TC11,TU56 TC2-TC11 TEST #2 AH-9378E-MC
CZTCBE0 FICHE 1 OF 1

IDENTIFICATION

PRODUCT CODE:	AC-9377E-MC
PRODUCT NAME:	CZTCBE0 TC2 - TC11 TEST 2
DATE:	MAR 1980
MAINTAINER:	ENGINEERING
AUTHOR:	L. R. KOLLER

1.0 GENERAL PROGRAM INFORMATION
1.1 ABSTRACT
TC2 - TC11 TEST2 IS USED TO TEST THE TC11 DECTAPE CONTROL. TC2 USES THE MAINTENANCE BIT FEATURE OF THE TC11 CONTROL TO CHECK THE TC11 CONTROL WITHOUT DEPENDING ON DECTAPE TRANSPORT MOVEMENT. PRIOR TO ACTUAL USE OF THE MAINTENANCE BIT FEATURE, CORRECT OPERATION OF THE INTERRUPT CIRCUITS IS CHECKED, AND THE MAINTENANCE BIT ITSELF IS CHECKED. IF CACHE MEMORY IS PRESENT IN THE PROCESSOR, IT WILL BE TURNED OFF BEFORE THE TESTS ARE RUN.

1.1 SYSTEM REQUIREMENTS
HARDWARE REQUIREMENTS

A) PDP-11 SYSTEM (12k CORE).
B) ASR33/35 TELETYPE.
C) TC11 DECTAPE CONTROL AND AT LEAST ONE TU56 DUAL TRANSPORT.

THE TELETYPE AND TC11 CONTROL MUST HAVE THEIR STANDARD PERIPHERAL ADDRESSES, INTERRUPT LEVELS, AND INTERRUPT VECTOR ADDRESSES. REFER TO SECTION 7.2 IF YOUR SYSTEM DOES NOT HAVE STANDARD PERIPHERAL ADDRESSES.

1.2 SOFTWARE REQUIREMENTS
THIS PROGRAM IS ABLE TO RUN ''STAND ALONE'' OR UNDER CONTROL OF THE ACT11 MONITOR

1.3 RELATED DOCUMENTS AND STANDARDS
SEE THE ACT11/XXDP PROGRAMERS GUIDE FOR INFORMATION ON RUNNING UNDER ACT 11

1.4 SUGESTED PREREQUISITES
IT IS RECOMENDED THAT ALL MAINDECS THAT CHECK OUT THE BASIC CPU BE RUN BEFORE TC2.

1.5 FAILURE ASSUMPTIONS
THROUGHOUT THIS PROGRAM IT IS ASSUMED THAT THE BASIC CPU IS IN GOOD RUNNING ORDER. IF IT IS NOT THE INFORMATION GAINED BY RUNNING THIS PROGRAM IS LIKELY TO BE FALSE (OR NONEXISTANT IF THE PROGRAM WILL NOT RUN).

2.0 OPERATING INSTRUCTIONS
2.10 LOADING PROCEDURES
THIS PROGRAM'S OBJECT TAPE IS PUNCHED IN ABSOLUTE FORMAT. THE ABS LOADER IS USED TO LOAD THE PROGRAM UNDER STAND ALONE MODE. FOR FOR INFORMATION ON PROGRAM LOADING UNDER CONTROL OF THE VARIOUS MONITOR SYSTEMS, REFER TO THE DOCUMENTS NAMES IN SECTION 1.3 ABOVE. UNDER STAND ALONE MODE, AFTER ACERTAINING THAT THE ABS LOADER PROGRAM IS IN THE PDP-11, FOLLOW THESE STEPS TO LOAD TC2:

A) PUT THE TC2 BINARY TAPE INTO THE PAPER TAPE READER
B) SET THE PDP-11 CONSOLE SWITCHES TO 37750
C) DEPRESS LOAD ADDRESS
D) DEPRES START (TAPE SHOULD READ IN)

2.2 STARTING PROCEDURE

A) UNIT 0: REMOTE/WRITE LOCK/. ALL OTHER UNITS OFF.
B) WALL SWITCH ON, WRTM SWITCH OFF. WALL SWITCH IS LOCATED BEHIND BLANK PANEL ABOVE TU56.
C) LOAD ADDRESS 000200.
D) PRESS START.
E) THE PROGRAM IDENTIFIES ITSELF, TYPES SETUP INSTRUCTIONS, SR OPTIONS MESSAGE, AND HALTS.
F) MAKE SURE THAT THE SETUP (STEPS A AND B) HAS BEEN PROPERLY DONE, AND SELECT DESIRED SR OPTIONS, IF ANY. NORMAL SR SETTING IS 000000.
G) PRESS CONT. THE PROGRAM BEGINS EXECUTION.
H) AT THE END OF EACH PASS THE PASS COUNT IS PRINTED
I) REFER TO SECTION 6.2 IF ERROR PRINTOUTS OCCUR.

2.3 EXECUTION TIME

EXECUTION TIME IS DEPENDENT ON WHICH MODEL OF PDP11 THE PROGRAM IS TO BE RUN ON. ANY TIMES GIVEN APPLY TO THE PDP-11 MODEL 40 UNLESS OTHERWISE STATED

A) ONE NORMAL ERROR FREE PASS TAKES APPROXIMATELY 10 SECONDS
B) ONE SINGLE ITERATION PASS (SR11=1) TAKES ABOUT 5 SECONDS.

******NOTE******

THE SINGLE ITERATION PASS IS A CONVENIENT WAY TO QUICKLY DETERMINE IF ANY SOLID PROBLEMS EXIST. FOR A THOROUGH TEST, THE NORMAL ITERATION PASS SHOULD BE RUN.

3.0 ERROR INFORMATION

ERRORS ARE REPORTED IN THIS PROGRAM BY THE FOLLOWING METHODS:

A) UNCONDITIONAL ERROR HALTS, OR
B) ERROR PRINTOUT FOLLOWED BY OPTIONAL ERROR HALT.

3.1 UNCONDITIONAL ERROR HALTS

AN UNCONDITIONAL ERROR HALT WILL OCCUR AT THE ADDRESSES LISTED BELOW IF THROUGH HARDWARE OR SOFTWARE FAILURE, PROGRAM CONTROL IS TRANSFERRED TO AN UNEXPECTED AREA BETWEEN 000000 AND 000176.

000002 RESERVED AREA
000016 DEBUG TRAP
000022 IOT TRAP
000040 THROUGH 000176 - SYSTEM SOFTWARE AND INTERRUPT VECTOR AREA

TO FIND OUT WHERE THE PROGRAM WAS AT THE TIME THE FAILURE OCCURRED,

A) EXAMINE CONTENTS OF REGISTER 6. (ADDRESS 177706).
B) TRANSFER THE CONTENTS OF REG 6 TO THE SR, LOAD ADDRESS AND EXAMINE.
C) THE DATA SHOWN IN THE DATA LIGHTS IS THE VALUE OF THE PC WHEN THE FAILURE OCCURRED.
D) LOCATE IN PROGRAM LISTING THE DISPLAYED PC VALUE.
E) THE INSTRUCTION THAT IMMEDIATELY PRECEDES THE ONE REFERENCED BY THE DISPLAYED PC VALUE IS THE INSTRUCTION THAT WAS/WAS BEING

EXECUTED WHEN THE FAILURE OCCURRED.

AN UNCONDITIONAL ERROR HALT FAILURE IS AN ABNORMAL CONDITION INDICATING A HARDWARE FAILURE, OR MOST UNLIKELY, A PROGRAM FAILURE. THIS PROGRAM ASSUMES THAT THE PROCESSOR IS IN OPERATING CONDITION IN ORDER TO PERFORM ITS TESTS. ANY FURTHER STEPS REQUIRED TO DIAGNOSE AN AN UNCONDITIONAL ERROR HALT ARE NOT WITHIN THE SCOPE OF THIS PROGRAM.

3.2 ERROR PRINTOUTS

THERE ARE 2 TYPES OF ERROR PRINTOUTS, NORMAL ERROR PRINTOUTS AND FATAL ERROR PRINTOUTS. EACH TYPE IS GENERATED BY THE SYSMAC .$ERROR SUBROUTINE. THE ''.$ERROR'' SUBROUTINE IS CALLED BY AN ''ERROR NN(TRAP+N)'' STATEMENT IN THE PROGRAM LISTING. A NORMAL ERROR PRINTOUT LOOKS AS FOLLOWS:

PC	SP	PS	TEST	TCCM	TCST	ADDITIONAL INFO	
XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX

WHERE:

PC
XXXXXX IS THE ADDRESS OF THE ERROR CALL

SP
XXXXXX IS THE VALUE OF THE STACK POINTER

PS
XXXXXX IS THE VALUE OF THE PROCESSOR STATUS WORD

TEST
XXXXXX IS THE NUMBER OF THE FAILING ROUTINE

TCCM
XXXXXX IS THE VALUE OF THE DECTAPE COMMAND REGISTER

TCST
XXXXXX IS THE CONTENTS OF THE DECTAPE STATUS REGISTER

ADITIONAL INFORMATION CAN VARY FROM TEST TO TEST AND FURTHER DESCRIBES THE ERROR.
AFTER THE PRINTOUT IS COMPLETED, THE PROGRAM WILL HALT AT COMMON ERROR HALT IF SR15 IS SET.
WHEN AN ERROR PRINTOUT OCCURS:

A) LOOK UP THE ADDRESS REFERENCED BY PC OYYYYY IN THE LISTING.
B) OPPOSITE THE PC VALUE AN ''ERROR'' STATEMENT WILL BE FOUND, AND IN THE COMMENTS SECTION, A DESCRIPTION OF THE ERROR.
C) AT THE BEGINNING OF THE TEST ROUTINE A DESCRIPTION OF THE TEST WILL BE FOUND.

FATAL ERRORS ARE UNEXPECTED TRAPS TO EITHER LOCATION 4 OR TO LOCATION 10.
WHEN THESE OCCUR A FATAL ERROR MESSAGE IS PRINTED OUT IN THE FOLLOWING FORMAT.

FATAL ERROR TRAP TO LOC XX FROM LOCATION XXXXXX

WHERE X IS THE TRAP VECTOR LOCATION(4 OR 10) AND XXXXXX IS THE PLACE THAT THE PROGRAM WAS EXECUTING AT WHEN THE FATAL ERROR TRAP OCCURRED. AFTER THE MESSAGE IS PRINTED THE PROGRAM ATTEMPTS TO RESTART ITSELF AT LOCATION 000200 THE STANDARD SR OPTIONS ARE DESCRIBED HERE.

SR15 HALT ON ERROR. WITH SR15 SET TO A 1, THE PROGRAM WILL HALT AFTER AN ERROR OCCURS. PRESSING CONT WILL CAUSE PROGRAM TO RESUME OPERATION.

SR14 SCOPE. THIS OPTION CAUSES THE PROGRAM TO REMAIN IN THE CURRENT TEST ROUTINE. WHEN THE OPTION IS REMOVED, THE PROGRAM WILL COMPLETE THE CURRENT ROUTINE, AND WILL THEN GO ON TO THE NEXT ROUTINE.

SR13 INHIBIT ERROR PRINTOUT. THIS OPTION IF SET, WILL REMOVE ALL ERROR PRINTOUTS.

SR11 PROGRAM TO EXECUTE EACH TEST ONLY ONCE, INSTEAD OF THE NORMAL NUMBER OF ITERATIONS SELECTED FOR EACH TEST. THIS ALLOWS FOR A ''QUICK CHECK'' OF THE TC11 HARDWARE.

SR10 BELL ON ERROR. SETTING THIS SWITCH TO A 1 WILL CAUSE THE PROGRAM TO SOUND THE BELL WHEN AN ERROR IS FOUND. THIS SWITCH DOES NOT INTERFERE WITH THE FUNCTIONS OF SW15 AND SW13

SR08 SELECT ROUTINE. WITH SR8 SET,THE PROGRAM WILL RUN NORMALY UNTIL THE ROUTINE SPECIFIED IN SR7 THROUGH SR0 IS ENCOUNTERED. THE PROGRAM WILL REMAIN LOOPING IN THE SPECIFIED ROUTINE, UNTIL EITHER SR8 IS CHANGED, OR UNTIL THE VALUE OF SWITCHES SR7 THROUGH SR0 CHANGES

SR7-SR0 TEST SELLECT. THE NUMBER SET IN THESE SWITCHES IS THE NUMBER OF THE TEST THAT WILL BE LOCKED ONTO IF SR8 IS SET IF SR8 IS SET TO A 0 THEN SR7 THROUGH SR0 HAVE NO EFFECT ON THE OPERATION OF THE PROGRAM

4.0 TESTING TC11 AT NON-STANDARD ADDRESSES AND/OR VECTORS
THIS PROGRAM CAN TEST THE TC11 AT NON-STANDARD ADDRESSES AND VECTORS PROVIDED THOSE ADDRESSES AND VECTORS ARE PROVIDED TO THE PROGRAM AS FOLLOWS:

A) AFTER LOADING PROGRAM REFER TO PROGRAM LISTING AND CHANGE LOCATIONS 001004 THROUGH 001020 TO REFLECT THE NEW TC11 ADDRESSES AND VECTORS.

