6768#
LDT35   034134          7061    7065#
LET14   025446          5747    5751#
LET21   027770          6183    6195#
LEUWCH  012000          3350    3354#
LF    = 000012 G        7293#   7296    7297    7298    7299    7300    7301    7302    7303    7304
LFFRU   005562          2403    2411#
LGFRU   005550          2405    2408#
LGT31   032712          6783    6788#
LKERR   003312          2043    2048#
LKT32   033316          6892    6895#
LMECK   020114          4441    4444#
LOAD    012614          3517    3530    3544    3555    3565#
LOE   = 040000 G        1566#
LOGICT= 000001          1592#   5560    5622    5678    5732    5782    5827    5888    5949    6072    6115    6161    6224
                        6271    6330    6386    6435    6489    6541    6593    6665    6750    6849    6938    6994    7050
                        7123    7275
LOT   = 000010 G        1566#
LRXCSR  002426          1773#   3451*   3852
LRXESR  002430          1774#   3452*   3853
LSIFLG= 000400          1711#   2404    4786    4791    5565    6184
LTSTUP  020736          4620#   5560*   5622*   5678*   5732*   5782*   5827*   5888*   5949*   6072*   6115*   6161*   6224*
                        6271*   6330*   6386*   6435*   6489*   6541*   6593*   6665*   6750*   6849*   6938*   6994*   7050*
                        7123*
L$ACP   002110 G        1146#
L$APT   002036 G        1146#
L$AU    022062 G        1146    4983#
L$AUT   002070 G        1146#
L$AUTO  022054 G        1146    4969#
L$CCP   002106 G        1146#
L$CLEA  021764 G        1146    4907#
L$CO    002032 G        1146#
L$DEPO  002011 G        1146#
L$DESC  002122 G        1146    1147#
L$DESP  002076 G        1146#
L$DEVP  002060 G        1146#
L$DISP  002164 G        1146    1170#
L$DLY   002116 G        1146#
L$DTP   002040 G        1146#
L$DTYP  002034 G        1146#
L$DU    021776 G        1146    4935#
L$DUT   002072 G        1146#
L$DVTY  002154 G        1146    1157#
L$EF    002052 G        1146#
L$ENVI  002044 G        1146#
L$ERRT  002516 G        1146    1828#
L$ETP   002102 G        1146#
L$EXP1  002046 G        1146#
L$EXP4  002064 G        1146#
L$EXP5  002066 G        1146#
L$HARD  034530 G        1146    7227#
L$HIME  002120 G        1146#   4787
L$HPCP  002016 G        1146#
L$HPTP  002022 G        1146#
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L$HW	002276	G	1146	1185#
L$ICP	002104	G	1146#	
L$INIT	021214	G	1146	4768#
L$LADP	002026	G	1146#	
L$LAST	037634	G	1146	7349# 7367
L$LOAD	002100	G	1146#	
L$LUN	002074	G	1146#	
L$MREV	002050	G	1146#	
L$NAME	002000	G	1146#	
L$PRIO	002042	G	1146#	
L$PROT	002310	G	1146	1205#
L$PRT	002112	G	1146#	
L$REPP	002062	G	1146#	
L$REV	002010	G	1146#	
L$RPT	021212	G	4740#	
L$SOFT	034700	G	1146	7270#
L$SPC	002056	G	1146#	
L$SPCP	002020	G	1146#	
L$SPTP	002024	G	1146#	
L$STA	002030	G	1146#	
L$SW	002320	G	1146	1217#
L$TEST	002114	G	1146#	
L$TIML	002014	G	1146#	
L$UNIT	002012	G	1146#	4802
L10000	002310		1185	1196#
L10002	002350		1217	1236#
L10003	002532		1920#	
L10004	002540		1924#	
L10005	002546		1928#	
L10006	003532		2213#	
L10007	021212		4747#	
L10010	021522		4831#	
L10011	021774		4916#	
L10012	022010		4948#	
L10013	022060		4971#	
L10014	022064		4990#	
L10015	022454		5152	5155#
L10016	022614		5185	5188#
L10017	022730		5212	5215#
L10020	023046		5240	5243#
L10021	023164		5270	5273#
L10022	023350		5311	5314#
L10023	023612		5375	5378#
L10024	024002		5417	5420#
L10025	024220		5480	5483#
L10026	024362		5520	5523#
L10027	024620		5582	5586#
L10030	025030		5639	5642#
L10031	025260		5697	5701#
L10032	025500		5753	5757#
L10033	025630		5786	5791#
L10034	026232		5846	5856#
L10035	026426		5900	5905#
L10036	026772		5990	5994#
L10037	027336		6085	6090#
L10040	027500		6123	6127#

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L10041  030124          6197    6203#
L10042  030244          6227    6231#
L10043  030446          6275    6277    6286    6290#
L10044  030706          6334    6336    6352    6356#
L10045  031076          6392    6395    6399#
L10046  031276          6440    6447    6449    6453#
L10047  031466          6497    6502    6506#
L10050  031662          6545    6552    6554    6558#
L10051  032076          6598    6601    6609    6613#
L10052  032376          6670    6675    6683    6694    6698#
L10053  032750          6790    6794#
L10054  033354          6897    6901#
L10055  033554          6943    6950    6952    6957#
L10056  033750          6999    7006    7008    7013#
L10057  034170          7056    7059    7067    7072#
L10060  034524          7156    7162#
L10061  034606          7227    7240#
L10062  035012          7270    7290#
L10063  037640          7353#
L10064  037656          7353    7360#
L10065  037652          7353    7359#
L10067  037670          7360    7366#
MAXSEC  002342 G        1227#
MINSEC  002340 G        1226#
MOTOR =  000032         1682#
MSG1    034606          7229    7242#
MSG10   035745          7277    7311#
MSG14   036014          7278    7312#
MSG15   036053          7279    7313#
MSG17   036124          7280    7314#
MSG2    034621          7230    7243#
MSG20   036150          7282    7315#
MSG3    034634          7231    7244#
MSG4    034647          7232    7245#
MSG4A   034662          7233    7246#
MSG5    035012          7283    7294#
MSG6    035044          7272    7295#
MSG7    035057          7274    7296#
MSG8    035677          7275    7309#
MSG9    035722          7276    7310#
NAT     026774          6019#
NATADR  027102          6024*   6026*   6030*   6031    6034*   6040#
NATCTR  027100          6020    6022    6027*   6029*   6033*   6039#
NCMD    011542          2973*   3009*   3045*   3046*   3081*   3116*   3148*   3175*   3230    3236#
NEGTST= 004000          1697#   3261    3952    3953    3954    3959    3960    4025    4028    4040    4041    4042    4350
                        4357    4365    4478    4480    4481    5358    5364    5837    5843    6088    6443    6548    6676
                        6681    6774    6946    7002
NEW     021352          4795    4798#
NEXT    021370          4799    4801#   4805
NGTSER  002464          1802#   4483    5365*   5836*   6079*   6444*   6549*   6677*   6775*   6947*   7003*
NODNBT= 000060          1661#   3146    3173    3355    3389
NOITDB= 000061          1662#   5738
NOITDP= 000062          1663#   3951
NOPWR =  000034         1683#
NOTRBT= 000057          1660#   3426
NPRERR= 000053          1656#   5954    5976    5982    5988
```

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NPRJPR= 000020          1677#
NXMADR  002344 G        1228#   6077
NXMBIT= 004000          1579#   6087
NXMERR= 000052          1655#   3960    6079
OD      002334 G        1224#   3590    3592    3609
ODCOMP  013032          3607    3609#
ODTFLG= ****** U        4771
ODTNOT= 000001          1084#   7368
ONEFIL= 000000          1089#   1121    1247    1248    1261    4691    4692    4705    5005    5006    5019    7172    7173
                        7188
O$APTS= 000000          1100#   1146
O$AU  = 000001          1100#   1134#   1146
O$BGNR= 000000          1100#   1146
O$BGNS= 000001          1100#   1134#   1146
O$DU  = 000001          1100#   1134#   1146
O$ERRT= 000001          1100#   1134#   1146
O$GNSW= 000001          1100#   1134#   1146
O$POIN= 000001          1100#   1134#   1146
O$SETU= 000001          1100#   1134#   1146    7349
PAT     012660          3495    3497*   3498    3578#   5302*   5958*   6272*   6279*   6280    6285*   7127*
PATCH   037226          7346#
PAT125  012532          3512    3543#
PAT333  012556          3513    3550#
PG      012434          3517#   3520    3523
PHYDRV= 000006          1672#   2525    2526    2528    2529    2530    2531    2533    2534
PLOC    021524          4804*   4833#   4853
PNT   = 001000 G        1566#
POWRSP= 000012          1674#   2531
PRESCK  013044          3610    3612#
PRI   = 002000 G        1566#
PRILEV= 000054          1657#   6188
PRIMSG  030006          6192    6198#
PRIORT  002416          1768#   3334    6167*   6168    6190
PRITAB  021732          4875    4878#   6167
PRI00 = 000000 G        1566#   4878
PRI01 = 000040 G        1566#   4879
PRI02 = 000100 G        1566#   4880
PRI03 = 000140 G        1566#   4881
PRI04 = 000200 G        1566#   4882
PRI05 = 000240 G        1566#   4883
PRI06 = 000300 G        1566#   4884
PRI07 = 000340 G        1566#   3356    4808    4885    5081    6076    6117    6164
PROPRT= 000010          1708#   2582    5903
PROTCT  002472          1806#   2584    3231*   3410*
PRTB0   002526 G        1918#
PRTB0S  002550          1919*   1930#   2210*   2212*   2399*   2409*   2413*   2568*   2577*   2579*   2651*   2656*   2690*
                        2699*   2704*   2710*   3687*   4064*   4213*
PRTB1   002534 G        1922#   5088
PRTB1S  002570          1923*   1933#   2657*   2658*   2692*   2701*   2706*   2712*   4553*   4576*   4581*   4947*
PRTB2   002542 G        1926#
PRTB2S  002612          1927*   1936#   2625*   3684*   4505*
PRTB3S  002636          1939#   3692*   4501*
PRTB4S  002664          1942#   4054*
PRTCDE  007040          2023*   2566#
PRTDID  020600          2685*   4574#
PRTECD  015744          4067*   4096#
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PRTFRU  005404  2035*  2377#
PRTGMS  007620  2622   2630#
PRTREG  007564  2020*  2028*  2621#
PRTSEC  007674  2031*  2646#
PRTSTA  015240  2036*  2040*  4049#
PRTTRK  010002  2034*  2685#
PRTXOS  002714  1945#  4104*
PRTX1S  002734  1948#  2586*  4099*
PRTX2S  002756  1951#  6193*
PRTX3S  003002  1954#  4073*
PRTX4S  003030  1957#  4079*
PTERTY  003474  2015*  2128#
PTUTMS  020560  4552   4556#
PWDNRY  026175  5832   5852#
PWRMS   026122  5831   5839   5851#
PWUPRY  026214  5840   5853#
RANDAT  012566  3514   3553#  3558
RANGEN  010344  2887#  3553   3604*  3642*
RANUM   010436  2902*  2907#  3554   3605*  3606  3609  3612  3614  3643*  3644  3646  3648*  3649
RAN1    010432  2888   2894*  2899   2905#
RAN2    010434  2889   2896   2901*  2906#
RDERCD  011340  3172#  5182*  5751*  5890*  5951*  6078*  6335*  6391*  6439*  6446*  6496*  6551*  6674*
                6757*  6779*  6857*  6942*  6949*  7005*  7055*
RDERR = 000003  1618#  4028   4030   4031   4032   4035   4036   6775
RDSTAT  011266  3145#  4236*  5268*  5898*
READ    011062  3078#  4276*  4285*  5361*  5368*  5411*  5464*  5467*  5472*  5475*  5515*  6438*  6445*
                6495*  6600*  6756*  6778*  6856*  6941*  6948*  7058*  7139*
READ1   011112  3084#
RECADR  002364  1754#  3183   4653*  5180*  6077*
RECCMD= 000016  1612#
RECERN  002462  1801#  4013*
RECERR= 000021  1632#  6874   6883
RECFLG= 000200  1694#  2384   2647   2686   3187   4065   4080   4344   4415   4452   5956   6080
RECTST= 000200  1710#  3849   4417   5181   5184   5889   5892   6390   6394
REGACT  002440  1778#  2623   2626*  3785*  5572*  5579*  5629*  5636*  5685*  5686*  5693*  6340*  6341*
REGCK = 000001  1687#  4412   4603   5755   5789   5848   5903   5992   6088   6229   6397   6451   6504
                6556   6611   6696   6792   6954   7010   7069   7159
REGEXP  002436  1777#  2624   2627*  3784*  5567*  5569*  5570   5575*  5577   5626*  5627   5632*  5634
                5682*  5683   5689*  5691   6342*
REGSCK  013664  3760#  4414*
REGS1 = 015036  5153#  5154   5186#  5187   5213#  5214   5241#  5242   5271#  5272   5312#  5313   5376#
                5377   5418#  5419   5481#  5482   5521#  5522   5583#  5584   5640   5699   5754#  5755
                5788#  5789   5847#  5848   5902#  5903   5991#  5992   6086#  6088   6124#  6125   6200#
                6201   6228#  6229   6287#  6288   6353#  6354   6396#  6397   6450#  6451   6503#  6504
                6555#  6556   6610#  6611   6695#  6696   6791#  6792   6898#  6899   6953#  6954   7009#
                7010   7068#  7069   7158#  7159
REGS2 = 000000  5153#  5154   5186#  5187   5213#  5214   5241#  5242   5271#  5272   5312#  5313   5376#
                5377   5418#  5419   5481#  5482   5521#  5522   5583#  5584   5640   5699   5754#  5755
                5788#  5789   5847#  5848   5902#  5903   5991#  5992   6086#  6088   6124#  6125   6200#
                6201   6228#  6229   6287#  6288   6353#  6354   6396#  6397   6450#  6451   6503#  6504
                6555#  6556   6610#  6611   6695#  6696   6791#  6792   6898#  6899   6953#  6954   7009#
                7010   7068#  7069   7158#  7159
REGS3 = 000000  5153#  5154   5186#  5187   5213#  5214   5241#  5242   5271#  5272   5312#  5313   5376#
                5377   5418#  5419   5481#  5482   5521#  5522   5583#  5584   5640   5699   5754#  5755
                5788#  5789   5847#  5848   5902#  5903   5991#  5992   6086#  6088   6124#  6125   6200#
                6201   6228#  6229   6287#  6288   6353#  6354   6396#  6397   6450#  6451   6503#  6504
```

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                    6555#  6556   6610#  6611   6695#  6696   6791#  6792   6898#  6899   6953#  6954   7009#
                    7010   7068#  7069   7158#  7159
REGS4 = 000000      5153#  5154   5186#  5187   5213#  5214   5241#  5242   5271#  5272   5312#  5313   5376#
                    5377   5418#  5419   5481#  5482   5521#  5522   5583#  5584   5640   5699   5754#  5755
                    5788#  5789   5847#  5848   5902#  5903   5991#  5992   6086#  6088   6124#  6125   6200#
                    6201   6228#  6229   6287#  6288   6353#  6354   6396#  6397   6450#  6451   6503#  6504
                    6555#  6556   6610#  6611   6695#  6696   6791#  6792   6898#  6899   6953#  6954   7009#
                    7010   7068#  7069   7158#  7159
REGS5 = 000000      5153#  5154   5186#  5187   5213#  5214   5241#  5242   5271#  5272   5312#  5313   5376#
                    5377   5418#  5419   5481#  5482   5521#  5522   5583#  5584   5640   5699   5754#  5755
                    5788#  5789   5847#  5848   5902#  5903   5991#  5992   6086#  6088   6124#  6125   6200#
                    6201   6228#  6229   6287#  6288   6353#  6354   6396#  6397   6450#  6451   6503#  6504
                    6555#  6556   6610#  6611   6695#  6696   6791#  6792   6898#  6899   6953#  6954   7009#
                    7010   7068#  7069   7158#  7159
REGS6 = 000000      5153#  5154   5186#  5187   5213#  5214   5241#  5242   5271#  5272   5312#  5313   5376#
                    5377   5418#  5419   5481#  5482   5521#  5522   5583#  5584   5640   5699   5754#  5755
                    5788#  5789   5847#  5848   5902#  5903   5991#  5992   6086#  6088   6124#  6125   6200#
                    6201   6228#  6229   6287#  6288   6353#  6354   6396#  6397   6450#  6451   6503#  6504
                    6555#  6556   6610#  6611   6695#  6696   6791#  6792   6898#  6899   6953#  6954   7009#
                    7010   7068#  7069   7158#  7159
RESFLG= 040000      1713#  4781   4796
RESTAR  021332      4783   4794#
REVC  = 000000      1083#  1143   1198   1743   1820   1827   2120   4774   4814   4942   4965   7305   7368
RGERMB  020166      4429*  4435   4437*  4440   4442   4449*  4456#  4503
RGERTB  014706      3823*  3907*  3929#  4431   4433
RGETPT  014670      3761*  3821   3905   3908*  3917#
RGPRT = 000004      1707#  2016   2026   5584   5640   5699   6229   6354
RSC   = 000000      1600#
RSCMD = 000006      1608#  3869
RTBADR  014704      3794*  3815*  3901   3923#
RTK   = 000000      1599#  5510   6490
RWELEC= 000004      1671#  2487   2525   2526   2528   2529   2530   2531   2532   2533   2534   2535   2536
                    2537   2539
RXCS    002350      1748#  2926*  2950*  2976*  3012*  3049*  3084*  3119*  3151*  3179*  3309   3339   3349
                    3381   3413   3415   3428   3453   4203   4854*  4855   5082   5087   5564*  5570   5572
                    5576*  5577   5579   5681*  5690*  5734   6118*  6121*  6170*  6177*
RXCSR   002432      1775#  3451   3453*  3777   3852*  4051   4363   4419
RXDB    002352      1749#  2980*  2984*  3016*  3020*  3053*  3057*  3088*  3092*  3123*  3183*  3454   4237
                    4279   4286   4855*  4856*  5625*  5627   5629   5633*  5634   5636   5683   5685   5691
                    5736   5741   5746   6602   7060
RXESR   002434      1776#  3452   3454*  3800   3853*  4052
RXINIT= 040000      1572#  3841
RXPRI   002356      1751#  4875*  6186   6191
RX2BIT= 004000      1573#
SCPRT = 000002      1706#  2029   6763   6765   6784
SDCMD = 000010      1609#
SDENC   020472      4530#  5357*  5407*  5460*  5477*  5512*  6437*  6492*  6543*  6595*  6753*  6851*  6940*
                    6997*  7052*  7126*
SDKYWD= 000036      1646#  4042   6677
SDRDYE= 000024      1636#  3950
SECAER= 000042      1650#  6762   6785
SECDON= 002000      1696#  3633   3640   6771   6773   7146
SECTOR  002376      1759#  2649   3053   3088   3632*  3636*  3637   3639*  3649*  3683   4275*  4655*  4685*
                    5354*  6493*  6760   6777*  6782
SEKERR= 000006      1621#  4022   4023   4026   4034
SETDCD  011462      3048*  3083*  3118*  3150*  3209#
```

```
SETDN   011172          3113#   5461*   5470*   5478*   6669*   6673*   6682*   6693*   7149*
SETSCD  011502          2974*   3010*   3047*   3082*   3117*   3149*   3176*   3228#
SETUP   021362          4793    4797    4800#
SFPTBL  002320 G        1217#
SFTSTS  002450          1792#   4077
SIDE    002410          1765#   3211    4869*   4872*
SIDE1 = 001000          1574#   3843    3857    3859    4872
SIDFLG= 010000          1594#   4577    7283
SIDPRT  002515          1818#   4579    4870*   4873*
SIDRDY= 000002          1588#
SIDWRG= 000026          1638#   3958
SSC   = 000002          1598#   6754    7130
STAFLG= 100000          1714#   4781    4792
START   021252          4782#
STARTO  021262          4784#
START1  021322          4788    4790    4792#
STATER  017222          4212    4218#
STCMD = 000012          1610#
STDATP  012306          3493#   5303*   5959*   6273*   7128*
STDNER= 000035          1645A   6688
STK   = 000001          1597#   3600    6852    6855    7130
STTK76  021174          4684#   5372*   5405*   5463*   5474*