B) PROCEED TO USE THE PROGRAM

ECO TABLE

CHGE1 - ADDED ROUTINE TO DISABLE CACHE

5.0 PROGRAM LISTING

```
                                .ABS
                                .ENABL AMA
                                .LIST   MC,MD,BIN,LD,SEQ,ME
                                .NLIST  CND
            167400              $SWR=167400
            000000              $TN=0
                                .ENABL ABS
                                .MCALL  .HEADER,.$CATCH,.$EOP,.EQUAT
                                .MCALL  .SWRHI,.SWRLO,.$SCOPE,.SETUP
                                .MCALL  .$TYPOCT,.$TYPDEC,.$TRAP,.$POWER
                                .MCALL  .$ERROR,.$TYPE,STARS,.$ERRTYP
                                .MCALL  .$CMTAG
000000                          .SETUP  <.$SCOPE,.$EOP,.$POWER,.$TRAP,.$ERROR>
                                .LIST
000000                          .HEADER <CZTCBE0 TC2-TC11 TEST #2>,<1972,1979>,<J. COMEAU>
                                .TITLE  CZTCBE0 TC2-TC11 TEST #2
                                ;*COPYRIGHT (C) 1972,1979
                                ;*DIGITAL EQUIPMENT CORP.
                                ;*MAYNARD, MASS. 01754
                                ;*
                                ;*PROGRAM BY J. COMEAU
                                ;*
                                ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                                ;*PACKAGE (MAINDEC-11-DZQAC-C3), JAN 19, 1977.
                                ;*
000000                          .SWRHI
                                .SBTTL  OPERATIONAL SWITCH SETTINGS
                                ;*
                                ;*      SWITCH                  USE
                                ;*      ------          --------------------
                                ;*        15            HALT ON ERROR
                                ;*        14            LOOP ON TEST
                                ;*        13            INHIBIT ERROR TYPEOUTS
                                ;*        11            INHIBIT ITERATIONS
                                ;*        10            BELL ON ERROR
                                ;*         9            LOOP ON ERROR
                                .LIST
                                ;*         8            LOOP ON TEST IN SWR<7:0>
                                .MACRO  .SWRLO  S07,S06,S05,S04,S03,S02,S01,S00
                                .IIF NB <S07>,;*            7               S07
                                .IIF NB <S06>,;*            6               S06
                                .IIF NB <S05>,;*            5               S05
                                .IIF NB <S04>,;*            4               S04
                                .IIF NB <S03>,;*            3               S03
                                .IIF NB <S02>,;*            2               S02
                                .IIF NB <S01>,;*            1               S01
                                .IIF NB <S00>,;*            0               S00
                                .ENDM   .SWRLO
                                ;*      7-0     # OF TEST TO LOOP ON IF SWR<8> IS SET
000000                          .EQUAT
                                .SBTTL  BASIC DEFINITIONS

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

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                        .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL

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

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

                        ;*PRIORITY LEVEL DEFINITIONS
000000                  PR0=    0               ;;PRIORITY LEVEL 0
000040                  PR1=    40              ;;PRIORITY LEVEL 1
000100                  PR2=    100             ;;PRIORITY LEVEL 2
000140                  PR3=    140             ;;PRIORITY LEVEL 3
000200                  PR4=    200             ;;PRIORITY LEVEL 4
000240                  PR5=    240             ;;PRIORITY LEVEL 5
000300                  PR6=    300             ;;PRIORITY LEVEL 6
000340                  PR7=    340             ;;PRIORITY LEVEL 7

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

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

                        ;*BASIC ''CPU'' TRAP VECTOR ADDRESSES
000004                  ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
000010                  RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
000014                  TBITVEC=14              ;;''T'' BIT
000014                  TRTVEC= 14              ;;TRACE TRAP
000014                  BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
000020                  IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
000024                  PWRVEC= 24              ;;POWER FAIL
000030                  EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
000034                  TRAPVEC=34              ;;''TRAP'' TRAP
000060                  TKVEC=  60              ;;TTY KEYBOARD VECTOR
000064                  TPVEC=  64              ;;TTY PRINTER VECTOR
000240                  PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
                        .LIST
                        ;MISCELANIOUS EQUATES
000000                  .$CATCH START
                        .SBTTL  TRAP CATCHER

000000                          .=0
                        ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ''.+2,HALT''
```

```
                                ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
                                ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
                                .LIST
000174                          .=174
000174  000000                 DISPREG: .WORD  0              ;;SOFTWARE DISPLAY REGISTER
000176  000000                 SWREG:   .WORD  0              ;;SOFTWARE SWITCH REGISTER
                                .SBTTL  STARTING ADDRESS(ES)
000200  000137  002314                  JMP     @#START ;;JUMP TO STARTING ADDRESS OF PROGRAM
                                ;EQUATES
001000                                  SPBOT=1000
000240                                  NOP=240
000000                                  OPEN=0
100000                                  MANUAL=BIT15
005746                                  PUSH=005746
024646                                  PUSH2=024646
005726                                  POPSP=005726
022626                                  POPSP2=022626
000007                                  BELL=007
177777                                  TLAST=-1
000003                                  TRC=3
000207                          RTSPC=207
000040                                  I=40
177777                                  X=-1
100000                                  A=BIT15
040000                                  B=BIT14
020000                                  C=BIT13
000000                                  V0=0
000004                                  V1=4
000010                                  V2=10
000014                                  V3=14
000020                                  V4=20
000024                                  V5=24
000030                                  V6=30
000034                                  V7=34
020000                                  MAINT=BIT13
010000                                  DINH=BIT12
004000                                  REV=BIT11
000000                                  FWD=0
000204  000240                          NOP
000000                                  U0=0
000400                                  U1=BIT8
001000                                  U2=BIT9
001400                                  U3=BIT9!BIT8
002000                                  U4=BIT10
002400                                  U5=BIT10!BIT8
003000                                  U6=BIT10!BIT9
003400                                  U7=BIT10!BIT9!BIT8
000100                                  IE=BIT6
000000                                  SAT=0
000002                                  RNUM=BIT1
000004                                  RDATA=BIT2
000006                                  RALL=BIT2!BIT1
000010                                  SST=BIT3
000012                                  WRTM=BIT3!BIT1
000014                                  WDATA=BIT3!BIT2
000016                                  WALL=BIT3!BIT2!BIT1
```

```
000001                          DO=BIT0
000000                          EMTX=0
                        .MACRO  ADITAG
                        TCST:   177340          ;TC11 STATUS REGISTER.
                        TCCM:   177342          ;TC11 COMMAND REGISTER.
                        TCWC:   177344          ;TC11 WORD COUNT REGISTER,
                        TCBA:   177346          ;TC11 BUS ADDRESS REGISTER.
                        TCDT:   177350          ;TC11 DATA REGISTER.
                        TCVTR:  214             ;TC11 INTERRUPT VECTOR
                        TCLVL:  300             ;TC11 INTERRUPT PRIORITY LEVEL.
                        TPS:    177564          ;LSP CSR
                        TPB:    177566          ;LSP BUFFER
                        CODCAL: OPEN
                        RTNNO:  OPEN
                        NXTST:  OPEN
                        CURTST: OPEN
                        CRBUF:  OPEN
                        CRBUFA: OPEN
                        CTRA:   OPEN
                        SBDAT1: 50505
                                127272
                        SBDAT2: 72727
                                105050
                        SBDAT3: 72727
                                105056
                        POWPUS: .WORD   000000
                        POWPOP: .WORD   000000
                        TCCMT:  OPEN
                        TCSTT:  OPEN
                        CCR:    177746          ;CACHE CONTROL REGISTER
                        .ENDM   ADITAG

                        ;
                        .MACRO  SETRAP
                                MOV     #TRAP0,@#4      ;SETUP FATAL TRAP VECTOR JUST IN CASE
                                MOV     #340,@#6        ;NO INTERRUPTS WHILE SERVICING FATAL ERRORS
                        .ENDM   SETRAP
                                .MACR   C55
                                .BYTE   I,0,I,I,0,I             ;MTK CODE 55. REV END ZONE MARK.
                                .ENDM
                                .MACR   C25
                                .BYTE   0,I,0,I,0,I             ;MTK CODE 25. EXTENSION MARK.
                                .ENDM
                                .MACR   C26     B0,B1,B2,B3,B4,B5
                                .BYTE   0!B0,I!B1,0!B2,I!B3,I!B4,0!B5   ;FWD BLOCK MARK.
                                .ENDM
                                .MACR   C32     B0,B1,B2,B3,B4,B5
                                .BYTE   0!B0,I!B1,I!B2,0!B3,I!B4,0!B5   ;REV GUARD.
                                .ENDM
                                .MACR   C10     B0,B1,B2,B3,B4,B5
                                .BYTE   0!B0,0!B1,I!B2,0!B3,0!B4,0!B5   ;MTK CODE 10.
                                .ENDM
                                .MACR   C70     B0,B1,B2,B3,B4,B5
                                .BYTE   I!B0,I!B1,I!B2,0!B3,0!B4,0!B5   ;MTK CODE 70. DATA MARK.
                                .ENDM
                                .MACR   C73     B0,B1,B2,B3,B4,B5
```

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                                        .BYTE   I!B0,I!B1,I!B2,0!B3,I!B4,I!B5   ;MTK CODE 73. DATA MARK.
                                        .ENDM
                                        .MACR   C51     B0,B1,B2,B3,B4,B5
                                        .BYTE   I!B0,0!B1,I!B2,0!B3,0!B4,I!B5   ;MTK CODE 51. FWD GUARD.
                                        .ENDM
                                        .MACR   C45     B0,B1,B2,B3,B4,B5
                                        .BYTE   I!B0,0!B1,0!B2,I!B3,0!B4,I!B5   ;MTK CODE 45. REV BLOCK MARK.
                                        .ENDM
                                        .MACR   C22
                                        .BYTE   0,I,0,0,I,0             ;MTK CODE 22. FWD END ZONE.
                                        .ENDM
                                        .MACR   CEND
                                        .BYTE   -1
                                        .ENDM
                                        .MACR   EMTE
                                        .BYTE   I,I,I,0,0,I
                                        .ENDM
                                        .MACR   MTCOD   MTADR,CNT
                                        JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
                                        MTADR                   ;ADDRESS OF MARK TRACK CODES.
                                        CNT                     ;MARK TRACK CODE COUNT.
                                        .ENDM
                                        .MACR   MTCOE   CALADR,MTADR,CNT
                                        JSR     R5,LMTCOE       ;CALL LOAD MT CODES SUBROUTINE.
                                        CALADR                  ;ADDR TO GO AFTER EACH CODE PASSED.
                                        MTADR                   ;ADDRESS OF MARK TRACK CODES.
                                        CNT                     ;MARK TRACK CODE COUNT.
                                        .ENDM
                                        .MACR   EMTDEF  NAMEA,NAMEB
                                        .WORD   NAMEB           ;POINTER FOR EMT CALL NAMEA
                                        .NLIST
                                        NAMEA=EMT+EMTX
                                        EMTX=EMTX+1
                                        .LIST
                                        .ENDM
                                        .MACRO SCOMAC
                                        CLR     @TCCM
                                        CLR     2(SP)           ;PS TO =0 AFTER WE EXIT THE SCOPE ROUTINE
                                        JSR     PC,SRSETT
                                        JSR     PC,RSTMTK
                                        .ENDM   SCOMAC
            000050                  .=50
000050  000000                      .WORD   0
000052  000000                      .WORD   0
000054                              .$CMTAG 10,10,ADITAG,1100
                                    .MACRO  $$CMREG A,B
                                    $REG'A: .WORD   0               ;;CONTAINS (($REGAD)+'B)
                                    .NLIST
                                    $CM1=$CM1+1
                                    $CM2=$CM2+2
                                    .LIST
                                    .ENDM   $$CMREG
                                    .MACRO  $$CMTMP A
                                    $TMP'A: .WORD   0               ;;USER DEFINED
                                    .NLIST
                                    $CM4=$CM4+1
```

```
337                             .LIST
338                             .ENDM   $$CMTMP
339                             .PAGE
```

```
                        .SBTTL  COMMON TAGS

000054                  STARS
                        ;;*********************************************************************
                        ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                        ;*USED IN THE PROGRAM.