SUDVCD  021014          4604*   4625*   4643#   5209*   5237*   5267*   5301*
SUM     012654          3494*   3565*   3570    3571*   3572    3576#
SURGCK  014276          3764*   3839#
SUTSFG  020772          4624*   4631#
SVCGBL= 000000          1100#   1109#   1146    1147    1157    1170    1185    1205    1217    1828    1918    1922    1926
                        2205    4740    4768    4907    4935    4969    4983    7227    7270    7349#
SVCINS= 177777          1100#   1106#   1146    1147    1157    1170    1185    1217    1920    1924    1928    1930    1933
                        1936    1939    1942    1945    1948    1951    1954    1957    2129    2213    3264    3265    3313
                        3334    3344    3356    3383    3417    4214    4215    4295    4296    4747    4775    4777    4778
                        4779    4780    4782    4783    4784    4785    4794    4795    4798    4799    4804    4805    4808
                        4810    4812    4831    4908    4909    4916    4948    4971    4990    5081    5083    5088    5089
                        5145    5152    5155    5185    5188    5212    5215    5240    5243    5270    5273    5311    5314
                        5375    5378    5417    5420    5480    5483    5520    5523    5561    5582    5586    5623    5639
                        5642    5679    5697    5701    5733    5753    5757    5786    5791    5829    5830    5831    5832
                        5839    5840    5846    5856    5900    5905    5990    5994    6076    6083    6085    6090    6117
                        6123    6127    6164    6197    6203    6227    6231    6275    6277    6286    6290    6334    6336
                        6352    6356    6392    6395    6399    6440    6447    6449    6453    6497    6502    6506    6545
                        6552    6554    6558    6598    6601    6609    6613    6670    6675    6683    6694    6698    6790
                        6794    6897    6901    6943    6950    6952    6957    6999    7006    7008    7013    7056    7059
                        7067    7072    7156    7162    7227    7229    7230    7231    7232    7233    7240    7270    7272
                        7273    7274    7275    7276    7277    7278    7279    7280    7281    7282    7283    7290    7349
                        7353    7360
SVCSUB= 177777          1100#   1108#
SVCTAG= 177777          1100#   1110#   1196    1236    1920    1924    1928    2213    4747    4831    4916    4948    4971
                        4990    5155    5188    5215    5243    5273    5314    5378    5420    5483    5523    5586    5642
                        5701    5757    5791    5832    5840    5856    5905    5994    6090    6127    6203    6231    6290
                        6356    6399    6453    6506    6558    6613    6698    6794    6901    6957    7013    7072    7162
                        7240    7290    7353    7359    7360    7366
SVCTST= 177777          1100#   1107#   5124    5158    5191    5218    5246    5276    5317    5381    5423    5486    5527
                        5589    5645    5704    5760    5794    5859    5908    6044    6093    6130    6206    6234    6293
                        6359    6402    6456    6509    6561    6616    6701    6797    6904    6960    7016    7075
SWREG   002332 G        1223#   2038    3670    3786    3807    4446    4577
SYFERR= 002000          1720#
SYSERR  002456          1799#   3354*   3390*   3427*   3430*   4239*   4272
```

```
S$LSYM= 010000   1100# 1196# 1236# 1920# 1924# 1928# 2213# 4747# 4831# 4916# 4948# 4971# 4990#
                 5155# 5188# 5215# 5243# 5273# 5314# 5378# 5420# 5483# 5523# 5586# 5642# 5701#
                 5757# 5791# 5832# 5840# 5856# 5905# 5994# 6090# 6127# 6203# 6231# 6290# 6356#
                 6399# 6453# 6506# 6558# 6613# 6698# 6794# 6901# 6957# 7013# 7072# 7162# 7240#
                 7290#
TCMDCT  002470   1805# 2394  3769  4569* 5897* 6389*
TFDCK   013342   3669  3672#
TGMS    010220   2655  2703  2717#
TKERCK  017516   4339# 6498*
TKPRT = 000001   1705# 2032  4360  4368  4371
TKSCFG  002510   1814# 3586  3588* 3595  3600  3629  3631* 3634  4671* 5510* 6490* 6499* 6754*
                 6852* 6855* 6889* 6890* 7129* 7130*
TN    = 000044   2476# 2478  2481  2484  2487  2490  2524# 2525  2526  2527  2528  2529  2530
                 2531  2532  2533  2534  2535  2536  2537  2538  2539  2540  3983# 3984  3985
                 3986  3987  3988  3989  5121# 5124# 5144  5154  5158# 5177  5187  5191# 5207
                 5214  5218# 5235  5242  5246# 5264  5272  5276# 5299  5313  5317# 5351  5377
                 5381# 5404  5419  5423# 5458  5482  5486# 5509  5522  5527# 5560  5584  5585
                 5589# 5622  5640  5641  5645# 5678  5699  5700  5704# 5732  5755  5756  5760#
                 5782  5789  5790  5794# 5827  5848  5849  5859# 5888  5903  5904  5908# 5949
                 5992  5993  6044# 6072  6087  6088  6089  6093# 6115  6125  6126  6130# 6161
                 6201  6202  6206# 6224  6229  6230  6234# 6271  6288  6289  6293# 6330  6354
                 6355  6359# 6386  6397  6398  6402# 6435  6451  6452  6456# 6489  6504  6505
                 6509# 6541  6556  6557  6561# 6593  6611  6612  6616# 6665  6696  6697  6701#
                 6750  6792  6793  6797# 6849  6899  6900  6904# 6938  6954  6955  6960# 6994
                 7010  7011  7016# 7050  7069  7070  7075# 7123  7159  7160
TRACK   002374   1758# 2688  2708  3057  3092  3592* 3593* 3597* 3602* 3612  3614* 3682  4274*
                 4284* 4348  4355  4654* 4684* 5353* 5466* 6860  6867  6877
TRAP    022324   5081  5113# 6076
TRBIT = 000200   1576# 3415  3427
TRKAER= 000041   1649# 4025  4352  4359  4367  6862  6869  6879
TRKCNT  013100   3589* 3590* 3591* 3615* 3620#
TRKDON= 001000   1695# 3594  3598  3617  5517  6500  6886  6888  7144
TRKSEQ  002330 G 1222#
TRPMS1  022212   5086  5093#
TSAVE1  002506   1813# 6667* 6690
TSDGMS  020306   4500  4508#
TSDGM1  020364   4502  4509#
TSEC    002447   1791# 2654  4076  6760  6782
TSTDBG  020240   4448* 4497#
TSTID   002466   1804# 2389  3765  4602  4623  4632  5144* 5177* 5207* 5235* 5264* 5299* 5351*
                 5404* 5458* 5509* 5560* 5622* 5678* 5732* 5782* 5827* 5888* 5949* 6072* 6115*
                 6161* 6224* 6271* 6330* 6386* 6435* 6489* 6541* 6593* 6665* 6750* 6849* 6938*
                 6994* 7050* 7123*
TSTMOD  002324 G 1220# 5144  5177  5207  5235  5264  5299  5351  5404  5458  5509  5560  5622
                 5678  5732  5782  5827  5888  5949  6072  6115  6161  6224  6271  6330  6386
                 6435  6489  6541  6593  6665  6750  6849  6938  6994  7050  7123
TSTPAT  002326 G 1221#
TTEMP1  002504   1812# 4673* 5355* 5370* 5373  5828* 5832  5833  5840  5841  5961* 5962* 5963*
                 5964  5979  6168* 6169* 6186  7124* 7150* 7154
TTRK    002446   1790# 2702  4075  6860
TYPERR  002460   1800# 2021  2587* 3342* 3352* 3424* 4668*
T$ARGC= 000002   1146# 1930# 1933# 1936# 1939# 1942# 1945# 1948# 1951# 1954# 1957# 4810# 5831#
                 5839#
T$CODE= 005130   5832# 5840# 7229# 7230# 7231# 7232# 7233# 7272# 7273# 7274# 7275# 7276# 7277#
                 7278# 7279# 7280# 7281# 7282# 7283#
T$ERRN= 000074   1100# 5088#
```

```
T$EXCP= 000000  7229#  7230#  7231#  7232#  7233#  7277#  7278#  7279#
T$FLAG= 000040  5152#  5185#  5212#  5240#  5270#  5311#  5375#  5417#  5480#  5520#  5582#  5639#  5697#
                5753#  5786#  5846#  5900#  5990#  6085#  6123#  6197#  6227#  6275#  6277#  6286#  6334#
                6336#  6352#  6392#  6395#  6440#  6447#  6449#  6497#  6502#  6545#  6552#  6554#  6598#
                6601#  6609#  6670#  6675#  6683#  6694#  6790#  6897#  6943#  6950#  6952#  6999#  7006#
                7008#  7056#  7059#  7067#  7156#
T$FREE= 037670  7349   7367#
T$GMAN= 000000  1100#
T$HILI= 000003  7229#  7230#  7231#  7232#  7233#  7277#  7278#  7279#
T$LAST= 000001  1100#  7349#  7352
T$LOLI= 000000  7229#  7230#  7231#  7232#  7233#  7277#  7278#  7279#
T$LSYM= 010000  1100#  1196   1236   1920   1924   1928   2213   4747   4831   4916   4948   4971   4990
                5155   5188   5215   5243   5273   5314   5378   5420   5483   5523   5586   5642   5701
                5757   5791   5856   5905   5994   6090   6127   6203   6231   6290   6356   6399   6453
                6506   6558   6613   6698   6794   6901   6957   7013   7072   7162   7240   7290
T$LTNO= 000044  7349#
T$NEST= 177777  1100#  1127#  1185#  1196#  1205#  1209#  1217#  1236#  1245#  1559#  1918#  1920#  1922#
                1924#  1926#  1928#  2205#  2213#  4689#  4733#  4740#  4747#  4768#  4831#  4907#  4916#
                4935#  4948#  4969#  4971#  4983#  4990#  5003#  5054#  5124#  5155#  5158#  5188#  5191#
                5215#  5218#  5243#  5246#  5273#  5276#  5314#  5317#  5378#  5381#  5420#  5423#  5483#
                5486#  5523#  5527#  5586#  5589#  5642#  5645#  5701#  5704#  5757#  5760#  5791#  5794#
                5856#  5859#  5905#  5908#  5994#  6044#  6090#  6093#  6127#  6130#  6203#  6206#  6231#
                6234#  6290#  6293#  6356#  6359#  6399#  6402#  6453#  6456#  6506#  6509#  6558#  6561#
                6613#  6616#  6698#  6701#  6794#  6797#  6901#  6904#  6957#  6960#  7013#  7015#  7072#
                7075#  7162#  7170#  7216#  7227#  7240#  7270#  7273   7281   7290#  7350#
T$NS0 = 000000  1127#  1245   1559#  4689   4733#  5003   5054#  7170   7216#  7350
T$NS1 = 000005  1185#  1196   1205#  1209   1217#  1236   1918#  1920   1922#  1924   1926#  1928   2205#
                2213   4740#  4747   4768#  4831   4907#  4916   4935#  4948   4969#  4971   4983#  4990
                5124#  5155   5158#  5188   5191#  5215   5218#  5243   5246#  5273   5276#  5314   5317#
                5378   5381#  5420   5423#  5483   5486#  5523   5527#  5586   5589#  5642   5645#  5701
                5704#  5757   5760#  5791   5794#  5856   5859#  5905   5908#  5994   6044#  6090   6093#
                6127   6130#  6203   6206#  6231   6234#  6290   6293#  6356   6359#  6399   6402#  6453
                6456#  6506   6509#  6558   6561#  6613   6616#  6698   6701#  6794   6797#  6901   6904#
                6957   6960#  7013   7016#  7072   7075#  7162   7227#  7240   7270#  7273   7281   7290
T$PCNT= 000000  7352#  7353#  7360#
T$PTAB= 010066  7353#  7360#
T$PTHV= 000002  1146   7367#
T$PTNU= 000002  1100#  7353#  7360#  7367
T$SAVL= 177777  1100#
T$SEGL= 177777  1100#
T$SIZE= 000016  7349   7367#
T$SUBN= 000000  1100#  5124#  5158#  5191#  5218#  5246#  5276#  5317#  5381#  5423#  5486#  5527#  5589#
                5645#  5704#  5760#  5794#  5859#  5908#  6044#  6093#  6130#  6206#  6234#  6293#  6359#
                6402#  6456#  6509#  6561#  6616#  6701#  6797#  6904#  6960#  7016#  7075#
T$TAGL= 177777  1100#
T$TAGN= 010070  1100#  1185#  1205#  1217#  1918#  1922#  1926#  2205#  4740#  4768#  4907#  4935#  4969#
                4983#  5124#  5158#  5191#  5218#  5246#  5276#  5317#  5381#  5423#  5486#  5527#  5589#
                5645#  5704#  5760#  5794#  5859#  5908#  6044#  6093#  6130#  6206#  6234#  6293#  6359#
                6402#  6456#  6509#  6561#  6616#  6701#  6797#  6904#  6960#  7016#  7075#  7227#  7270#
                7352#  7353#  7360#
T$TEMP= 000000  1170#  1196#  1209#  1236#  1245#  1920#  1924#  1928#  2213#  4689#  4747#  4831#  4916#
                4948#  4971#  4990#  5003#  5152#  5155#  5185#  5188#  5212#  5215#  5240#  5243#  5270#
                5273#  5311#  5314#  5375#  5378#  5417#  5420#  5480#  5483#  5520#  5523#  5582#  5586#
                5639#  5642#  5697#  5701#  5753#  5757#  5786#  5791#  5832#  5840#  5846#  5856#  5900#
                5905#  5990#  5994#  6085#  6090#  6123#  6127#  6197#  6203#  6227#  6231#  6275#  6277#
                6286#  6290#  6334#  6336#  6352#  6356#  6392#  6395#  6399#  6440#  6447#  6449#  6453#
```

```
                    6497#  6502#  6506#  6545#  6552#  6554#  6558#  6598#  6601#  6609#  6613#  6670#  6675#
                    6683#  6694#  6698#  6790#  6794#  6897#  6901#  6943#  6950#  6952#  6957#  6999#  7006#
                    7008#  7013#  7056#  7059#  7067#  7072#  7156#  7162#  7170#  7229#  7230#  7231#  7232#
                    7233#  7240#  7272#  7274#  7275#  7276#  7277#  7278#  7279#  7280#  7282#  7283#  7290#
                    7350#
T$TEST= 000044      1100#  5124#  5158#  5191#  5218#  5246#  5276#  5317#  5381#  5423#  5486#  5527#  5589#
                    5645#  5704#  5760#  5794#  5859#  5908#  6044#  6093#  6130#  6206#  6234#  6293#  6359#
                    6402#  6456#  6509#  6561#  6616#  6701#  6797#  6904#  6960#  7016#  7075#  7349
T$TSTM= 177777      1100#  1920   1924   1928   1930   1933   1936   1939   1942   1945   1948   1951   1954
                    1957   2129   2213   3264   3265   3313   3334   3344   3356   3383   3417   4214   4215
                    4295   4296   4747   4775   4777   4779   4782   4784   4794   4798   4804   4808   4810
                    4812   4831   4908   4909   4916   4948   4971   4990   5081   5083   5088   5089   5145
                    5152   5155   5185   5188   5212   5215   5240   5243   5270   5273   5311   5314   5375
                    5378   5417   5420   5480   5483   5520   5523   5561   5582   5586   5623   5639   5642
                    5679   5697   5701   5733   5753   5757   5786   5791   5829   5831   5832   5839   5840
                    5846   5856   5900   5905   5990   5994   6076   6083   6085   6090   6117   6123   6127
                    6164   6197   6203   6227   6231   6275   6277   6286   6290   6334   6336   6352   6356
                    6392   6395   6399   6440   6447   6449   6453   6497   6502   6506   6545   6552   6554
                    6558   6598   6601   6609   6613   6670   6675   6683   6694   6698   6790   6794   6897
                    6901   6943   6950   6952   6957   6999   7006   7008   7013   7056   7059   7067   7072
                    7156   7162
T$TSTS= 000001      1100#  5124#  5158#  5191#  5218#  5246#  5276#  5317#  5381#  5423#  5486#  5527#  5589#
                    5645#  5704#  5760#  5794#  5859#  5908#  6044#  6093#  6130#  6206#  6234#  6293#  6359#
                    6402#  6456#  6509#  6561#  6616#  6701#  6797#  6904#  6960#  7016#  7075#
T$$AU = 010014      4983#  4990
T$$AUT= 010013      4969#  4971
T$$CLE= 010011      4907#  4916
T$$DAT= 010067      7353#  7359   7360#  7366
T$$DU = 010012      4935#  4948
T$$HAR= 010061      7227#  7240
T$$HW = 010000      1185#  1196
T$$INI= 010010      4768#  4831
T$$MSG= 010006      1918#  1920   1922#  1924   1926#  1928   2205#  2213
T$$PC = 000002      7352#  7367
T$$PRO= 010001      1205#
T$$PTA= 010066      7352#  7353#  7360#
T$$RPT= 010007      4740#  4747
T$$SOF= 010062      7270#  7290
T$$SW = 010002      1217#  1236
T$$TES= 010060      5124#  5152   5155   5158#  5185   5188   5191#  5212   5215   5218#  5240   5243   5246#
                    5270   5273   5276#  5311   5314   5317#  5375   5378   5381#  5417   5420   5423#  5480
                    5483   5486#  5520   5523   5527#  5582   5586   5589#  5639   5642   5645#  5697   5701
                    5704#  5753   5757   5760#  5786   5791   5794#  5846   5856   5859#  5900   5905   5908#
                    5990   5994   6044#  6085   6090   6093#  6123   6127   6130#  6197   6203   6206#  6227
                    6231   6234#  6275   6277   6286   6290   6293#  6334   6336   6352   6356   6359#  6392
                    6395   6399   6402#  6440   6447   6449   6453   6456#  6497   6502   6506   6509#  6545
                    6552   6554   6558   6561#  6598   6601   6609   6613   6616#  6670   6675   6683   6694
                    6698   6701#  6790   6794   6797#  6897   6901   6904#  6943   6950   6952   6957   6960#
                    6999   7006   7008   7013   7016#  7056   7059   7067   7072   7075#  7156   7162
TOFTB   006660      2387   2497#
TOFT0   006640      2380   2477   2478#
TOFT1   006736      2498   2525#
TOFT11  006763      2506   2530#
TOFT12  006770      2507   2531#
TOFT13  006776      2508   2532#
TOFT15  007002      2510   2533#
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TOFT16  007006            2511    2534#
TOFT17  007012            2512    2535#
TOFT2   006742            2499    2526#
TOFT20  007016            2513    2536#
TOFT22  007022            2515    2537#
TOFT23  007025            2516    2538#
TOFT24  007030            2517    2539#
TOFT25  007035            2518    2540#
TOFT4   006746            2501    2527#
TOFT40  006644            2480    2481#
TOFT41  006646            2483    2484#
TOFT42  006651            2486    2487#
TOFT43  006654            2489    2490#
TOFT5   006751            2502    2528#
TOFT7   006755            2504    2529#
TOMSG   022172            5088    5092#
TORT1   015026            3984#   3991
TORT2   015036            3985#   3992
TORT3   015046            3986#   3993
TORT4   015056            3987#   3994
TORT5   015066            3988#   3995
TORT6   015076            3989#   3996
T1      022332 G          1170    5124#
T1MSG   022334            5124#   5154
T1RTB   022450            5154#
T1RT1 = ****** U          5154
T1RT2 = ****** U          5154
T1RT3 = ****** U          5154
T1RT4 = ****** U          5154
T1TBL   022444            5144    5154#
T10     024222 G          1170    5486#
T10MSG  024224            5486#   5522
T10RTB  024356            5522#
T10RT1= ****** U          5522
T10RT2= ****** U          5522
T10RT3= ****** U          5522
T10RT4= ****** U          5522
T10TBL  024352            5509    5522#
T11     024364 G          1170    5527#
T11FTB  024614            5585#
T11FT1= ****** U          5585
T11FT2= ****** U          5585
T11FT3= ****** U          5585
T11FT4= ****** U          5585
T11FT5= ****** U          5585
T11FT6= ****** U          5585
T11MSG  024366            5527#   5584
T11RTB  024612            5584#
T11RT1= ****** U          5584
T11RT2= ****** U          5584
T11RT3= ****** U          5584
T11RT4= ****** U          5584