                001100          .=1100
001100                  $CMTAG:                         ;;START OF COMMON TAGS
001100  000000          $PASS:  .WORD   0               ;;CONTAINS PASS COUNT
001102     000          $TSTNM: .BYTE   0               ;;CONTAINS THE TEST NUMBER
001103     000          $ERFLG: .BYTE   0               ;;CONTAINS ERROR FLAG
001104  000000          $ICNT:  .WORD   0               ;;CONTAINS SUBTEST ITERATION COUNT
001106  000000          $LPADR: .WORD   0               ;;CONTAINS SCOPE LOOP ADDRESS
001110  000000          $LPERR: .WORD   0               ;;CONTAINS SCOPE RETURN FOR ERRORS
001112  000000          $ERTTL: .WORD   0               ;;CONTAINS TOTAL ERRORS DETECTED
001114     000          $ITEMB: .BYTE   0               ;;CONTAINS ITEM CONTROL BYTE
001115     001          $ERMAX: .BYTE   1               ;;CONTAINS MAX. ERRORS PER TEST
001116  000000          $ERRPC: .WORD   0               ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001120  000000          $GDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'GOOD' DATA
001122  000000          $BDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'BAD' DATA
001124  000000          $GDDAT: .WORD   0               ;;CONTAINS 'GOOD' DATA
001126  000000          $BDDAT: .WORD   0               ;;CONTAINS 'BAD' DATA
001130  000000                  .WORD   0               ;;RESERVED--NOT TO BE USED
001132  000000                  .WORD   0
001134     000          $AUTOB: .BYTE   0               ;;AUTOMATIC MODE INDICATOR
001135     000          $INTAG: .BYTE   0               ;;INTERRUPT MODE INDICATOR
001136  000000                  .WORD   0
001140  177570          SWR:    .WORD   DSWR            ;;ADDRESS OF SWITCH REGISTER
001142  177570          DISPLAY: .WORD  DDISP           ;;ADDRESS OF DISPLAY REGISTER
001144  177560          $TKS:   177560                  ;;TTY KBD STATUS
001146  177562          $TKB:   177562                  ;;TTY KBD BUFFER
001150  177564          $TPS:   177564                  ;;TTY PRINTER STATUS REG. ADDRESS
001152  177566          $TPB:   177566                  ;;TTY PRINTER BUFFER REG. ADDRESS
001154     000          $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
001155     002          $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001156     012          $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A 'LINE FEED''
001157     000          $TPFLG: .BYTE   0               ;;'TERMINAL AVAILABLE'' FLAG (BIT<07>=0=YES)
                        .LIST
001160  000000          $REGAD: .WORD   0               ;;CONTAINS THE ADDRESS FROM
                                                        ;;WHICH  ($REG0) WAS OBTAINED
                        .LIST
                000010          .REPT   $CM3
                                $$CMREG \$CM1,\$CM2
                                .ENDR
001162                          $$CMREG \$CM1,\$CM2
001162  000000          $REG0:  .WORD   0               ;;CONTAINS (($REGAD)+0)
                        .LIST
001164                          $$CMREG \$CM1,\$CM2
001164  000000          $REG1:  .WORD   0               ;;CONTAINS (($REGAD)+2)
                        .LIST
001166                          $$CMREG \$CM1,\$CM2
001166  000000          $REG2:  .WORD   0               ;;CONTAINS (($REGAD)+4)
                        .LIST
001170                          $$CMREG \$CM1,\$CM2
001170  000000          $REG3:  .WORD   0               ;;CONTAINS (($REGAD)+6)
```

```
                                .LIST
001172                          $$CMREG \$CM1,\$CM2
001172  000000                $REG4:  .WORD   0               ;;CONTAINS (($REGAD)+10)
                                .LIST
001174                          $$CMREG \$CM1,\$CM2
001174  000000                $REG5:  .WORD   0               ;;CONTAINS (($REGAD)+12)
                                .LIST
001176                          $$CMREG \$CM1,\$CM2
001176  000000                $REG6:  .WORD   0               ;;CONTAINS (($REGAD)+14)
                                .LIST
001200                          $$CMREG \$CM1,\$CM2
001200  000000                $REG7:  .WORD   0               ;;CONTAINS (($REGAD)+16)
                                .LIST
                                .LIST
        000010                  .REPT   10
                                $$CMTMP \$CM4
                                .ENDR
001202                          $$CMTMP \$CM4
001202  000000                $TMP0:  .WORD   0               ;;USER DEFINED
                                .LIST
001204                          $$CMTMP \$CM4
001204  000000                $TMP1:  .WORD   0               ;;USER DEFINED
                                .LIST
001206                          $$CMTMP \$CM4
001206  000000                $TMP2:  .WORD   0               ;;USER DEFINED
                                .LIST
001210                          $$CMTMP \$CM4
001210  000000                $TMP3:  .WORD   0               ;;USER DEFINED
                                .LIST
001212                          $$CMTMP \$CM4
001212  000000                $TMP4:  .WORD   0               ;;USER DEFINED
                                .LIST
001214                          $$CMTMP \$CM4
001214  000000                $TMP5:  .WORD   0               ;;USER DEFINED
                                .LIST
001216                          $$CMTMP \$CM4
001216  000000                $TMP6:  .WORD   0               ;;USER DEFINED
                                .LIST
001220                          $$CMTMP \$CM4
001220  000000                $TMP7:  .WORD   0               ;;USER DEFINED
                                .LIST
001222  000000                $TIMES: 0                       ;;MAX. NUMBER OF ITERATIONS
001224  000000                $ESCAPE:0                       ;;ESCAPE ON ERROR ADDRESS
001226  177607  000377        $BELL:  .ASCIZ  <207><377><377> ;;CODE FOR BELL
001232     077                $QUES:  .ASCII  /?/             ;;QUESTION MARK
001233     015                $CRLF:  .ASCII  <15>            ;;CARRIAGE RETURN
001234  000012                $LF:    .ASCIZ  <12>            ;;LINE FEED
001236                          STARS
                                ;;**************************************************************************
                                .IRP A,<ADITAG>
                                A
                                .ENDM
001236                          ADITAG
001236  177340                TCST:   177340                  ;TC11 STATUS REGISTER.
001240  177342                TCCM:   177342                  ;TC11 COMMAND REGISTER.
001242  177344                TCWC:   177344                  ;TC11 WORD COUNT REGISTER,
```

```
  452  001244  177346                TCBA:   177346                  ;TC11 BUS ADDRESS REGISTER.
  453  001246  177350                TCDT:   177350                  ;TC11 DATA REGISTER.
  454  001250  000214                TCVTR:  214                     ;TC11 INTERRUPT VECTOR
  455  001252  000300                TCLVL:  300                     ;TC11 INTERRUPT PRIORITY LEVEL.
  456  001254  177564                TPS:    177564                  ;LSP CSR
  457  001256  177566                TPB:    177566                  ;LSP BUFFER
  458  001260  000000                CODCAL: OPEN
  459  001262  000000                RTNNO:  OPEN
  460  001264  000000                NXTST:  OPEN
  461  001266  000000                CURTST: OPEN
  462  001270  000000                CRBUF:  OPEN
  463  001272  000000                CRBUFA: OPEN
  464  001274  000000                CTRA:   OPEN
  465  001276  050505                SBDAT1: 50505
  466  001300  127272                        127272
  467  001302  072727                SBDAT2: 72727
  468  001304  105050                        105050
  469  001306  072727                SBDAT3: 72727
  470  001310  105056                        105056
  471  001312  000000                POWPUS: .WORD   000000
  472  001314  000000                POWPOP: .WORD   000000
  473  001316  000000                TCCMT:  OPEN
  474  001320  000000                TCSTT:  OPEN
  475  001322  177746                CCR:    177746                  ;CACHE CONTROL REGISTER
  476                                .PAGE
```

```
                        .SBTTL  ERROR POINTER TABLE

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

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

001324                  $ERRTB:

001324  016237                  EM1     ;'SAT (STOP ALL TRANSPORTS) COMMAND DID NOT CLEAR READY''
001326  016325                  EH1     ;''  PC      SP      PS     TEST#   TCCM    TCST''
001330  016404                  ET1     ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
001332  000000                  000000

001334  016422                  EM2     ;'SST (STOP SELECTED TRANSPORT) DID NOT CLEAR READY''
001336  016504                  EH2     ;''  PC      SP      PS     TEST#   TCCM    TCST''
001340  016562                  ET2     ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
001342  000000                  000000

001344  016600                  EM3     ;'READY BIT DID NOT CAUSE AN INTERRUPT''
001346  016645                  EH3     ;''  PC      SP      PS     TEST#   TCCM    TCST''
001350  016724                  ET3     ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
001352  000000                  000000

001354  016742                  EM4     ;'READY BIT CAUSED AN INTERRUPT WITH PROCESSOR AND TC11 AT SAME PRIORITY
001356  017051                  EH4     ;''  PC      SP      PS     TEST#   TCCM    TCST''
001360  017130                  ET4     ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
001362  000000                  000000

001364  017146                  EM5     ;'TC11 FAILED TO INTERRUPT''
001366  017177                  EH5     ;''  PC      SP      PS     TEST#   TCCM    TCST''
001370  017256                  ET5     ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
001372  000000                  000000

001374  017274                  EM6     ;'TC11 DID NOT DROP INTERRUPT REQUEST AFTER IT WAS ACKNOLEDGED''
001376  017371                  EH6     ;''  PC      SP      PS     TEST#   TCCM    TCST''
001400  017450                  ET6     ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
001402  000000                  000000

001404  017466                  EM7     ;'DOING A RESET INSTRUCTION DID NOT CLEAR UPS''
001406  017542                  EH7     ;''  PC      SP      PS     TEST#   TCCM    TCST''
001410  017620                  ET7     ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
001412  000000                  000000
```