T11TBL  024602            5560    5584#
T12     024622 G          1170    5589#
T12FTB  025024            5641#
T12FT1= ****** U          5641
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T12FT2= ****** U          5641
T12FT3= ****** U          5641
T12FT4= ****** U          5641
T12FT5= ****** U          5641
T12FT6= ****** U          5641
T12MSG  024624            5589#   5640
T12RTB  025022            5640#
T12RT1= ****** U          5640
T12RT2= ****** U          5640
T12RT3= ****** U          5640
T12RT4= ****** U          5640
T12TBL  025012            5622    5640#
T13     025032 G          1170    5645#
T13FTB  025254            5700#
T13FT1= ****** U          5700
T13FT2= ****** U          5700
T13FT3= ****** U          5700
T13FT4= ****** U          5700
T13FT5= ****** U          5700
T13FT6= ****** U          5700
T13MSG  025034            5645#   5699
T13RTB  025252            5699#
T13RT1= ****** U          5699
T13RT2= ****** U          5699
T13RT3= ****** U          5699
T13RT4= ****** U          5699
T13TBL  025242            5678    5699#
T14     025262 G          1170    5704#
T14FTB  025474            5756#
T14FT1= ****** U          5756
T14FT2= ****** U          5756
T14FT3= ****** U          5756
T14FT4= ****** U          5756
T14FT5= ****** U          5756
T14FT6= ****** U          5756
T14MSG  025264            5704#   5755
T14RTB  025472            5755#
T14RT1= ****** U          5755
T14RT2= ****** U          5755
T14RT3= ****** U          5755
T14RT4= ****** U          5755
T14TBL  025462            5732    5755#
T15     025502 G          1170    5760#
T15FTB  025624            5790#
T15FT1= ****** U          5790
T15FT2= ****** U          5790
T15FT3= ****** U          5790
T15FT4= ****** U          5790
T15FT5= ****** U          5790
T15FT6= ****** U          5790
T15MSG  025504            5760#   5789
T15RTB  025620            5789#
T15RT1= ****** U          5789
T15RT2= ****** U          5789
T15RT3= ****** U          5789
T15RT4= ****** U          5789
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T15TBL  025610          5782    5789#
T16     025632 G        1170    5794#
T16FTB  026116          5849#
T16FT1= ****** U        5849
T16FT2= ****** U        5849
T16FT3= ****** U        5849
T16FT4= ****** U        5849
T16FT5= ****** U        5849
T16FT6= ****** U        5849
T16MSG  025634          5794#   5848
T16RTB  026112          5848#
T16RT1= ****** U        5848
T16RT2= ****** U        5848
T16RT3= ****** U        5848
T16RT4= ****** U        5848
T16TBL  026102          5827    5848#
T17     026234 G        1170    5859#
T17FTB  026422          5904#
T17FT1= ****** U        5904
T17FT2= ****** U        5904
T17FT3= ****** U        5904
T17FT4= ****** U        5904
T17FT5= ****** U        5904
T17FT6= ****** U        5904
T17MSG  026236          5859#   5903
T17RTB  026414          5903#
T17RT1= ****** U        5903
T17RT2= ****** U        5903
T17RT3= ****** U        5903
T17RT4= ****** U        5903
T17TBL  026404          5888    5903#
T18     026430 G        1170    5908#
T18FTB  026766          5993#
T18FT1= ****** U        5993
T18FT2= ****** U        5993
T18FT3= ****** U        5993
T18FT4= ****** U        5993
T18FT5= ****** U        5993
T18FT6= ****** U        5993
T18MSG  026432          5908#   5992
T18RTB  026762          5992#
T18RT1= ****** U        5992
T18RT2= ****** U        5992
T18RT3= ****** U        5992
T18RT4= ****** U        5992
T18TBL  026752          5949    5992#
T19     027104 G        1170    6044#
T19FTB  027332          6089#
T19FT1= ****** U        6089
T19FT2= ****** U        6089
T19FT3= ****** U        6089
T19FT4= ****** U        6089
T19FT5= ****** U        6089
T19FT6= ****** U        6089
T19MSG  027106          6044#   6088
T19RTB  027326          6088#
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T19RT1  027306          6087#   6088
T19RT2= ****** U        6088
T19RT3= ****** U        6088
T19RT4= ****** U        6088
T19TBL  027316          6072    6088#
T2      022456 G        1170    5158#
T2MSG   022460          5158#   5187
T2RTB   022610          5187#
T2RT1 = ****** U        5187
T2RT2 = ****** U        5187
T2RT3 = ****** U        5187
T2RT4 = ****** U        5187
T2TBL   022604          5177    5187#
T20     027340 G        1170    6093#
T20FTB  027474          6126#
T20FT1= ****** U        6126
T20FT2= ****** U        6126
T20FT3= ****** U        6126
T20FT4= ****** U        6126
T20FT5= ****** U        6126
T20FT6= ****** U        6126
T20MSG  027342          6093#   6125
T20RTB  027472          6125#
T20RT1= ****** U        6125
T20RT2= ****** U        6125
T20RT3= ****** U        6125
T20RT4= ****** U        6125
T20TBL  027462          6115    6125#
T21     027502 G        1170    6130#
T21FTB  030120          6202#
T21FT1= ****** U        6202
T21FT2= ****** U        6202
T21FT3= ****** U        6202
T21FT4= ****** U        6202
T21FT5= ****** U        6202
T21FT6= ****** U        6202
T21MSG  027504          6130#   6201
T21RTB  030116          6201#
T21RT1= ****** U        6201
T21RT2= ****** U        6201
T21RT3= ****** U        6201
T21RT4= ****** U        6201
T21TBL  030106          6161    6201#
T22     030126 G        1170    6206#
T22FTB  030240          6230#
T22FT1= ****** U        6230
T22FT2= ****** U        6230
T22FT3= ****** U        6230
T22FT4= ****** U        6230
T22FT5= ****** U        6230
T22FT6= ****** U        6230
T22MSG  030130          6206#   6229
T22RTB  030234          6229#
T22RT1= ****** U        6229
T22RT2= ****** U        6229
T22RT3= ****** U        6229
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T22RT4= ****** U          6229
T22TBL  030224            6224    6229#
T23     030246 G          1170    6234#
T23FTB  030442            6289#
T23FT1= ****** U          6289
T23FT2= ****** U          6289
T23FT3= ****** U          6289
T23FT4= ****** U          6289
T23FT5= ****** U          6289
T23FT6= ****** U          6289
T23MSG  030250            6234#   6288
T23RTB  030440            6288#
T23RT1= ****** U          6288
T23RT2= ****** U          6288
T23RT3= ****** U          6288
T23RT4= ****** U          6288
T23TBL  030430            6271    6288#
T24     030450 G          1170    6293#
T24FTB  030702            6355#
T24FT1= ****** U          6355
T24FT2= ****** U          6355
T24FT3= ****** U          6355
T24FT4= ****** U          6355
T24FT5= ****** U          6355
T24FT6= ****** U          6355
T24MSG  030452            6293#   6354
T24RTB  030700            6354#
T24RT1= ****** U          6354
T24RT2= ****** U          6354
T24RT3= ****** U          6354
T24RT4= ****** U          6354
T24TBL  030670            6330    6354#
T25     030710 G          1170    6359#
T25FTB  031072            6398#
T25FT1= ****** U          6398
T25FT2= ****** U          6398
T25FT3= ****** U          6398
T25FT4= ****** U          6398
T25FT5= ****** U          6398
T25FT6= ****** U          6398
T25MSG  030712            6359#   6397
T25RTB  031064            6397#
T25RT1= ****** U          6397
T25RT2= ****** U          6397
T25RT3= ****** U          6397
T25RT4= ****** U          6397
T25TBL  031054            6386    6397#
T26     031100 G          1170    6402#
T26FTB  031272            6452#
T26FT1= ****** U          6452
T26FT2= ****** U          6452
T26FT3= ****** U          6452
T26FT4= ****** U          6452
T26FT5= ****** U          6452
T26FT6= ****** U          6452
T26MSG  031102            6402#   6451
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T26RTB  031266          6451#
T26RT1= ****** U        6451
T26RT2= ****** U        6451
T26RT3= ****** U        6451
T26RT4= ****** U        6451
T26TBL  031256          6435    6451#
T27     031300 G        1170    6456#
T27FTB  031462          6505#
T27FT1= ****** U        6505
T27FT2= ****** U        6505
T27FT3= ****** U        6505
T27FT4= ****** U        6505
T27FT5= ****** U        6505
T27FT6= ****** U        6505
T27MSG  031302          6456#   6504
T27RTB  031456          6504#
T27RT1= ****** U        6504
T27RT2= ****** U        6504
T27RT3= ****** U        6504
T27RT4= ****** U        6504
T27TBL  031446          6489    6504#
T28     031470 G        1170    6509#
T28FTB  031656          6557#
T28FT1= ****** U        6557
T28FT2= ****** U        6557
T28FT3= ****** U        6557
T28FT4= ****** U        6557
T28FT5= ****** U        6557
T28FT6= ****** U        6557
T28MSG  031472          6509#   6556
T28RTB  031652          6556#
T28RT1= ****** U        6556
T28RT2= ****** U        6556
T28RT3= ****** U        6556
T28RT4= ****** U        6556
T28TBL  031642          6541    6556#
T29     031664 G        1170    6561#
T29FTB  032072          6612#
T29FT1= ****** U        6612
T29FT2= ****** U        6612
T29FT3= ****** U        6612
T29FT4= ****** U        6612
T29FT5= ****** U        6612
T29FT6= ****** U        6612
T29MSG  031666          6561#   6611
T29RTB  032066          6611#
T29RT1= ****** U        6611
T29RT2= ****** U        6611
T29RT3= ****** U        6611
T29RT4= ****** U        6611
T29TBL  032056          6593    6611#
T3      022616 G        1170    5191#
T3MSG   022620          5191#   5214
T3RTB   022724          5214#
T3RT1 = ****** U        5214
T3RT2 = ****** U        5214
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T3RT3 = ****** U          5214
T3RT4 = ****** U          5214
T3TBL   022720            5207    5214#
T30     032100 G          1170    6616#
T30FTB  032372            6697#
T30FT1= ****** U          6697
T30FT2= ****** U          6697
T30FT3= ****** U          6697
T30FT4= ****** U          6697
T30FT5= ****** U          6697
T30FT6= ****** U          6697
T30MSG  032102            6616#   6696
T30RTB  032366            6696#
T30RT1= ****** U          6696
T30RT2= ****** U          6696
T30RT3= ****** U          6696
T30RT4= ****** U          6696
T30TBL  032356            6665    6696#
T31     032400 G          1170    6701#
T31FTB  032744            6793#
T31FT1= ****** U          6793
T31FT2= ****** U          6793
T31FT3= ****** U          6793
T31FT4= ****** U          6793
T31FT5= ****** U          6793
T31FT6= ****** U          6793
T31MSG  032402            6701#   6792
T31RTB  032740            6792#
T31RT1= ****** U          6792
T31RT2= ****** U          6792
T31RT3= ****** U          6792
T31RT4= ****** U          6792
T31TBL  032730            6750    6792#
T32     032752 G          1170    6797#
T32FTB  033350            6900#
T32FT1= ****** U          6900
T32FT2= ****** U          6900
T32FT3= ****** U          6900
T32FT4= ****** U          6900
T32FT5= ****** U          6900
T32FT6= ****** U          6900
T32MSG  032754            6797#   6899
T32RTB  033346            6899#
T32RT1= ****** U          6899
T32RT2= ****** U          6899
T32RT3= ****** U          6899
T32RT4= ****** U          6899
T32TBL  033336            6849    6899#
T33     033356 G          1170    6904#
T33FTB  033550            6955#
T33FT1= ****** U          6955
T33FT2= ****** U          6955
T33FT3= ****** U          6955
T33FT4= ****** U          6955
T33FT5= ****** U          6955
T33FT6= ****** U          6955
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T33MSG  033360          6904#   6954
T33RTB  033544          6954#
T33RT1= ****** U        6954
T33RT2= ****** U        6954
T33RT3= ****** U        6954
T33RT4= ****** U        6954
T33TBL  033534          6938    6954#
T34     033556 G        1170    6960#
T34FTB  033744          7011#
T34FT1= ****** U        7011
T34FT2= ****** U        7011
T34FT3= ****** U        7011
T34FT4= ****** U        7011
T34FT5= ****** U        7011
T34FT6= ****** U        7011
T34MSG  033560          6960#   7010
T34RTB  033740          7010#
T34RT1= ****** U        7010
T34RT2= ****** U        7010
T34RT3= ****** U        7010
T34RT4= ****** U        7010
T34TBL  033730          6994    7010#
T35     033752 G        1170    7016#
T35FTB  034164          7070#
T35FT1= ****** U        7070
T35FT2= ****** U        7070
T35FT3= ****** U        7070
T35FT4= ****** U        7070
T35FT5= ****** U        7070
T35FT6= ****** U        7070
T35MSG  033754          7016#   7069
T35RTB  034160          7069#
T35RT1= ****** U        7069
T35RT2= ****** U        7069
T35RT3= ****** U        7069
T35RT4= ****** U        7069
T35TBL  034150          7050    7069#
T36     034172 G        1170    7075#
T36FTB  034520          7160#
T36FT1= ****** U        7160
T36FT2= ****** U        7160
T36FT3= ****** U        7160
T36FT4= ****** U        7160
T36FT5= ****** U        7160
T36FT6= ****** U        7160
T36MSG  034174          7075#   7159
T36RTB  034514          7159#
T36RT1= ****** U        7159
T36RT2= ****** U        7159
T36RT3= ****** U        7159
T36RT4= ****** U        7159
T36TBL  034504          7123    7159#
T4      022732 G        1170    5218#
T4MSG   022734          5218#   5242
T4RTB   023042          5242#
T4RT1 = ****** U        5242
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T4RT2 = ****** U          5242
T4RT3 = ****** U          5242
T4RT4 = ****** U          5242
T4TBL   023036            5235    5242#
T5      023050 G          1170    5246#
T5MSG   023052            5246#   5272
T5RTB   023160            5272#
T5RT1 = ****** U          5272
T5RT2 = ****** U          5272
T5RT3 = ****** U          5272
T5RT4 = ****** U          5272
T5TBL   023154            5264    5272#
T6      023166 G          1170    5276#
T6MSG   023170            5276#   5313
T6RTB   023344            5313#
T6RT1 = ****** U          5313
T6RT2 = ****** U          5313
T6RT3 = ****** U          5313
T6RT4 = ****** U          5313
T6TBL   023340            5299    5313#
T7      023352 G          1170    5317#
T7MSG   023354            5317#   5377
T7RTB   023606            5377#
T7RT1 = ****** U          5377
T7RT2 = ****** U          5377
T7RT3 = ****** U          5377
T7RT4 = ****** U          5377
T7TBL   023602            5351    5377#
T8      023614 G          1170    5381#
T8MSG   023616            5381#   5419
T8RTB   023776            5419#
T8RT1 = ****** U          5419
T8RT2 = ****** U          5419
T8RT3 = ****** U          5419
T8RT4 = ****** U          5419
T8TBL   023772            5404    5419#
T9      024004 G          1170    5423#
T9MSG   024006            5423#   5482
T9RTB   024214            5482#
T9RT1 = ****** U          5482
T9RT2 = ****** U          5482
T9RT3 = ****** U          5482
T9RT4 = ****** U          5482
T9TBL   024210            5458    5482#
UACDB   013660            3721#
UADCK   013500            3695#
UAM   = 000200 G          1566#
UAUWCH  011750            3348#
UBRCR   013710            3766#   3768
UBT10   024334            5517#
UBT21   027670            6175    6178#
UBT23   030410            6281    6283#
UBT24   030654            6345    6348    6350#
UBT27   031432            6500#
UBT31   032566            6759    6767    6769#
UBT32   033324            6894    6896#
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UBT36   034462          7152#
UBT7    023570          5373#
UCGSC   013214          3644#
UCT32   033240          6859    6871    6873    6876    6880    6882    6884#
UCT36   034410          7142#
UDUWCH  011744          3346#
UNIT    021526          3264    4214    4295    4800*   4801*   4802    4804    4820    4834#   5089    5831    5839
UNPKHP  021572          4807*   4853#
UNTPRT  002512          1816#   4050    4551    4820*
UN1     021314          4785    4791#
VARIFY  002372          1757#   3123    4644*   6672*   6680*
VECT    002354          1750#   4808    4857*   4908
WAIT    011610          2985*   3021*   3058*   3093*   3124*   3152*   3184*   3284#   5146*   5562*   5624*   5680*
WATCH   011662          3286*   3333#   6119*   6171*
WC      002443          1787#   4070    6337    6341
WCERR = 000023          1635#   6339
WCFRU   005462          2390#   2391
WCOVFE= 000051          1654#   3959    4040
WCOVRF= 002000          1580#
WDCNT   002370          1756#   2980    3016    3503    3659    4534*   4537*   4649*   4652*   5957*   5961    6332*   6346*
                        6347    7151*
WDDCMD= 000014          1611#   3871
WDFRU   005466          2392#   2393
WEECK   020040          4431#   4439
WEFRU   005516          2400#   2415
WRITE   010744          3042#   5359*   5366*   5409*   5414*   6544*   6550*   6597*   6608*   6998*   7004*   7054*   7066*
                        7134*
WRITE1  011002          3049#
WRTERR= 000002          1617#
WSCMD = 000004          1607#
XADBIT  002346 G        1229#
XCDENC  020470          4521    4524#
XCEC    011606          3258    3260    3262    3266#
XCRBIT  014666          3915#
XCSRCK  014106          3797    3799#
XDVRCK  011660          3310    3315#
XEMPBF  010732          3008    3015    3019    3022#
XENTCK  020236          4479    4482    4486    4488    4490#
XERNBE  003470          2113#
XERRCK  020162          4426    4453#
XERROR  003334          2052#
XERUUT  002442          1786#   2382    2736*   4004    4006    4097    4100    4105*   4165    4653    4670*   5180    5950*
                        5952    6872    6881
XER1    016014          4096    4108#
XER2    015531          4069    4087#
XER3    015627          4074    4088#
XESRCK  014234          3818    3820#
XFILBF  010614          2972    2979    2983    2986#
XGSC    013244          3638    3641    3650#
XGTFCN  015162          4005    4015#
XGTK    013076          3599    3616    3618#
XINIT   021512          4778    4780    4809    4813#
XINT    010460          2928#
XPCE    007162          2581    2583    2588#
XPG     012464          3526#   3541
XPTDID  020640          4578    4582#
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XPTSTA  015436  4066  4081#
XRDERC  011454  3174  3182  3186  3189#
XRDSTA  011336  3147  3154#
XREAD   011164  3080  3087  3091  3094#
XREGCK  014256  3825#
XSCP    007756  2648  2659#
XSDC    020540  4535  4538#
XSETDN  011254  3115  3122  3125#
XSRC    014520  3875#
XTKECK  017722  4372#
XTKPRT  010154  2707  2713#
XT1     022440  5144  5152#
XT10    024346  5509  5520#
XT11    024576  5560  5578  5582#