```
                                                E 2
533
534
535  001414  017636                    EM10    ;''ENTERING MAINTANENCE MODE DID NOT SET UPS''
536  001416  017710                    EH10    ;''  PC      SP      PS     TEST#   TCCM    TCST''
537  001420  017766                    ET10    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
538  001422  000000                    000000
539
540
541  001424  020004                    EM11    ;''UPS DID NOT CLEAR WHEN LEAVING MAINTANENCE MODE''
542  001426  020064                    EH11    ;''  PC      SP      PS     TEST#   TCCM    TCST''
543  001430  020142                    ET11    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
544  001432  000000                    000000
545
546
547  001434  020160                    EM12    ;''TCST BIT 0 CAN BE SET WHILE IN MAINTANENCE MODE''
548  001436  020240                    EH12    ;''  PC      SP      PS     TEST#   TCCM    TCST''
549  001440  020316                    ET12    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
550  001442  000000                    000000
551
552
553  001444  020334                    EM13    ;''TCST BIT 1 CAN BE SET WHILE IN MAINTANENCE MODE''
554  001446  020414                    EH13    ;''  PC      SP      PS     TEST#   TCCM    TCST''
555  001450  020472                    ET13    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
556  001452  000000                    000000
557
558
559  001454  020510                    EM14    ;''WRTM COMMAND WITH WRTM SWITCH DISABLED FAILED TO SET ILO ERROR''
560  001456  020607                    EH14    ;''  PC      SP      PS     TEST#   TCCM    TCST''
561  001460  020666                    ET14    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
562  001462  000000                    000000
563
564
565  001464  020704                    EM15    ;''ILO ERROR FAILED TO SET THE 'ERROR' BIT''
566  001466  020754                    EH15    ;''  PC      SP      PS     TEST#   TCCM    TCST''
567  001470  021032                    ET15    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
568  001472  000000                    000000
569
570
571  001474  021050                    EM16    ;''CLEARING ILLEGAL OP FAILED TO CLEAR ILO ERROR''
572  001476  021126                    EH16    ;''  PC      SP      PS     TEST#   TCCM    TCST''
573  001500  021204                    ET16    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
574  001502  000000                    000000
575
576
577  001504  021222                    EM17    ;''CLEARING ILLEGAL OP FAILED TO CLEAR THE 'ERROR' BIT''
578  001506  021306                    EH17    ;''  PC      SP      PS     TEST#   TCCM    TCST''
579  001510  021364                    ET17    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
580  001512  000000                    000000
581
582
583  001514  021402                    EM20    ;''WRTM WITH WRTM SWITCH OFF DID NOT SET ILO ERROR BIT''
584  001516  021466                    EH20    ;''  PC      SP      PS     TEST#   TCCM    TCST''
585  001520  021544                    ET20    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
586  001522  000000                    000000
587
588
```

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 589  001524  021562                    EM21    ;''ILO ERROR SETTING DID NOT CAUSE THE 'ERROR' BIT TO SET''
 590  001526  021651                    EH21    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 591  001530  021730                    ET21    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 592  001532  000000                    000000
 593
 594
 595  001534  021746                    EM22    ;''CLEARING ERROR BIT ALSO CLEARED ILO ERROR''
 596  001536  022020                    EH22    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 597  001540  022076                    ET22    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 598  001542  000000                    000000
 599
 600
 601  001544  022114                    EM23    ;''THE 'ERROR' BIT DID NOT SET''
 602  001546  022150                    EH23    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 603  001550  022226                    ET23    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 604  001552  000000                    000000
 605
 606
 607  001554  022244                    EM24    ;''THE 'ERROR' BIT SET DID NOT CAUSE AN INTERRUPT''
 608  001556  022323                    EH24    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 609  001560  022402                    ET24    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 610  001562  000000                    000000
 611
 612
 613  001564  022420                    EM25    ;''DOING A RESET INSTRUCTION DID NOT SET THE READY BIT''
 614  001566  022504                    EH25    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 615  001570  022562                    ET25    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 616  001572  000000                    000000
 617
 618
 619  001574  022600                    EM26    ;''TEST EXECUTION IS OUT OF ORDER''
 620  001576  022637                    EH26    ;''  PC      SP      PS      TEST#  TEST# S/B''
 621  001600  022712                    ET26    ;$ERRPC,$REG6,$REG7,$REG5,TEST# S/B
 622  001602  000000                    000000
 623
 624
 625  001604  022726                    EM27    ;''ERROR TRYING TO READ A BLOCK MARK''
 626  001606  022770                    EH27    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 627  001610  023046                    ET27    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 628  001612  000000                    000000
 629
 630
 631  001614  023064                    EM30    ;''READY WAS NOT SET AFTER BLOCK MARK WAS SHIFTED INTO THE WINDOW REGISTE
 632  001616  023174                    EH30    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 633  001620  023252                    ET30    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 634  001622  000000                    000000
 635
 636
 637  001624  023270                    EM31    ;''INCORRECT BLOCK # IN DATA REG AFTER BLOCK MARK WAS DETECTED''
 638  001626  023364                    EH31    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 639  001630  023464                    ET31    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 640  001632  000000                    000000
 641
 642
 643  001634  023506                    EM32    ;''MTE WAS NOT SET BY AN ILLEGAL MARK TRACK CODE''
 644  001636  023564                    EH32    ;''  PC      SP      PS      TEST#   TCCM    TCST''
```

```
  645  001640  023642                    ET32    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  646  001642  000000                    000000
  647
  648
  649  001644  023660                    EM33    ;'MTE SETTING FAILED TO SET THE 'ERROR' BIT''
  650  001646  023732                    EH33    ;''  PC      SP      PS     TEST#   TCCM    TCST''
  651  001650  024010                    ET33    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  652  001652  000000                    000000
  653
  654
  655  001654  024026                    EM34    ;'ENDZ BIT DID NOT SET WHEN ENDZ MARK DETECTED''
  656  001656  024103                    EH34    ;''  PC      SP      PS     TEST#   TCCM    TCST''
  657  001660  024162                    ET34    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  658  001662  000000                    000000
  659
  660
  661  001664  024026                    EM34
  662  001666  024103                    EH34
  663  001670  024162                    ET34
  664  001672  000000                    0000
  665  001674  024356                    EM36    ;'MARK TRACK CODE 55 WAS MISTAKEN FOR END ZONE''
  666  001676  024433                    EH36    ;''  PC      SP      PS     TEST#   TCCM    TCST''
  667  001700  024512                    ET36    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  668  001702  000000                    000000
  669
  670
  671  001704  024530                    EM37    ;'ERROR''
  672  001706  024536                    EH37    ;''  PC      SP      PS     TEST#   TCCM    TCST''
  673  001710  024614                    ET37    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  674  001712  000000                    000000
  675
  676
  677  001714  024632                    EM40    ;'READY BIT DID NOT SET''
  678  001716  024660                    EH40    ;''  PC      SP      PS     TEST#   TCCM    TCST''
  679  001720  024736                    ET40    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  680  001722  000000                    000000
  681
  682
  683  001724  024754                    EM41    ;'THE 'ERROR' BIT SHOULD NOT HAVE SET''
  684  001726  025020                    EH41    ;''  PC      SP      PS     TEST#   TCCM    TCST''
  685  001730  025076                    ET41    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  686  001732  000000                    000000
  687
  688
  689  001734  025114                    EM42    ;'READY BIT SHOULD NOT HAVE SET''
  690  001736  025152                    EH42    ;''  PC      SP      PS     TEST#   TCCM    TCST''
  691  001740  025230                    ET42    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  692  001742  000000                    000000
  693
  694
  695  001744  025246                    EM43    ;'WORD TRANSFERED INCORRECTLY TO CORE''
  696  001746  025312                    EH43    ;''  PC      SP      PS     TEST#   TCCM    TCST    RBUF    RBUF S/B''
  697  001750  025414                    ET43    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF    RBUF S/B
  698  001752  000000                    000000
  699
  700
```

```
  701  001754  025436                EM44    ;'WORD COUNT INCREMENTED IMPROPERLY''
  702  001756  025500                EH44    ;''  PC      SP      PS      TEST#   TCCM    TCST    TCWC''
  703  001760  025602                ET44    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCWC
  704  001762  000000                000000
  705
  706
  707  001764  025624                EM45    ;'TCBA INCREMENTED IMPROPERLY''
  708  001766  025660                EH45    ;''  PC      SP      PS      TEST#   TCCM    TCST    TCBA''
  709  001770  025762                ET45    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCBA
  710  001772  000000                000000
  711
  712
  713  001774  026004                EM46    ;'PARITY ERROR''
  714  001776  026021                EH46    ;''  PC      SP      PS      TEST#   TCCM    TCST''
  715  002000  026100                ET46    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  716  002002  000000                000000
  717
  718
  719  002004  026116                EM47    ;'READY DID NOT SET AFTER READING WAS COMPLETED''
  720  002006  026174                EH47    ;''  PC      SP      PS      TEST#   TCCM    TCST''
  721  002010  026252                ET47    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  722  002012  000000                000000
  723
  724
  725  002014  026270                EM50    ;'TRANSFERED TOO MANY WORDS''
  726  002016  026322                EH50    ;''  PC      SP      PS      TEST#   TCCM    TCST    RBUF+2''
  727  002020  026412                ET50    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF+2
  728  002022  000000                000000
  729
  730
  731  002024  026432                EM51    ;'TCBA CONTAINS AN INCORRECT ADDRESS''
  732  002026  026475                EH51    ;''  PC      SP      PS      TEST#   TCCM    TCST    TCBA    TCBA S/B''
  733  002030  026576                ET51    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCBA    TCBA S/B
  734  002032  000000                000000
  735
  736
  737  002034  026620                EM52    ;'PARRITY ERROR WAS NOT DETECTED''
  738  002036  026657                EH52    ;''  PC      SP      PS      TEST#   TCCM    TCST''
  739  002040  026746                ET52    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  740  002042  000000                000000
  741
  742
  743  002044  026766                EM53    ;'PARITY ERROR DID NOT SET THE 'ERROR' BIT''
  744  002046  027037                EH53    ;''  PC      SP      PS      TEST#   TCCM    TCST''
  745  002050  027126                ET53    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  746  002052  000000                000000
  747
  748
  749  002054  027146                EM54    ;'PARITY ERROR BIT WILL NOT CLEAR''
  750  002056  027206                EH54    ;''  PC      SP      PS      TEST#   TCCM    TCST''
  751  002060  027274                ET54    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
  752  002062  000000                000000
  753
  754
  755  002064  027314                EM55    ;'BLOCK MISS SHOULD NOT HAVE SET''
  756  002066  027353                EH55    ;''  PC      SP      PS      TEST#   TCCM    TCST''
```

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                                                I 2
 757  002070  027442                    ET55    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 758  002072  000000                    000000
 759
 760
 761  002074  027462                    EM56    ;'RDATA WAS ISSUED BUT BLOCK MISS FAILED TO SET''
 762  002076  027540                    EH56    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 763  002100  027626                    ET56    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 764  002102  000000                    000000
 765
 766
 767  002104  027646                    EM57    ;'BLOCK MISS SETTING DID NOT SET THE 'ERROR' BIT''
 768  002106  027725                    EH57    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 769  002110  030014                    ET57    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 770  002112  000000                    000000
 771
 772
 773  002114  030034                    EM60    ;''CLEARING ERROR BIT FAILED TO CLEAR BLOCK MISS''
 774  002116  030112                    EH60    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 775  002120  030200                    ET60    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 776  002122  000000                    000000
 777
 778
 779  002124  030220                    EM61    ;'FORWARD CHECKSUM WAS WRITTEN INCORRECTLY INTO CORE''
 780  002126  030303                    EH61    ;''  PC      SP      PS      TEST#   TCCM    TCST   RBUF+514''
 781  002130  030402                    ET61    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF+514
 782  002132  000000                    000000
 783
 784
 785  002134  030424                    EM62    ;''TCWC WAS MODIFIED DURRING RAL''
 786  002136  030462                    EH62    ;''  PC      SP      PS      TEST#   TCCM    TCST    TCWC''
 787  002140  030550                    ET62    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCWC
 788  002142  000000                    000000
 789
 790
 791  002144  030570                    EM63    ;'TCBA WAS MODIFIED DURRING RAL''
 792  002146  030626                    EH63    ;''  PC      SP      PS      TEST#   TCCM    TCST    TCBA''
 793  002150  030730                    ET63    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCBA
 794  002152  000000                    000000
 795
 796
 797  002154  030750                    EM64    ;'DATA MISS DID NOT SET''
 798  002156  030776                    EH64    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 799  002160  031064                    ET64    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 800  002162  000000                    000000
 801
 802
 803  002164  031104                    EM65    ;'DATA MISS SETTING DID NOT CAUSE THE 'ERROR' BIT TO SET''
 804  002166  031173                    EH65    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 805  002170  031252                    ET65    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 806  002172  000000                    000000
 807
 808
 809  002174  031270                    EM66    ;''CLEARING THE 'ERROR' BIT DID NOT CAUSE DATA MISS TO BE CLEARED''
 810  002176  031367                    EH66    ;''  PC      SP      PS      TEST#   TCCM    TCST''
 811  002200  031446                    ET66    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 812  002202  000000                    000000
```

```
                                                                J 2
813
814
815  002204  031464                    EM67    ;''READY BIT WAS NOT SET AFTER THE DATA WAS WRITTEN''
816  002206  031545                    EH67    ;''  PC      SP      PS      TEST#   TCCM    TCST''
817  002210  031624                    ET67    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
818  002212  000000                    000000
819
820
821  002214  031642                    EM70    ;''THE REVERSE CHECKSUM WAS WRITTEN INCORRECTLY''
822  002216  031717                    EH70    ;''  PC      SP      PS      TEST#   TCCM    TCST   RBUF+512 RBUF+512 S/B
823  002220  032026                    ET70    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF+512 RBUF+512 S/B
824  002222  000000                    000000
825
826
827  002224  032050                    EM71    ;''WORD COUNT MODIFIED DURRING WRITE ALL''
828  002226  032116                    EH71    ;''  PC      SP      PS      TEST#   TCCM    TCST    TCWC''
829  002230  032204                    ET71    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCWC
830  002232  000000                    000000
831
832
833  002234  032224                    EM72    ;''TCBA MODIFIED DURRING WRITE ALL''
834  002236  032264                    EH72    ;''  PC      SP      PS      TEST#   TCCM    TCST    TCBA''
835  002240  032352                    ET72    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCBA
836  002242  000000                    000000
837
838
839  002244  032372                    EM73    ;''SST DID NOT CAUSE A SELECT ERROR''
840  002246  032433                    EH73    ;''  PC      SP      PS      TEST#   TCCM    TCST''
841  002250  032512                    ET73    ;$ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
842  002252  000000                    000000
843  002254  032530                    EM74
844  002256  032603                    EH74
845  002260  032642                    ET74
846  002262  000000                    0000
847
848  002264  032654                    EM75
849  002266  032727                    EH75
850  002270  032766                    ET75
851  002272  000000                    0000
852
853  002274  033000                    EM76
854  002276  033053                    EH76
855  002300  033112                    ET76
856  002302  000000                    0000
857
858  002304  033124                    EM77
859  002306  033177                    EH77
860  002310  033236                    ET77
861  002312  000000                    0000
862  002314                  .SETUP    <.$EOP,.$SCOPE,.$TRAP,.$ERROR,.$POWER>
863                          .LIST
864  002314  000240          START:    NOP
865  002316  000240                    NOP
866  002320  000240                    NOP
867  002322  000240                    NOP
868  002324                            SETUP    1000
```

```
                                        .SBTTL  INITIALIZE THE COMMON TAGS
                                        ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
002324  012706  001100                          MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
002330  005026                                  CLR     (R6)+           ;;CLEAR MEMORY LOCATION
002332  022706  001140                          CMP     #SWR,R6 ;;DONE?
002336  001374                                  BNE     .-6             ;;LOOP BACK IF NO
002340  012706  001000                          MOV     #1000,SP                ;;SETUP THE STACK POINTER
                                        ;;INITIALIZE A FEW VECTORS
002344  012737  013362  000020                  MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
002352  012737  000340  000022                  MOV     #340,@#IOTVEC+2 ;;LEVEL 7
002360  012737  013652  000030                  MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
002366  012737  000340  000032                  MOV     #340,@#EMTVEC+2 ;;LEVEL 7
002374  012737  015314  000034                  MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
002402  012737  000340  000036                  MOV     #340,@#TRAPVEC+2;LEVEL 7
002410  012737  014074  000024                  MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
002416  012737  000340  000026                  MOV     #340,@#PWRVEC+2 ;;LEVEL 7
002424  013737  011604  011576                  MOV     $ENDCT,$EOPCT   ;;SETUP END-OF-PROGRAM COUNTER
002432  005037  001222                          CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
002436  005037  001224                          CLR     $ESCAPE         ;;CLEAR THE ESCAPE ON ERROR ADDRESS
002442  112737  000001  001115                  MOVB    #1,$ERMAX       ;;ALLOW ONE ERROR PER TEST
002450  012737  002450  001106                  MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
002456  012737  002456  001110                  MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
                                        .LIST
002464                                          SWRSU
                                        ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
                                        ;;EQUAL TO A ''-1'', SETUP FOR A SOFTWARE SWITCH REGISTER.
002464  013746  000004                          MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
002470  012737  002524  000004                  MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
002476  012737  177570  001140                  MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
002504  012737  177570  001142                  MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
002512  022777  177777  176420                  CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
002520  001012                                  BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
                                                                        ;;AND  THE HARDWARE SWR IS NOT = -1
002522  000403                                  BR      65$             ;;BRANCH IF NO TIMEOUT
002524  012716  002532          64$:    MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
002530  000002                          RTI
002532  012737  000176  001140  65$:    MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
002540  012737  000174  001142          MOV     #DISPREG,DISPLAY
002546  012637  000004          66$:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR

002552  012706  001000                  MOV     #1000,SP        ;SET BOTTOM OF SP STACK.
002556  005037  001262                  CLR     RTNNO
002562  104401  001233                  TYPE    ,$CRLF
002566  104401  015366                  TYPE    ,STMES          ;PRINTOUT STARTUP MESSAGE
002572  000240                          NOP
                                        ;**********************
002574  013746  000004          CHGE1:  MOV     @#ERRVEC,-(SP)  ;SAVE ERROR VECTOR
002600  012737  002616  000004          MOV     #1$,@#ERRVEC    ;SET UP ERROR VECTOR
002606  012777  000014  176506          MOV     #14,@CCR        ;DISABLE CACHE, IF THERE
002614  000403                          BR      2$              ;GET AROUND INTERRUPT SERV. ROUTINE
002616  012716  002624          1$:     MOV     #2$,(SP)        ;NO CACHE MEM,SETUP TO RESTORE SP
002622  000002                          RTI                     ;RESTORE SP
002624  012637  000004          2$:     MOV     (SP)+,@#ERRVEC  ;RESTORE ERROR VECTOR
                                        ;**********************
002630  000000                          HALT                    ;HERE IS YOUR CHANCE TO SET THE SWITCH REGISTER
002632  005737  000042          STARTX: TST     42
```

```
                                        BEQ     GETRDY
                                        RESET
                                GETRDY: CLR     PSW
                                        MOV     #1000,SP        ;SET BOTTOM OF STACK.
                                        JSR     PC,SRSETT       ;ISSUE RESET.
                                        JSR     PC,RSTMTK       ;RESTORE MARK TRACK.
                                        JMP     T0001
                                .SBTTL T0001
                                ;CHECK THAT THE TCCM REGISTER CAN BE ACCESSED WITHOUT A TRAP OCCURING
                                ;*********************************************************************
                                T0001:  SCOPE
                                        MOV     #A0001,@#4      ;SETUP THE FATAL TRAP VECTOR
                                        MOV     #340,@#6        ;MAKE SURE WE GET NO INTERRUPTS IF WE TRAP
                                        MOV     #1000,SP        ;SETUP THE STACK POINTER
                                        JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
                                        00001                   ;HERE LIES THE NUMBER OF THIS TEST
                                R0001:  MOV     #1000,SP        ;INIT THE STACK POINTER
                                        TST     @TCCM           ;TRY TO READ THE TCCM
                                        CLR     @TCCM           ;TRY TO MODIFY THE TCCM
                                        BR      T0002           ;NO ERRORS. GO ON TO THE NEXT TEXT
                                A0001:  ERROR   74              ;COULD NOT ACCESS TCCM
                                .SBTTL T0002
                                ;CHECK THAT THE TCST REGISTER CAN BE ACCESSED WITHOUT A TRAP OCCURING
                                ;*********************************************************************
                                T0002:  SCOPE
                                        MOV     #A0002,@#4      ;SETUP THE FATAL TRAP VECTOR
                                        MOV     #340,@#6        ;MAKE SURE WE GET NO INTERRUPTS IF WE TRAP
                                        MOV     #1000,SP        ;SETUP THE STACK POINTER
                                        JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
                                        00002                   ;HERE LIES THE NUMBER OF THIS TEST
                                R0002:  MOV     #1000,SP        ;INIT THE STACK POINTER
                                        TST     @TCST           ;TRY TO READ THE TCST
                                        CLR     @TCST           ;TRY TO MODIFY THE TCST
                                        BR      T0003           ;NO ERRORS. GO ON TO THE NEXT TEXT
                                A0002:  ERROR   75              ;COULD NOT ACCESS TCST
                                ;CHECK THAT THE TCWC REGISTER CAN BE ACCESSED WITHOUT A TRAP OCCURING
                                .SBTTL T0003
                                ;*********************************************************************
                                T0003:  SCOPE
                                        MOV     #A0003,@#4      ;SETUP THE FATAL TRAP VECTOR
                                        MOV     #340,@#6        ;MAKE SURE WE GET NO INTERRUPTS IF WE TRAP
                                        MOV     #1000,SP        ;SETUP THE STACK POINTER
                                        JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
                                        00003                   ;HERE LIES THE NUMBER OF THIS TEST
                                R0003:  MOV     #1000,SP        ;INIT THE STACK POINTER
                                        TST     @TCWC           ;TRY TO READ THE TCWC
                                        CLR     @TCWC           ;TRY TO MODIFY THE TCWC
                                        BR      T0004           ;NO ERRORS. GO ON TO THE NEXT TEXT
                                A0003:  ERROR   76              ;COULD NOT ACCESS TCWC
                                ;CHECK THAT THE TCBA REGISTER CAN BE ACCESSED WITHOUT A TRAP OCCURING
                                .SBTTL T0004
                                ;*********************************************************************
                                T0004:  SCOPE
                                        MOV     #A0004,@#4      ;SETUP THE FATAL TRAP VECTOR
                                        MOV     #340,@#6        ;MAKE SURE WE GET NO INTERRUPTS IF WE TRAP
                                        MOV     #1000,SP        ;SETUP THE STACK POINTER
```

```
  981  003100  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
  982  003104  000004                        00004                   ;HERE LIES THE NUMBER OF THIS TEST
  983  003106  012706  001000        R0004:  MOV     #1000,SP        ;INIT THE STACK POINTER
  984  003112  005777  176126                TST     @TCBA           ;TRY TO READ THE TCBA
  985  003116  005077  176122                CLR     @TCBA           ;TRY TO MODIFY THE TCBA
  986  003122  000401                        BR      T0005           ;NO ERRORS. GO ON TO THE NEXT TEXT
  987  003124  104077                A0004:  ERROR   77              ;COULD NOT ACCESS TCBA
  988
  989                                ;CHECK THAT ISSUING A SAT COMMAND (STOP ALL TRANSPORTS) CAUSES READY BIT
  990                                ;TO CLEAR IMMEDIATELY (TCCM BIT 7).
  991                                .SBTTL T0005
  992                                ;******************************************************************************
  993  003126  000004                T0005:  SCOPE
  994  003130  012737  011702  000004        MOV     #TRAP4,4        ;SETUP FATAL TRAP VECTORS
  995  003136  012737  011672  000010        MOV     #TRAP10,10
  996  003144  012737  000340  000006        MOV     #340,6
  997  003152  012737  000340  000012        MOV     #340,12
  998  003160  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
  999  003164  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
 1000  003170  000005                        00005                   ;HERE LIES THE NUMBER OF THIS TEST
 1001  003172  013700  001240        R0005:  MOV     TCCM,R0         ;TCCM ADDR TO R0.
 1002  003176  005010                        CLR     (0)             ;SELECT U0, FUNCTION 0.(SAT COMMAND).
 1003  003200  005210                        INC     (0)             ;DO.
 1004  003202  105710                        TSTB    (0)             ;SEE IF READY IS SET.
 1005  003204  100001                        BPL     A0005           ;BR IF READY NOT SET. (OK).
 1006  003206  104001                        ERROR 1                         ;SAT COMMAND FAILED TO CLEAR READY.
 1007  003210                        A0005:
 1008  003210  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
 1009  003214  000400                        BR      T0006           ;GO ON TO THE NEXT TEST
 1010                               ;CHECK THAT ISSUING SST COMMAND (STOP SELECTED TRANSPORT) CAUSES READY
 1011                               ;BIT TO CLEAR IMMEDIATELY (TCCM BIT 7)
 1012                               .SBTTL T0006
 1013                               ;******************************************************************************
 1014  003216  000004                T0006:  SCOPE
 1015  003220  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
 1016  003224  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
 1017  003230  000006                        00006                   ;HERE LIES THE NUMBER OF THIS TEST
 1018  003232  013700  001240        R0006:  MOV     TCCM,R0         ;TCCM ADDR TO R0.
 1019  003236  012710  000010                MOV     #10,(0)         ;SELECT U0,FUNCTION 100. (SST COMMAND).
 1020  003242  005210                        INC     (0)             ;DO.
 1021  003244  105710                        TSTB    (0)             ;SEE IF READY IS SET.
 1022  003246  100001                        BPL     A0006           ;BR IF READY NOT SET. (OK).
 1023  003250  104002                        ERROR 2                 ;SST COMMAND FAILED TO CLEAR READY.
 1024  003252                        A0006:
 1025  003252  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
 1026  003256  000400                        BR      T0007           ;GO ON TO THE NEXT TEST
 1027                               ;TEST THAT READY BIT CAN CAUSE AN INTERRUPT. IF THE INTERRUPT IS SERVICED,
 1028                               ;IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
 1029                               .SBTTL T0007
 1030                               ;******************************************************************************
 1031  003260  000004                T0007:  SCOPE
 1032  003262  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
 1033  003266  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
 1034  003272  000007                        00007                   ;HERE LIES THE NUMBER OF THIS TEST
 1035  003274  004737  012174        R0007:  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO CB.
 1036  003300  003324                        A0007
```

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1037  003302  005077  175732                  CLR     @TCCM           ;DISABLE TC11 INTERRUPTS.
1038  003306  005037  177776                  CLR     PSW             ;SET PROCESSOR PRIORITY 0.
1039  003312  052777  000100  175720          BIS     #BIT6,@TCCM     ;ENABLE TC11 INTERRUPTS.
1040  003320  000240                          NOP
1041  003322  104003                          ERROR 3                 ;READY DID NOT INTERRUPT.
1042  003324                          A0007:
1043  003324  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1044  003330  000400                          BR      T0010           ;GO ON TO THE NEXT TEST
1045                                  ;TEST THAT READY DOES NOT CAUSE INTERRUPT WITH PROCESSOR AT SAME PRIORITY
1046                                  ;LEVEL AS THE TC11 INTERRUPT PRIORITY.
1047                                  .SBTTL T0010
1048                                  ;*****************************************************************************
1049  003332  000004                  T0010:  SCOPE
1050  003334  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1051  003340  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN P.POER SEQUENCE
1052  003344  000010                          00010                   ;HERE LIES THE NUMBER OF THIS TEST
1053  003346  004737  012174          R0010:  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO DC.
1054  003352  003410                          B0010
1055  003354  013737  001252  177776          MOV     TCLVL,PSW       ;SET PROCESSOR TO SAME PRTY AS TC11.
1056  003362  005077  175652                  CLR     @TCCM           ;DISABLE TC11 INTERRUPTS.
1057  003366  052777  000100  175644          BIS     #BIT6,@TCCM     ;ENABLE TC11 INTERRUPTS.
1058  003374  000240                          NOP
1059  003376  005077  175636          A0010:  CLR     @TCCM           ;DISABLE TC11 INTERRUPTS. (OK).
1060
1061  003402  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1062  003406  000402                          BR      T0011           ;GO ON TO THE NEXT TEST
1063  003410  104000                  B0010:  ERROR                   ;HERE IF INT. OCCURS.
1064                                                                  ;TC11 INTERRUPTED. WITH PROCESSOR AT SAME
1065  003412  000771                          BR      A0010           ;PRTY AS TC11 INTERRUPT PRTY.
1066                                  ;TEST THAT TC11 INTERRUPTS WHEN PROCESSOR IS AT PRIORITY ONE LEVEL LOWER
1067                                  ;THAN THE TC11 INTERRUPT PRIORITY.
1068                                  .SBTTL T0011
1069                                  ;*****************************************************************************
1070  003414  000004                  T0011:  SCOPE
1071  003416  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1072  003422  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1073  003426  000011                          00011                   ;HERE LIES THE NUMBER OF THIS TEST
1074  003430  004737  012174          R0011:  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO EB.
1075  003434  003472                          A0011
1076  003436  005077  175576                  CLR     @TCCM           ;DISABLE TC11 INTERRUPTS.
1077  003442  013737  001252  177776          MOV     TCLVL,PSW       ;SET PROCESSOR TO PRTY ONE LEVEL LOWER
1078  003450  162737  000040  177776          SUB     #40,PSW         ;THAN TC11 INTERRUPT PRTY.
1079  003456  052777  000100  175554          BIS     #BIT6,@TCCM     ;ENABLE TC11 INTERRUPTS.
1080  003464  000240                          NOP
1081  003466  104003                          ERROR 3                 ;TC11 FAILED TO INT. WITH PROCESSOR AT
1082  003470  000401                          BR      B0011           ;PRTY ONE LEVEL LOWER THAN TC11 INT. PRTY.
1083  003472  022626                  A0011:  POPSP2                  ;HERE IF INT. OCCURS. POP STACK TWICE.
1084  003474  005077  175540          B0011:  CLR     @TCCM           ;DISABLE TC11 INTERRUPTS.
1085
1086  003500  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1087  003504  000400                          BR      T0012           ;GO ON TO THE NEXT TEST
1088
1089
1090                                  ;TEST TC11 DOES NOT REINTERRUPT AFTER INITIAL INTERRUPT HAS BEEN SERVICED.
1091                                  .SBTTL T0012
1092                                  ;*****************************************************************************
```

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1093  003506  000004                    T0012:  SCOPE
1094  003510  012706  001000                    MOV     #1000,SP        ;SETUP THE STACK POINTER
1095  003514  004737  011766                    JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1096  003520  000012                            00012                   ;HERE LIES THE NUMBER OF THIS TEST
1097  003522  004737  012174          R0012:    JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO FC.
1098  003526  003564                            B0012
1099  003530  005077  175504                    CLR     @TCCM           ;DISABLE TC11 INTERRUPTS.
1100  003534  005037  177776                    CLR     PSW             ;SET PROCESSOR PRTY 0.
1101  003540  052777  000100  175472            BIS     #BIT6,@TCCM     ;ENABLE TC11 INTERRUPTS.
1102  003546  000240                            NOP
1103  003550  104005                            ERROR   5               ;TC11 FAILED TO INTERRUPT.
1104  003552  005077  175462          A0012:    CLR     @TCCM           ;DISABLE TC11 INTERRUPTS.
1105
1106  003556  012706  001000                    MOV     #1000,SP        ;RESTORE THE STACK POINTER
1107  003562  000413                            BR      T0013           ;GO ON TO THE NEXT TEST
1108  003564  012777  003604  175456  B0012:    MOV     #D0012,@TCVTR   ;CHANGE INT POINTER TO FE.
1109  003572  012716  003600                    MOV     #C0012,@SP      ;CHANGE INT EXIT POINTER TO FD.
1110  003576  000002                            RTI                     ;EXIT INTERRUPT.
1111  003600  000240                  C0012:    NOP                     ;OK IF NO INT. REOCCURS.
1112  003602  000763                            BR      A0012
1113  003604  022626                  D0012:    POPSP2                  ;HERE IF REINTERRUPT OCCURS.
1114  003606  104006                            ERROR 6                 ;TC11 REINTERRUPTED AFTER RTI.
1115  003610  000760                            BR      A0012
1116                                  ;TEST THAT SETTING MAINTENANCE BIT (TCCM BIT 13) SETS UPS BIT (TCST BIT 7)
1117                                  ;THAT CLEARING MAINTENANCE BIT CLEARS UPS, AND THAT RESET CLEARS UPS.
1118                                  .SBTTL T0013
1119                                  ;******************************************************************************
1120  003612  000004                  T0013:  SCOPE
1121  003614  012706  001000                    MOV     #1000,SP        ;SETUP THE STACK POINTER
1122  003620  004737  011766                    JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1123  003624  000013                            00013                   ;HERE LIES THE NUMBER OF THIS TEST
1124  003626  032777  000200  175402  R0013:    BIT     #BIT7,@TCST     ;SEE IF UPS IS CLEAR.
1125  003634  001402                            BEQ     A0013           ;BR IF UPS IS CLEAR.
1126  003636  104007                            ERROR 7                 ;RESET FAILED TO CLEAR UPS.
1127  003640  000421                            BR      C0013
1128  003642  052777  020000  175370  A0013:    BIS     #BIT13,@TCCM    ;SET MAINTENALCE BIT.
1129  003650  032777  000200  175360            BIT     #BIT7,@TCST     ;SEE IF UPS IS SET.
1130  003656  001002                            BNE     B0013           ;BR IF UPS IS SET.
1131  003660  104010                            ERROR 10                ;MAINT BIT FAILED TO SET UPS.
1132  003662  000410                            BR      C0013
1133  003664  042777  020000  175346  B0013:    BIC     #BIT13,@TCCM    ;CLEAR MAINT BIT.
1134  003672  032777  000200  175336            BIT     #BIT7,@TCST     ;SEE IF UPS IS CLEAR.
1135  003700  001401                            BEQ     C0013           ;BR IF UPS IS CLEAR.
1136  003702  104011                            ERROR 11                ;CLEARING MAINT. BIT FAILED TO CLEAR UPS.
1137  003704  052777  020000  175326  C0013:    BIS     #BIT13,@TCCM    ;SET MAINT BIT TO SET UPS.
1138  003712  004737  012220                    JSR     PC,SRSETT       ;ISSUE RESET TO CLEAR MAINT AND UPS BITS.
1139
1140  003716  012706  001000                    MOV     #1000,SP        ;RESTORE THE STACK POINTER
1141  003722  000400                            BR      T0014           ;GO ON TO THE NEXT TEST
1142                                  ;TEST THAT SETTING MAINT. BIT DISABLES LOADING XD16 (TCST BIT 0).
1143                                  .SBTTL T0014
1144                                  ;******************************************************************************
1145  003724  000004                  T0014:  SCOPE
1146  003726  012706  001000                    MOV     #1000,SP        ;SETUP THE STACK POINTER
1147  003732  004737  011766                    JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1148  003736  000014                            00014                   ;HERE LIES THE NUMBER OF THIS TEST
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1149  003740  052777  020000  175272  R0014:  BIS     #BIT13,@TCCM    ;SET MAINTENANCE BIT.
1150  003746  052777  000001  175262          BIS     #BIT0,@TCST     ;TRY SETTILG XD16.
1151  003754  032777  000001  175254          BIT     #BIT0,@TCST     ;SEE IF XD16 IS SET.
1152  003762  001401                          BEQ     A0014           ;BR IF XD16 IS CLEAP.
1153  003764  104012                          ERROR 12                ;MAINT BIT SET FAILS TO PREVENT LOADING
1154  003766  004737  012220          A0014:  JSR     PC,SRSETT       ;OF XD16.
1155
1156  003772  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1157  003776  000400                          BR      T0015           ;GO ON TO THE NEXT TEST
1158                                  ;TEST THAT SETTING MAINT. BIT DISABLES LOADING XD17 (TCST BIT 1).
1159                                  .SBTTL T0015
1160                                  ;******************************************************************************
1161  004000  000004                  T0015:  SCOPE
1162  004002  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1163  004006  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1164  004012  000015                          00015                   ;HERE LIES THE NUMBER OF THIS TEST
1165  004014  052777  020000  175216  R0015:  BIS     #BIT13,@TCCM    ;SET MAINTENANCE BIT.
1166  004022  052777  000002  175206          BIS     #BIT1,@TCST     ;TRY SETTING XD17.
1167  004030  032777  000002  175200          BIT     #BIT1,@TCST     ;SEE ID XD17 IS SET.
1168  004036  001401                          BEQ     A0015           ;BR IF XD17 IS CLEAR.
1169  004040  104013                          ERROR 13                ;MAINT BIT FAILED TO PREVENT SETTING
1170  004042  004737  012220          A0015:  JSR     PC,SRSETT       ;OF XD17.
1171
1172  004046  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1173  004052  000400                          BR      T0016           ;GO ON TO THE NEXT TEST
1174
1175                                  ;CHECK THAT ISSUING WRTM COMMAND WITH WRTM SWITCH OFF CAUSES AN ILO ERROR.
1176                                  ;(ILLEGAL OP- TCST BIT 12), AND THAT ERROR BIT SETS.;(TCCM BIT 15).
1177                                  ;TEST DONE WITH MAINTENANCE BIT SET.
1178                                  .SBTTL T0016
1179                                  ;******************************************************************************
1180  004054  000004                  T0016:  SCOPE
1181  004056  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1182  004062  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1183  004066  000016                          00016                   ;HERE LIES THE NUMBER OF THIS TEST
1184  004070  012777  020012  175142  R0016:  MOV     #MAINT!FWD!UO!WRTM,@TCCM
1185  004076  000240                          NOP
1186  004100  032777  010000  175130          BIT     #BIT12,@TCST    ;SEE IF ILO ERROR IS SET.
1187  004106  001002                          BNE     A0016           ;BR IF ILO ERR IS SET.
1188  004110  104014                          ERROR 14                ;WRTM COMMAND WITH WRTM SWITCH DISABLED
1189  004112  000421                          BR      D0016           ;FAILED TO SET ILO ERROR.
1190  004114  005777  175120          A0016:  TST     @TCCM           ;SEE IF ERROR BIT IS SET.
1191  004120  100402                          BMI     B0016           ;BR IF ERROR BIT IS SET.
1192  004122  104015                          ERROR 15                ;ILO ERR FAILED TO SET ERROP BIT.
1193  004124  000414                          BR      D0016
1194  004126  005077  175106          B0016:  CLR     @TCCM           ;CLEAR ILLEGAL COMMAND.
1195  004132  032777  010000  175076          BIT     #BIT12,@TCST    ;SEE IF ILO ERROR IS SET.
1196  004140  001402                          BEQ     C0016           ;BR IF ILO ERROR IS CLEAR.
1197  004142  104016                          ERROR 16                ;CLEARING ILLEGAL OP FAILED TO CLEAR
1198  004144  000404                          BR      D0016           ;ILO ERROR.
1199  004146  005777  175066          C0016:  TST     @TCCM           ;SEE IF ERROR BIT IS CLEAR.
1200  004152  100001                          BPL     D0016           ;BR IF ERROR IS CLEAR.
1201  004154  104017                          ERROR 17                ;CLEARING ILLEGAL OP FAILED TO
1202  004156  004737  012220          D0016:  JSR     PC,SRSETT       ;CLEAR ERROR BIT.
1203
1204  004162  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
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1205  004166  000400                          BR      T0017           ;GO ON TO THE NEXT TEST
1206                                  ;CHECK THAT ISSUING WRTM COMMAND (WRITE TIMING AND MARK) WITH WRTM SWITCH
1207                                  ;OFF CAUSES AN ILO ERROR(ILLEGAL OP- TCST BIT 12),ALD THAT ERROR BIT SETS.
1208                                  ;(TCCM BIT 15). TEST DONE WITH MAINTENANCE @IT SET.
1209                                  .SBTTL T0017
1210                                  ;*****************************************************************************
1211  004170  000004                  T0017:  SCOPE
1212  004172  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1213  004176  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1214  004202  000017                          00017                   ;HERE LIES THE NUMBER OF THIS TEST
1215  004204  012777  020012  175026  R0017:  MOV     #MAINT!FWD!UO!WRTM,@TCCM
1216  004212  000240                          NOP
1217  004214  032777  010000  175014          BIT     #BIT12,@TCST    ;SEE IF ILO ERR IS SET.
1218  004222  001002                          BNE     A0017           ;BR IF ILO SET.
1219  004224  104020                          ERROR 20                ;WRTM WITH WRTM SW OFF FAILED TO SET
1220  004226  000421                          BR      D0017           ;ILO ERROR.
1221  004230  005777  175004          A0017:  TST     @TCCM           ;ERROR BIT SET?
1222  004234  100402                          BMI     B0017           ;BR IF ERROR BIT SET.
1223  004236  104021                          ERROR 21                ;ERROR BIT NOT SET WITH ILO ERR SET.
1224  004240  000414                          BR      D0017
1225  004242  005077  174772          B0017:  CLR     @TCCM           ;CLEAR ILLEGAL COMMAND.
1226  004246  032777  010000  174762          BIT     #BIT12,@TCST    ;SEE IF ILO ER IS CLEAR.
1227  004254  001402                          BEQ     C0017           ;BR ID ILO ERR IS CLEAR.
1228  004256  104016                          ERROR 16                ;CLEARING ILLEGAL OP FAILED TO
1229  004260  000404                          BR      D0017           ;CLEAR ILO ERR.
1230  004262  005777  174752          C0017:  TST     @TCCM           ;ERROR BIT SET?
1231  004266  100001                          BPL     D0017           ;BR IF ERROR BIT IS CLEAR.
1232  004270  104017                          ERROR 17                ;CLEARING ILLEGAL OP FAILED TO
1233  004272  004737  012220          D0017:  JSR     PC,SRSETT       ;CLEAR ERROR BIT.
1234
1235  004276  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1236  004302  000400                          BR      T0020           ;GO ON TO THE NEXT TEST
1237
1238                                  ;TEST THAT CLEARING ERROR BIT DOES NOT CLEAR ILO ERROR.
1239                                  .SBTTL T0020
1240                                  ;*****************************************************************************
1241  004304  000004                  T0020:  SCOPE
1242  004306  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1243  004312  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1244  004316  000020                          00020                   ;HERE LIES THE NUMBER OF THIS TEST
1245  004320  012777  020012  174712  R0020:  MOV     #MAINT!FWD!UO!WRTM,@TCCM
1246  004326  000240                          NOP
1247  004330  005777  174704                  TST     @TCCM           ;ERROR SET?
1248  004334  100402                          BMI     A0020           ;BR IF ERROR BIT IS SET.
1249  004336  104023                          ERROR 23                ;ERROR BIT FAILED TO SET.
1250  004340  000410                          BR      B0020
1251  004342  042777  100000  174670  A0020:  BIC     #BIT15,@TCCM    ;TRY CLEARING ERROR BIT.
1252  004350  032777  010000  174660          BIT     #BIT12,@TCST    ;ILO SET?
1253  004356  001001                          BNE     B0020           ;BR IF ILO IS SET.
1254  004360  104022                          ERROR 22                ;0 TO ERROR BIT CLEARED ILO ERROR.
1255  004362  004737  012220          B0020:  JSR     PC,SRSETT       ;RESET.
1256
1257  004366  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1258  004372  000400                          BR      T0021           ;GO ON TO THE NEXT TEST
1259                                  ;TEST THAT ERROR BIT (TCCM BIT15) IS ABLE TO CAUSE AN INTERRUPT.
1260                                  .SBTTL T0021
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                                ;*****************************************************************************
004374  000004                 T0021:  SCOPE
004376  012706  001000                 MOV     #1000,SP        ;SETUP THE STACK POINTER
004402  004737  011766                 JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
004406  000021                         00021                   ;HERE LIES THE NUMBER OF THIS TEST
004410  004737  012174         R0021:  JSR     PC,STTCV        ;SET TC11 INT. VECTOR TO MB.
004414  004442                         A0021
004416  005077  174616                 CLR     @TCCM           ;DISABLE TC11 INTERRUPTS.
004422  005037  177776                 CLR     PSW             ;SET PRTY 0.
004426  052777  000100  174604         BIS     #BIT6,@TCCM     ;ENABLE TC11 INTERRUPTS.
004434  000240                         NOP
004436  104005                         ERROR 5                 ;TC11 FAILED TO INTERRUPT.
004440  000415                         BR      D0021
004442  012777  004472  174600 A0021:  MOV     #C0021,@TCVTR   ;CHANGE INT VECTOR TO MD.
004450  012716  004456                 MOV     #B0021,@SP      ;CHANGE INT EXIT POINTER TO MC.
004454  000002                         RTI                     ;EXIT INTERRUPT.
004456  052777  020012  174554 B0021:  BIS     #MAINT!FWD!UO!WRTM,@TCCM
004464  000240                         NOP
004466  104024                         ERROR 24                ;ERROR BIT FAILED TO INTERRUPT.
004470  000401                         BR      D0021
004472  022626                 C0021:  POPSP2                  ;HERE IF ERROR INTERRUPTS.
004474  005077  174540         D0021:  CLR     @TCCM           ;DISABLE INT. CLEAR ILLEGAL OP.