XT12    025006  5622  5635  5639#
XT13    025236  5678  5692  5697#
XT14    025456  5732  5735  5740  5745  5750  5753#
XT15    025604  5782  5786#
XT16    026076  5827  5830  5834  5842  5846#
XT17    026400  5888  5900#
XT18    026746  5949  5978  5984  5987  5990#
XT19    027302  6072  6074  6085#
XT2     022600  5177  5185#
XT20    027456  6115  6123#
XT21    027774  6161  6185  6187  6194  6196#
XT22    030220  6224  6227#
XT23    030424  6271  6286#
XT24    030664  6330  6352#
XT25    031050  6386  6395#
XT26    031252  6435  6449#
XT27    031442  6489  6502#
XT28    031636  6541  6554#
XT29    032052  6593  6606  6609#
XT3     022714  5207  5212#
XT30    032352  6665  6691  6694#
XT31    032724  6750  6790#
XT32    033332  6849  6897#
XT33    033530  6938  6952#
XT34    033724  6994  7008#
XT35    034144  7050  7064  7067#
XT36    034500  7123  7153  7156#
XT4     023032  5235  5240#
XT5     023150  5264  5270#
XT6     023334  5299  5311#
XT7     023575  5351  5375#
XT8     023766  5404  5417#
XT9     024204  5458  5480#
XUWCH   012014  3340  3343  3353  3356#
XWAIT   011632  3287  3289#
XWRITE  011054  3044  3052  3056  3059#
YXPG    012540  3544#  3548  3551
X$ALWA= 000000  1100#
X$FALS= 000040  1100#  7273  7281
X$OFFS= 000400  1100#  7273  7281
X$TRUE= 000020  1100#
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.     = 037670   1123#  1147#  1157#  2492#  2614#  2632#  2662#  2720#  3507   4557#  4586#  4837#  4962#
                 5095#  5124#  5152   5185   5212   5218#  5240   5270   5311   5375   5417   5480   5486#
                 5520   5582   5639   5645#  5697   5753   5760#  5786   5846   5854#  5900   5908#  5990
                 6085   6093#  6123   6197   6227   6275   6277   6286   6293#  6334   6336   6352   6359#
                 6392   6395   6402#  6440   6447   6449   6456#  6497   6502   6545   6552   6554   6598
                 6601   6609   6616#  6670   6675   6683   6694   6790   6797#  6897   6904#  6943   6950
                 6952   6999   7006   7008   7056   7059   7067   7075#  7156   7247#  7273   7281   7317#
                 7347#  7353   7360   7367
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BCOMPL  4778    4780
BGNAU   4983
BGNAUT  4969
BGNCLN  4907
BGNDU   4935
BGNHRD  7227
BGNHW   1185
BGNINI  4768
BGNMOD  1127    1559    4733    5054    7216
BGNMSG  1918    1922    1926    2205
BGNPRO  1205
BGNPTA  7353    7360
BGNRPT  4740
BGNSET  7352
BGNSFT  7270
BGNSW   1217
BGNTST  5124    5158    5191    5218    5246    5276    5317    5381    5423    5486    5527    5589    5645    5704    5760
        5794    5859    5908    6044    6093    6130    6206    6234    6293    6359    6402    6456    6509    6561    6616
        6701    6797    6904    6960    7016    7075
BNCOMP  4783    4785    4795    4799    4805    5830
BREAK   3344    3383    3417
BRESET  3313    4909    5145    5561    5623    5679    5733
CLRVEC  4908    5083    6083
DESCRI  1147
DEVTYP  1157
DISPAT  1170
DOCLN   3265    4215    4296    4812
DODU    3264    4214    4295    5089
ENDAU   4990
ENDAUT  4971
ENDCLN  4916
ENDDU   4948
ENDHRD  7240
ENDHW   1196
ENDINI  4831
ENDMOD  1245    4689    5003    7170    7350
ENDMSG  1920    1924    1928    2213
ENDPRO  1209
ENDPTA  7359    7366
ENDRPT  4747
ENDSET  7367
ENDSFT  7290
ENDSW   1236
ENDTST  5155    5188    5215    5243    5273    5314    5378    5420    5483    5523    5586    5642    5701    5757    5791
        5856    5905    5994    6090    6127    6203    6231    6290    6356    6399    6453    6506    6558    6613    6698
        6794    6901    6957    7013    7072    7162
EQUALS  1566
ERROR   2129
ERRSF   5088
ERRTBL  1828
ESCAPE  6275    6277    6334    6336    6392    6440    6447    6497    6545    6552    6598    6601    6670    6675    6683
        6943    6950    6999    7006    7056    7059
EXIT    5152    5185    5212    5240    5270    5311    5375    5417    5480    5520    5582    5639    5697    5753    5786
        5846    5900    5990    6085    6123    6197    6227    6286    6352    6395    6449    6502    6554    6609    6694
        6790    6897    6952    7008    7067    7156
FRUCO   1530#   2478    2481    2484    2487    2490    2525    2526    2527    2528    2529    2530    2531    2532    2533
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FRUTB	1524#	2478	2481	2484	2487	2490	2525	2526	2527	2528	2529	2530	2531	2532	2533
	2534	2535	2536	2537	2538	2539	2540								
FRUTBL	1488#	5585	5641	5700	5756	5790	5849	5904	5993	6089	6126	6202	6230	6289	6355
	6398	6452	6505	6557	6612	6697	6793	6900	6955	7011	7070	7160			
FUTABL	1494#	5585	5641	5700	5756	5790	5849	5904	5993	6089	6126	6202	6230	6289	6355
	6398	6452	6505	6557	6612	6697	6793	6900	6955	7011	7070	7160			
GMANIL	5832	5840													
GPHARD	4804														
GPRMA	7229	7230	7278												
GPRMD	7231	7232	7233	7277	7279										
GPRML	5832#	5840#	7272	7274	7275	7276	7280	7282	7283						
HEADER	1146														
LASTAD	7349														
MANUAL	5829														
MSBYTE	1146#														
MSCHEC	5152#	5185#	5212#	5240#	5270#	5311#	5375#	5417#	5480#	5520#	5582#	5639#	5697#	5753#	5786#
	5846#	5900#	5990#	6085#	6123#	6197#	6227#	6286#	6352#	6395#	6449#	6502#	6554#	6609#	6694#
	6790#	6897#	6952#	7008#	7067#	7156#									
MSCNTO	5832#	5840#	7229#	7230#	7231#	7232#	7233#	7272#	7274#	7275#	7276#	7277#	7278#	7279#	7280#
	7282#	7283#													
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MSDATA	1146#	1147#	1157#												
MSDECR	1196#	1209#	1236#	1245#	1920#	1924#	1928#	2213#	4689#	4747#	4831#	4916#	4948#	4971#	4990#
	5003#	5155#	5188#	5215#	5243#	5273#	5314#	5378#	5420#	5483#	5523#	5586#	5642#	5701#	5757#
	5791#	5856#	5905#	5994#	6090#	6127#	6203#	6231#	6290#	6356#	6399#	6453#	6506#	6558#	6613#
	6698#	6794#	6901#	6957#	7013#	7072#	7162#	7170#	7240#	7290#	7350#	7353#	7360#		
MSDEFA	5832#	5840#	7229#	7230#	7231#	7232#	7233#	7272#	7274#	7275#	7276#	7277#	7278#	7279#	7280#
	7282#	7283#													
MSENDE	1196#	1236#	1245#	1920#	1924#	1928#	2213#	4689#	4747#	4831#	4916#	4948#	4971#	4990#	5003#
	5155#	5188#	5215#	5243#	5273#	5314#	5378#	5420#	5483#	5523#	5586#	5642#	5701#	5757#	5791#
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MSERRI	5088#														
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	6943#	6950#	6999#	7006#	7056#	7059#									
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	5846#	5900#	5990#	6085#	6123#	6197#	6227#	6286#	6352#	6395#	6449#	6502#	6554#	6609#	6694#
	6790#	6897#	6952#	7008#	7067#	7156#									
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	5846#	5900#	5990#	6085#	6123#	6197#	6227#	6286#	6352#	6395#	6449#	6502#	6554#	6609#	6694#
	6790#	6897#	6952#	7008#	7067#	7156#									
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	5846#	5900#	5990#	6085#	6123#	6197#	6227#	6286#	6352#	6395#	6449#	6502#	6554#	6609#	6694#
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MSGEN	1146#	1147#	1157#	1170#	1185#	1196#	1205#	1217#	1236#	1828#	1918#	1920#	1922#	1924#	1926#
	1928#	2205#	2213#	4740#	4747#	4768#	4831#	4907#	4916#	4935#	4948#	4969#	4971#	4983#	4990#
	5124#	5155#	5158#	5188#	5191#	5215#	5218#	5243#	5246#	5273#	5276#	5314#	5317#	5378#	5381#
	5420#	5423#	5483#	5486#	5523#	5527#	5586#	5589#	5642#	5645#	5701#	5704#	5757#	5760#	5791#
	5794#	5832#	5840#	5856#	5859#	5905#	5908#	5994#	6044#	6090#	6093#	6127#	6130#	6203#	6206#
	6231#	6234#	6290#	6293#	6356#	6359#	6399#	6402#	6453#	6456#	6506#	6509#	6558#	6561#	6613#
	6616#	6698#	6701#	6794#	6797#	6901#	6904#	6957#	6960#	7013#	7016#	7072#	7075#	7162#	7227#
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        4798#  4799#  4804#  4805#  4808#  4810#  4812#  4831#  4908#  4909#  4916#  4948#  4971#  4990#  5081#
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        5856#  5900#  5905#  5990#  5994#  6076#  6083#  6085#  6090#  6117#  6123#  6127#  6164#  6197#  6203#
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M$HAPT  1146#
M$HNAP  1146#
M$INCR  1127#  1185#  1205#  1217#  1559#  1918#  1920#  1922#  1924#  1926#  1928#  1930#  1933#  1936#  1939#
        1942#  1945#  1948#  1951#  1954#  1957#  2129#  2205#  2213#  3264#  3265#  3313#  3334#  3344#  3356#
        3383#  3417#  4214#  4215#  4295#  4296#  4733#  4740#  4747#  4768#  4775#  4777#  4779#  4782#  4784#
        4794#  4798#  4804#  4808#  4810#  4812#  4831#  4907#  4908#  4909#  4916#  4935#  4948#  4969#  4971#
        4983#  4990#  5054#  5081#  5083#  5088#  5089#  5124#  5145#  5152#  5155#  5158#  5185#  5188#  5191#
        5212#  5215#  5218#  5240#  5243#  5246#  5270#  5273#  5276#  5311#  5314#  5317#  5375#  5378#  5381#
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        5642#  5645#  5679#  5697#  5701#  5704#  5733#  5753#  5757#  5760#  5786#  5791#  5794#  5829#  5831#
        5832#  5839#  5840#  5846#  5856#  5859#  5900#  5905#  5908#  5990#  5994#  6044#  6076#  6083#  6085#
        6090#  6093#  6117#  6123#  6127#  6130#  6164#  6197#  6203#  6206#  6227#  6231#  6234#  6275#  6277#
        6286#  6290#  6293#  6334#  6336#  6352#  6356#  6359#  6392#  6395#  6399#  6402#  6440#  6447#  6449#