004500  012706  001000                 MOV     #1000,SP        ;RESTORE THE STACK POINTER
004504  000400                         BR      T0022           ;GO ON TO THE NEXT TEST


                                ;TEST THAT ISSUING RNUM COMMAND (READ BLOCK #) CLEARS READY BIT.
                                ;RESET INSTRUCTION SHOULD SET READY. TEST DONE WITH MAINT. BIT SET.
                                .SBTTL T0022
                                ;*****************************************************************************
004506  000004                 T0022:  SCOPE
004510  012706  001000                 MOV     #1000,SP        ;SETUP THE STACK POINTER
004514  004737  011766                 JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
004520  000022                         00022                   ;HERE LIES THE NUMBER OF THIS TEST
004522  105777  174512         R0022:  TSTB    @TCCM           ;READY SET?
004526  100402                         BMI     A0022           ;BR IF READY IS SET.
004530  104025                         ERROR 25                ;RESET DID NOT FORCE READY TO SET.
004532  000407                         BR      B0022
004534  012777  020003  174476 A0022:  MOV     #MAINT!UO!FWD!RNUM!DO,@TCCM
004542  105777  174472                 TSTB    @TCCM           ;READY CLEAR?
004546  100001                         BPL     B0022           ;BR IF READY IS CLEAR.
004550  104076                         ERROR 76                ;RNUM,DO, FAILED TO CLEAR READY.
004552  004737  012220         B0022:  JSR     PC,SRSETT       ;ISSUE RESET TO FORCE READY TO SET.