        6453#  6456#  6497#  6502#  6506#  6509#  6545#  6552#  6554#  6558#  6561#  6598#  6601#  6609#  6613#
        6616#  6670#  6675#  6683#  6694#  6698#  6701#  6790#  6794#  6797#  6897#  6901#  6904#  6943#  6950#
        6952#  6957#  6960#  6999#  7006#  7008#  7013#  7016#  7056#  7059#  7067#  7072#  7075#  7156#  7162#
        7216#  7227#  7270#  7352#  7353#  7360#
M$LDRO  3264#  3334#  3356#  4214#  4295#  4777#  4779#  4782#  4794#  4798#  4804#  4908#  5083#  5089#  6083#
        6117#  6164#
M$MCHI  1100#
M$MCLO  1100#
M$POP   1196#  1209#  1236#  1245#  1920#  1924#  1928#  2213#  4689#  4747#  4831#  4916#  4948#  4971#  4990#
        5003#  5155#  5188#  5215#  5243#  5273#  5314#  5378#  5420#  5483#  5523#  5586#  5642#  5701#  5757#
        5791#  5856#  5905#  5994#  6090#  6127#  6203#  6231#  6290#  6356#  6399#  6453#  6506#  6558#  6613#
```

```
        6698#  6794#  6901#  6957#  7013#  7072#  7162#  7170#  7240#  7290#  7350#
MSPRIN  1930#  1933#  1936#  1939#  1942#  1945#  1948#  1951#  1954#  1957#  4810#  5831#  5839#
MSPUSH  1127#  1185#  1205#  1217#  1559#  1918#  1922#  1926#  2205#  4733#  4740#  4768#  4907#  4935#  4969#
        4983#  5054#  5124#  5158#  5191#  5218#  5246#  5276#  5317#  5381#  5423#  5486#  5527#  5589#  5645#
        5704#  5760#  5794#  5859#  5908#  6044#  6093#  6130#  6206#  6234#  6293#  6359#  6402#  6456#  6509#
        6561#  6616#  6701#  6797#  6904#  6960#  7016#  7075#  7216#  7227#  7270#
MSPUT   1930#  1933#  1936#  1939#  1942#  1945#  1948#  1951#  1954#  1957#  4808#  4810#  5081#  5831#  5839#
        6076#
MSPUT1  1930#  1933#  1936#  1939#  1942#  1945#  1948#  1951#  1954#  1957#  4808#  4810#  5081#  5831#  5839#
        6076#
MSRADI  5832#  5840#  7229#  7230#  7231#  7232#  7233#  7272#  7274#  7275#  7276#  7277#  7278#  7279#  7280#
        7282#  7283#
MSRNRO  4775#  4804#
MSSETS  1127#  1185#  1205#  1217#  1559#  1918#  1922#  1926#  2205#  4733#  4740#  4768#  4907#  4935#  4969#
        4983#  5054#  5124#  5158#  5191#  5218#  5246#  5276#  5317#  5381#  5423#  5486#  5527#  5589#  5645#
        5704#  5760#  5794#  5859#  5908#  6044#  6093#  6130#  6206#  6234#  6293#  6359#  6402#  6456#  6509#
        6561#  6616#  6701#  6797#  6904#  6960#  7016#  7075#  7216#  7227#  7270#
MSSVC   1920#  1924#  1928#  1930#  1933#  1936#  1939#  1942#  1945#  1948#  1951#  1954#  1957#  2129#  2213#
        3264#  3265#  3313#  3334#  3344#  3356#  3383#  3417#  4214#  4215#  4295#  4296#  4747#  4775#  4777#
        4779#  4782#  4784#  4794#  4798#  4804#  4808#  4810#  4812#  4831#  4908#  4909#  4916#  4948#  4971#
        4990#  5081#  5083#  5088   5089#  5145#  5152#  5155#  5185#  5188#  5212#  5215#  5240#  5243#  5270#
        5273#  5311#  5314#  5375#  5378#  5417#  5420#  5480#  5483#  5520#  5523#  5561#  5582#  5586#  5623#
        5639#  5642#  5679#  5697#  5701#  5733#  5753#  5757#  5786#  5791#  5829#  5831#  5832#  5839#  5840#
        5846#  5856#  5900#  5905#  5990#  5994#  6076#  6083#  6085#  6090#  6117#  6123#  6127#  6164#  6197#
        6203#  6227#  6231#  6275#  6277#  6286#  6290#  6334#  6336#  6352#  6356#  6392#  6395#  6399#  6440#
        6447#  6449#  6453#  6497#  6502#  6506#  6545#  6552#  6554#  6558#  6598#  6601#  6609#  6613#  6670#
        6675#  6683#  6694#  6698#  6790#  6794#  6897#  6901#  6943#  6950#  6952#  6957#  6999#  7006#  7008#
        7013#  7056#  7059#  7067#  7072#  7156#  7162#
MSTLAB  1920#  1924#  1928#  1930#  1933#  1936#  1939#  1942#  1945#  1948#  1951#  1954#  1957#  2129#  2213#
        3264#  3265#  3313#  3334#  3344#  3356#  3383#  3417#  4214#  4215#  4295#  4296#  4747#  4775#  4777#
        4779#  4782#  4784#  4794#  4798#  4804#  4808#  4810#  4812#  4831#  4908#  4909#  4916#  4948#  4971#
        4990#  5081#  5083#  5088#  5089#  5145#  5152#  5155#  5185#  5188#  5212#  5215#  5240#  5243#  5270#
        5273#  5311#  5314#  5375#  5378#  5417#  5420#  5480#  5483#  5520#  5523#  5561#  5582#  5586#  5623#
        5639#  5642#  5679#  5697#  5701#  5733#  5753#  5757#  5786#  5791#  5829#  5831#  5832#  5839#  5840#
        5846#  5856#  5900#  5905#  5990#  5994#  6076#  6083#  6085#  6090#  6117#  6123#  6127#  6164#  6197#
        6203#  6227#  6231#  6275#  6277#  6286#  6290#  6334#  6336#  6352#  6356#  6392#  6395#  6399#  6440#
        6447#  6449#  6453#  6497#  6502#  6506#  6545#  6552#  6554#  6558#  6598#  6601#  6609#  6613#  6670#
        6675#  6683#  6694#  6698#  6790#  6794#  6897#  6901#  6943#  6950#  6952#  6957#  6999#  7006#  7008#
        7013#  7056#  7059#  7067#  7072#  7156#  7162#
MSTSTL  1920#  1924#  1928#  1930#  1933#  1936#  1939#  1942#  1945#  1948#  1951#  1954#  1957#  2129#  2213#
        3264#  3265#  3313#  3334#  3344#  3356#  3383#  3417#  4214#  4215#  4295#  4296#  4747#  4775#  4777#
        4779#  4782#  4784#  4794#  4798#  4804#  4808#  4810#  4812#  4831#  4908#  4909#  4916#  4948#  4971#
        4990#  5081#  5083#  5088#  5089#  5145#  5152#  5155#  5185#  5188#  5212#  5215#  5240#  5243#  5270#
        5273#  5311#  5314#  5375#  5378#  5417#  5420#  5480#  5483#  5520#  5523#  5561#  5582#  5586#  5623#
        5639#  5642#  5679#  5697#  5701#  5733#  5753#  5757#  5786#  5791#  5829#  5831#  5832#  5839#  5840#
        5846#  5856#  5900#  5905#  5990#  5994#  6076#  6083#  6085#  6090#  6117#  6123#  6127#  6164#  6197#
        6203#  6227#  6231#  6275#  6277#  6286#  6290#  6334#  6336#  6352#  6356#  6392#  6395#  6399#  6440#
        6447#  6449#  6453#  6497#  6502#  6506#  6545#  6552#  6554#  6558#  6598#  6601#  6609#  6613#  6670#
        6675#  6683#  6694#  6698#  6790#  6794#  6897#  6901#  6943#  6950#  6952#  6957#  6999#  7006#  7008#
        7013#  7056#  7059#  7067#  7072#  7156#  7162#
MSWORD  1146#  1170#  5088#  5152#  5185#  5212#  5240#  5270#  5311#  5375#  5417#  5480#  5520#  5582#  5639#
        5697#  5753#  5786#  5832#  5840#  5846#  5900#  5990#  6085#  6123#  6197#  6227#  6286#  6352#  6395#
        6449#  6502#  6554#  6609#  6694#  6790#  6897#  6952#  7008#  7067#  7156#  7229#  7230#  7231#  7232#
        7233#  7272#  7273#  7274#  7275#  7276#  7277#  7278#  7279#  7280#  7281#  7282#  7283#  7353#  7360#
MSXFER  7273#  7281#
POINTE  1134
```

```
PRINTB  1930  1933  1936  1939  1942
PRINTF  4810  5831  5839
PRINTX  1945  1948  1951  1954  1957
READBU  4784
READEF  4777  4779  4782  4794  4798
REG     1404# 3984  3985  3986  3987  3988  3989  6087
REGTB   1398# 3984  3985  3986  3987  3988  3989  6087
REGTBL  1453# 5153  5186  5213  5241  5271  5312  5376  5418  5481  5521  5583  5754  5788  5847
        5902  5991  6086  6124  6200  6228  6287  6353  6396  6450  6503  6555  6610  6695  6791
        6898  6953  7009  7068  7158
RFLAGS  4775
RGTABL  1416# 5154  5187  5214  5242  5272  5313  5377  5419  5482  5522  5584  5640  5699  5755
        5789  5848  5903  5992  6088  6125  6201  6229  6288  6354  6397  6451  6504  6556  6611
        6696  6792  6899  6954  7010  7069  7159
SETPRI  3334  3356  6117  6164
SETVEC  4808  5081  6076
SVC     1099# 1100
TSETUP  1337# 5144  5177  5207  5235  5264  5299  5351  5404  5458  5509  5560  5622  5678  5732
        5782  5827  5888  5949  6072  6115  6161  6224  6271  6330  6386  6435  6489  6541  6593
        6665  6750  6849  6938  6994  7050  7123
TSTABL  1369# 5154  5187  5214  5242  5272  5313  5377  5419  5482  5522  5584  5640  5699  5755
        5789  5848  5903  5992  6088  6125  6201  6229  6288  6354  6397  6451  6504  6556  6611
        6696  6792  6899  6954  7010  7069  7159
TSTITL  1299# 5124  5158  5191  5218  5246  5276  5317  5381  5423  5486  5527  5589  5645  5704
        5760  5794  5859  5908  6044  6093  6130  6206  6234  6293  6359  6402  6456  6509  6561
        6616  6701  6797  6904  6960  7016  7075
TSTSUP  1345# 5144  5177  5207  5235  5264  5299  5351  5404  5458  5509  5560  5622  5678  5732
        5782  5827  5888  5949  6072  6115  6161  6224  6271  6330  6386  6435  6489  6541  6593
        6665  6750  6849  6938  6994  7050  7123
TSTTL   1307# 5124  5158  5191  5218  5246  5276  5317  5381  5423  5486  5527  5589  5645  5704
        5760  5794  5859  5908  6044  6093  6130  6206  6234  6293  6359  6402  6456  6509  6561
        6616  6701  6797  6904  6960  7016  7075
TTBL    1363# 5154  5187  5214  5242  5272  5313  5377  5419  5482  5522  5584  5640  5699  5755
        5789  5848  5903  5992  6088  6125  6201  6229  6288  6354  6397  6451  6504  6556  6611
        6696  6792  6899  6954  7010  7069  7159
XFER    5152# 5185# 5212# 5240# 5270# 5311# 5375# 5417# 5480# 5520# 5582# 5639# 5697# 5753# 5786#
        5846# 5900# 5990# 6085# 6123# 6197# 6227# 6286# 6352# 6395# 6449# 6502# 6554# 6609# 6694#
        6790# 6897# 6952# 7008# 7067# 7156#
XFERF   7273  7281

. ABS.  037670     000

 ERRORS DETECTED:  0

 ,CZRXFB/CRF/NL:TOC=SVC.SML/ML,CZRXFB.P11
 RUN-TIME: 34 34 6 SECONDS
 RUN-TIME RATIO: 162/75=2.1
 CORE USED:  36K  (71 PAGES)
```