004556  012706  001000                 MOV     #1000,SP        ;RESTORE THE STACK POINTER
004562  000400                         BR      T0023           ;GO ON TO THE NEXT TEST
                                ;TEST THAT TC11 CONTROL CAN RECOGNIZE A BLOCK MARK. WITH MAINT BIT SET,
                                ;RNUM COMMAND IS ISSUED. A SUBROUTINE PROVIDES TIMING AND MARK DATA.
                                ;WHEN THE BLOCK MARK HAS BEEN SHIFTED INTO THE WINDOW, THE READY BIT SHOULD SET.
                                .SBTTL T0023
                                ;*****************************************************************************
004564  000004                 T0023:  SCOPE
004566  012706  001000                 MOV     #1000,SP        ;SETUP THE STACK POINTER
004572  004737  011766                 JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
004576  000023                         00023                   ;HERE LIES THE NUMBER OF THIS TEST
004600  005077  174434         R0023:  CLR     @TCCM
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1317  004604  012777  020003  174426          MOV     #MAINT!U0!FWD!RNUM!DO,@TCCM
1318  004612                                  MTCOD   MTK7,6
1319  004612  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1320  004616  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1321  004620  000006                          6                       ;MARK TRACK CODE COUNT.
1322  004622  005777  174412                  TST     @TCCM           ;ERROR BIT SET?
1323  004626  100002                          BPL     A0023           ;BR IF NO ERROR.
1324  004630  104027                          ERROR 27                ;ERROR BIT SET. EXAMINE TCST OR LIGHT PANEL.
1325  004632  000404                          BR      B0023
1326  004634  105777  174400          A0023:  TSTB    @TCCM           ;READY BIT SET?
1327  004640  100401                          BMI     B0023           ;BR IF READY IS SET.
1328  004642  104030                          ERROR 30                ;READY NOT SET AFTER BLOCK MARK WAS
1329                                                                  ;SHIFTED INTO WINDOW REG WITH RNUM COMMAND
1330                                                                  ;IN EFFECT.EVERYTHING IS SUSPECT AT THIS
1331                                                                  ;POINT. ABILITY TO SHIFT TIMING AND MARK
1332                                                                  ;DATA WHILE IN MAINT MODE HAS NOT BEEN
1333  004644                          B0023:
1334  004644  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1335  004650  000400                          BR      T0024           ;GO ON TO THE NEXT TEST
1336                          ;TEST THAT TC11 CONTROL TRANSFERS THE BLOCK NUMBER TO THE DATA REGISTER
1337                          ;WHEN BLOCK MARK IS DETECTED AND CONTROL IS DOING RNUM COMMAND. A SUBROUTINE
1338                          ;PROVIDES TIMING, MARK, AND DATA. WHEN THE READY BIT SETS, THE BLOCK #
1339                          ;EXPECTED IN THE DATA REGISTER IS 000525.
1340                          .SBTTL T0024
1341                          ;******************************************************************************
1342  004652  000004         T0024:  SCOPE
1343  004654  012706  001000          MOV     #1000,SP        ;SETUP THE STACK POINTER
1344  004660  004737  011766          JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1345  004664  000024                  00024                   ;HERE LIES THE NUMBER OF THIS TEST
1346  004666  005077  174346  R0024:  CLR     @TCCM
1347  004672  012777  020003  174340          MOV     #MAINT!U0!FWD!RNUM!DO,@TCCM
1348  004700                                  MTCOD   MTK7,6
1349  004700  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1350  004704  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1351  004706  000006                          6                       ;MARK TRACK CODE COUNT.
1352  004710  022777  052525  174330          CMP     #52525,@TCDT    ;TCDT=52525?
1353  004716  001415                          BEQ     A0024           ;BR IF TCDT CORRECT.
1354  004720  017737  174322  001172          MOV     @TCDT,$REG4     ;SETUP BLOBK # FOR PRINTOUT
1355  004726  012737  052525  001162          MOV     #52525,$REG0    ;SETUP GOOD BLOBK # TO PRINTOUT
1356  004734  017737  174306  001172          MOV     @TCDT,$REG4     ;SETUP BLOBK # FOR PRINTOUT
1357  004742  012737  052525  001162          MOV     #52525,$REG0    ;SETUP GOOD BLOBK # TO PRINTOUT
1358  004750  104031                          ERROR 31                ;ERROR.BLOCK # IN TCDT NOT 52525. EXAMINE TCDT.
1359  004752                          A0024:
1360  004752  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1361  004756  000400                          BR      T0025           ;GO ON TO THE NEXT TEST
1362                          ;TEST THAT TC11 CONTROL IS ABLE TO DETECT AN INCORRECT MARK TRACK CODE.
1363                          ;A SUBROUTINE PROVIDES TIMING AND MARK DATA WHILE CONTROL IS IN RNUM
1364                          ;COMMAND. WHEN THE INCORRECT MARK IS SHIFTED, THE MTE AND ERR BITS SHOULD SET.
1365                          .SBTTL T0025
1366                          ;******************************************************************************
1367  004760  000004         T0025:  SCOPE
1368  004762  012706  001000          MOV     #1000,SP        ;SETUP THE STACK POINTER
1369  004766  004737  011766          JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1370  004772  000025                  00025                   ;HERE LIES THE NUMBER OF THIS TEST
1371  004774  004537  012646  R0025:  JSR     R5,BMOVE        ;SET INVALID CODE IN MARK TRACK.
1372  005000  033256                  MTKER
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1373  005002  033360                        MTKVAR
1374  005004  000006                        6
1375  005006  012777  020003  174224        MOV     #MAINT!U0!FWD!RNUM!DO,@TCCM
1376  005014                                MTCOD   MTK7,9.
1377  005014  004537  012674                JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1378  005020  033306                        MTK7                    ;ADDRESS OF MARK TRACK CODES.
1379  005022  000011                        9.                      ;MARK TRACK CODE COUNT.
1380  005024  032777  020000  174204        BIT     #BIT13,@TCST    ;MTE BIT SET? (MARK TRACK ERROR).
1381  005032  001002                        BNE     A0025           ;BR IF MTE BIT IS SET.
1382  005034  104032                        ERROR 32                ;INVALID MARK TRACK CODE FAILED TO SET MTE.
1383  005036  000404                        BR      B0025
1384  005040  005777  174174        A0025:  TST     @TCCM           ;ERROR BIT SET?
1385  005044  100401                        BMI     B0025           ;BR IF ERROR BIT IS SET.
1386  005046  104033                        ERROR 33                ;MTE BIT FAILED TO SET ERROR BIT.
1387  005050                        B0025:
1388  005050  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
1389  005054  000400                        BR      T0026           ;GO ON TO THE NEXT TEST
1390                                ;TEST THAT TC11 CONTROL DETECTS END ZONE MARK CODES. A SUBROUTINE PROVIDES
1391                                ;TIMING AND MARK DATA WHILE CONTROL IS IN RNUM COMMAND. WHEN THE ENDZ
1392                                ;MARK CODE IS SHIFTED INTO THE WINDOW, THE ENDZ AND ERROR BITS SHOULD SET.
1393                                .SBTTL T0026
1394                                ;*****************************************************************************
1395  005056  000004                T0026:  SCOPE
1396  005060  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
1397  005064  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1398  005070  000026                        00026                   ;HERE LIES THE NUMBER OF THIS TEST
1399  005072  004537  012646        R0026:  JSR     R5,BMOVE        ;SET END CODE IN MARK TRACK.
1400  005076  033264                        MTKEND
1401  005100  033336                        MTK5
1402  005102  000006                        6
1403  005104  012777  020003  174126        MOV     #MAINT!U0!FWD!RNUM!DO,@TCCM
1404  005112                                MTCOD   MTK7,5
1405  005112  004537  012674                JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1406  005116  033306                        MTK7                    ;ADDRESS OF MARK TRACK CODES.
1407  005120  000005                        5                       ;MARK TRACK CODE COUNT.
1408  005122  005777  174110                TST     @TCST           ;ENDZ BIT SET?
1409  005126  100402                        BMI     A0026           ;BR IF ENDZ BIT IS SET.
1410  005130  104034                        ERROR 34                ;ENDZ MARK FAILED TO SET ENDZ BIT.
1411  005132  000404                        BR      B0026
1412  005134  005777  174100        A0026:  TST     @TCCM           ;ERROR BIT SET?
1413  005140  100401                        BMI     B0026           ;BR IF ERROR BIT IS SET.
1414  005142  104035                        ERROR 35                ;ENDZ BIT FAILED TO SET ERROR BIT.
1415  005144                        B0026:
1416  005144  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
1417  005150  000400                        BR      T0027           ;GO ON TO THE NEXT TEST
1418                                ;TEST THAT TC11 CONTROL DOES NOT RECOGNIZE MARK TRACK CODE 55 AS END ZONE
1419                                ;BLOCK MARK. SUBROUTINE PROVIDES TIMING AND MARK DATA.
1420                                .SBTTL T0027
1421                                ;*****************************************************************************
1422  005152  000004                T0027:  SCOPE
1423  005154  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
1424  005160  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1425  005164  000027                        00027                   ;HERE LIES THE NUMBER OF THIS TEST
1426  005166  004537  012646        R0027:  JSR     R5,BMOVE        ;SET CODE 55 IN MARK TRACK.
1427  005172  033272                        MTK55
1428  005174  033336                        MTK5
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1429  005176  000006                          6
1430  005200  005077  174034                  CLR     @TCCM
1431  005204  012777  020003  174026          MOV     #MAINT!UO!FWD!RNUM!DO,@TCCM
1432  005212                                  MTCOD   MTK7,5
1433  005212  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1434  005216  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1435  005220  000005                          5                       ;MARK TRACK CODE COUNT.
1436  005222  005777  174010                  TST     @TCST           ;ENDZ BIT SET?
1437  005226  100002                          BPL     A0027           ;BR IF NOT SET.
1438  005230  104036                          ERROR 36                ;MARK CODE 55 INTERPRETED AS END ZONE.
1439  005232  000404                          BR      B0027
1440  005234  005777  174000          A0027:  TST     @TCCM           ;ERROR BIT SET?
1441  005240  100001                          BPL     B0027           ;BR IF NO ERROR.
1442  005242  104037                          ERROR 37                ;ERROR BIT SET. EXAMINE TCST.
1443  005244                          B0027:
1444  005244  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1445  005250  000400                          BR      T0030           ;GO ON TO THE NEXT TEST
1446                                  ;TEST THAT TC11 INTERRUPTS. RNUM COMMAND IS ISSUED. SUBROUTINE PROVIDES
1447                                  ;TIMING AND MARK. WHEN BLOCK IS FOUND INTERRUPT SHOULD OCCUR.
1448                                  .SBTTL T0030
1449                                  ;*****************************************************************************
1450  005252  000004                  T0030:  SCOPE
1451  005254  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1452  005260  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1453  005264  000030                          00030                   ;HERE LIES THE NUMBER OF THIS TEST
1454  005266  004737  012174          R0030:  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO UE.
1455  005272  005332                          D0030
1456  005274  005077  173740                  CLR     @TCCM
1457  005300  012777  020103  173732          MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
1458  005306                                  MTCOD   MTK7,4
1459  005306  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1460  005312  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1461  005314  000004                          4                       ;MARK TRACK CODE COUNT.
1462  005316  105777  173716                  TSTB    @TCCM           ;READY SET?
1463  005322  100402                          BMI     A0030           ;BR IF READY SET.
1464  005324  104040                          ERROR 40                ;READY DID NOT SET.
1465  005326  000401                          BR      D0030
1466  005330  104003                  A0030:  ERROR 3                 ;READY FAILED TO INTERRUPT.
1467  005332                          D0030:
1468  005332  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1469  005336  000400                          BR      T0031           ;GO ON TO THE NEXT TEST
1470                                  ;TEST THAT TC11 IS ABLE TO TRANSFER ONE WORD TO CORE STORAGE. SUBROUTINE
1471                                  ;PROVIDES TIMING AND MARK. AFTER BLOCK IS 'FOUND'' TEST SWITCHES TO
1472                                  ;RDATA COMMAND WITH WORD COUNT OF -1.
1473                                  .SBTTL T0031
1474                                  ;*****************************************************************************
1475  005340  000004                  T0031:  SCOPE
1476  005342  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1477  005346  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1478  005352  000031                          00031                   ;HERE LIES THE NUMBER OF THIS TEST
1479  005354  004737  012470          R0031:  JSR     PC,CLRBUF       ;CLEAR READ BUFFER.
1480  005360  004737  012174                  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO VG.
1481  005364  005530                          G0031
1482  005366  005077  173646                  CLR     @TCCM
1483  005372  012777  020103  173640          MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
1484  005400                                  MTCOD   MTK7,7
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1485  005400  004537  012674                      JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1486  005404  033306                              MTK7                    ;ADDRESS OF MARK TRACK CODES.
1487  005406  000007                              7                       ;MARK TRACK CODE COUNT.
1488  005410  005777  173624                      TST     @TCCM           ;ERROR BIT SET?
1489  005414  100002                              BPL     A0031           ;BR IF NO ERROR.
1490  005416  104041                              ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1491  005420  000440                              BR      F0031
1492  005422  105777  173612          A0031:      TSTB    @TCCM           ;READY BIT SET?
1493  005426  100002                              BPL     B0031           ;BR IF READY NOT SET.
1494  005430  104042                              ERROR 42                ;READY SHOULD NOT BE SET.
1495  005432  000433                              BR      F0031
1496  005434  022737  050505  036430  B0031:      CMP     #50505,RBUF     ;SEE IF 1ST WORD IN RBUF IS 50505.
1497  005442  001405                              BEQ     C0031           ;BR IF WORD IS 50505.
1498  005444  012737  050505  001162              MOV     #50505,$REG0    ;GOOD DATA FOR PRINTOUT
1499  005452  104043                              ERROR 43                ;WORD IN RBUF IS NOT 50505. EXAMINE RBUF.
1500  005454  000422                              BR      F0031           ;TRANSFER MAY NOT HAVE OCCURRED.
1501  005456  005777  173560          C0031:      TST     @TCWC           ;WORD COUNT 0?
1502  005462  001407                              BEQ     D0031           ;BR IF WORD COUNT IS 0.
1503  005464  017737  173552  001172              MOV     @TCWC,$REG4     ;PREPERE ERONIOUS WORD COUNT FOR PRINTOUT
1504  005472  005077  173464                      CLR     @$REG0          ;PREPARE GOOD WORD COUNT INFO FOR PRINTOUT
1505  005476  104044                              ERROR 44                ;WORD COUNT NOT 0.
1506  005500  000410                              BR      F0031
1507  005502  022777  036432  173534  D0031:      CMP     #RBUF+2,@TCBA   ;DID BUS ADDRESS INCREMENT CORRECTLY?
1508  005510  001404                              BEQ     F0031           ;BR IF TCBA IS CORRECT.
1509  005512  017737  173526  001172              MOV     @TCBA,$REG4
1510  005520  104045                              ERROR 45                ;TCBA DID NOT INCREMENT OR DID IT INCORRECTLY.
1511  005522                          F0031:
1512  005522  012706  001000                      MOV     #1000,SP        ;RESTORE THE STACK POINTER
1513  005526  000421                              BR      T0032           ;GO ON TO THE NEXT TEST
1514  005530  005777  173504          G0031:      TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS. ERROR BIT SET?
1515  005534  100004                              BPL     I0031           ;BR IF NO ERROR.
1516  005536  104041                              ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1517
1518  005540  012706  001000                      MOV     #1000,SP        ;RESTORE THE STACK POINTER
1519  005544  000412                              BR      T0032           ;GO ON TO THE NEXT TEST
1520  005546  012777  177777  173466  I0031:      MOV     #-1,@TCWC       ;SET WORD COUNT TO -1.
1521  005554  012777  036430  173462              MOV     #RBUF,@TCBA     ;SET BUS ADDR TO RBUF.
1522  005562  112777  000005  173450              MOVB    #RDATA!DO,@TCCM ;READ DATA COMMAND.
1523  005570  000002                              RTI                     ;EXIT INTERRUPT.
1524                          ;TEST THAT RDATA COMMAND WITH WORD COUNT SET TO -1 TRANSFERS ONLY ONE WORD.
1525                          ;THAT READY IS SET WHEN THE ENTIRE 256 WORD BLOCK HAS BEEN PROCESSED, AND
1526                          ;THAT NO PARITY ERROR OCCURS. TEST DONE UNDER MAINTENANCE MODE.
1527                          .SBTTL T0032
1528                          ;*****************************************************************************
1529  005572  000004          T0032:      SCOPE
1530  005574  012706  001000              MOV     #1000,SP        ;SETUP THE STACK POINTER
1531  005600  004737  011766              JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1532  005604  000032                      00032                   ;HERE LIES THE NUMBER OF THIS TEST
1533  005606  004737  012470  R0032:      JSR     PC,CLRBUF       ;CLEAR READ BUFFER.
1534  005612  004737  012174              JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO WI.
1535  005616  006002                      I0032
1536  005620  005077  173414              CLR     @TCCM
1537  005624  012777  020103  173406      MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
1538  005632                              MTCOD   MTK7,267.
1539  005632  004537  012674              JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1540  005636  033306                      MTK7                    ;ADDRESS OF MARK TRACK CODES.
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1541  005640  000413                          267.
1542  005642  005777  173372                  TST     @TCCM           ;MARK TRACK CODE COUNT.
1543  005646  100010                          BPL     B0032           ;ERROR BIT SET?
1544  005650  032777  040000  173360          BIT     #BIT14,@TCST    ;BR IF NO ERROR.
1545  005656  001402                          BEQ     A0032           ;WAS IT PARITY ERROR?
1546  005660  104046                          ERROR 46                ;BR IF NOT PARITY ERROR.
1547  005662  000444                          BR      H0032           ;PARITY ERROR.
1548  005664  104041                  A0032:  ERROR 41                ;ERROR BIT SET. NOT DUE TO PARITY ERROR.
1549  005666  000442                          BR      H0032
1550  005670  105777  173344          B0032:  TSTB    @TCCM           ;READY BIT SET?
1551  005674  100402                          BMI     C0032           ;BR IF READY IS SET.
1552  005676  104047                          ERROR 47                ;READY FAILED TO SET AFTER COMPLETION
1553  005700  000435                          BR      H0032           ;OF RDATA COMMAND.
1554  005702  022737  050505  036430  C0032:  CMP     #50505,RBUF     ;1ST WORD EQUAL 50505?
1555  005710  001405                          BEQ     D0032           ;BR IF WORD IS 50505.
1556  005712  012737  050505  001162          MOV     #50505,$REG0    ;GOOD DATA FOR PRINTOUT
1557  005720  104043                          ERROR 43                ;1ST WORD DID NOT TRANSFER TO RBUF CORRECTLY.
1558  005722  000424                          BR      H0032
1559  005724  005737  036432          D0032:  TST     RBUF+2          ;RBUF+2 EQUAL 0?
1560  005730  001402                          BEQ     F0032           ;BR IF RBUF+2 EQUAL 0.
1561  005732  104050                          ERROR 50                ;RBUF+2 NOT 0. NO DATA SHOULD HAVE
1562  005734  000417                          BR      H0032           ;TRANSFERRED TO IT.
1563  005736  005777  173300          F0032:  TST     @TCWC           ;WORD COUNT 0?
1564  005742  001407                          BEQ     G0032           ;BR IF WORD COUNT IS 0.
1565  005744  017737  173272  001172          MOV     @TCWC,$REG4     ;PREPERE ERONIOUS WORD COUNT FOR PRINTOUT
1566  005752  005077  173204                  CLR     @$REG0          ;PREPARE GOOD WORD COUNT INFO FOR PRINTOUT
1567  005756  104044                          ERROR 44                ;WORD COUNT NOT 0.
1568  005760  000405                          BR      H0032
1569  005762  022777  036432  173254  G0032:  CMP     #RBUF+2,@TCBA   ;IS BUS ADDR CORRECT?
1570  005770  001401                          BEQ     H0032           ;BR IF TCBA OK.
1571  005772  104045                          ERROR 45                ;TCBA ADDR INCORRECT. SHOULD CONTAIN RBUF+2.
1572  005774                          H0032:
1573  005774  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1574  006000  000421                          BR      T0033           ;GO ON TO THE NEXT TEST
1575  006002  005777  173232          I0032:  TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS. ERROR?
1576  006006  100004                          BPL     K0032           ;BR IF NO ERROR.
1577  006010  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1578
1579  006012  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1580  006016  000412                          BR      T0033           ;GO ON TO THE NEXT TEST
1581  006020  012777  177777  173214  K0032:  MOV     #-1,@TCWC       ;SET WORD COUNT TO -1.
1582  006026  012777  036430  173210          MOV     #RBUF,@TCBA     ;SET BUS ADDR TO RBUF.
1583  006034  112777  000005  173176          MOVB    #RDATA!DO,@TCCM ;READ DATA COMMAND.
1584  006042  000002                          RTI                     ;EXIT INTERRUPT.
1585                          ;TEST THAT TC11 IS ABLE TO DETECT INCORRECT PARITY. RDATA COMMAND IS ISSUED.
1586                          ;TCWC=-1. BLOCK TO BE READ CONTAINS BAD CHECKSUM. TEST DONE IN MAINT. MODE.
1587                          .SBTTL T0033
1588                          ;******************************************************************************
1589  006044  000004          T0033:  SCOPE
1590  006046  012706  001000          MOV     #1000,SP        ;SETUP THE STACK POINTER
1591  006052  004737  011766          JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1592  006056  000033                  00033                   ;HERE LIES THE NUMBER OF THIS TEST
1593  006060  004737  013152  R0033:  JSR     PC,MBCKSM       ;BAD CHECKSUM TO FCKSM.
1594  006064  004737  012470          JSR     PC,CLRBUF       ;CLEAR READ BUFFER.
1595  006070  004737  012174          JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO XE.
1596  006074  006212                  D0033
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1597  006076  005077  173136                    CLR     @TCCM
1598  006102  012777  020103  173130            MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
1599  006110                                    MTCOD   MTK7,267.
1600  006110  004537  012674                    JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1601  006114  033306                            MTK7                    ;ADDRESS OF MARK TRACK CODES.
1602  006116  000413                            267.                    ;MARK TRACK CODE COUNT.
1603  006120  032777  040000  173110            BIT     #BIT14,@TCST    ;PARITY ERROR SET?
1604  006126  001005                            BNE     A0033           ;BR IF PARITY ERROR SET.
1605  006130  017737  173106  001162            MOV     @TCWC,$REG0
1606  006136  104052                            ERROR 52                ;PARITY ERROR NOT DETECTED.(BIT NOT SET).
1607  006140  000421                            BR      C0033
1608  006142  005777  173072          A0033:    TST     @TCCM           ;ERROR BIT SET?
1609  006146  100405                            BMI     B0033           ;BR IF ERROR BIT SET.
1610  006150  017737  173066  001162            MOV     @TCWC,$REG0
1611  006156  104053                            ERROR 53                ;PARITY ERROR DID NOT SET ERROR BIT.
1612  006160  000411                            BR      C0033
1613  006162  005077  173052          B0033:    CLR     @TCCM           ;CLEAR COMMAND REGISTER.
1614  006166  005777  173046                    TST     @TCCM           ;ERROR BIT CLEAR?
1615  006172  100004                            BPL     C0033           ;BR IF ERROR BIT IS CLEAR.
1616  006174  017737  173042  001162            MOV     @TCWC,$REG0
1617  006202  104054                            ERROR 54                ;CLEARING TCCM FAILED TO CLEAR PARITY ERROR.
1618  006204                          C0033:
1619  006204  012706  001000                    MOV     #1000,SP        ;RESTORE THE STACK POINTER
1620  006210  000421                            BR      T0034           ;GO ON TO THE NEXT TEST
1621  006212  005777  173022          D0033:    TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS. ERROR?
1622  006216  100004                            BPL     G0033           ;BR IF NO ERROR.
1623  006220  104041                            ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1624
1625  006222  012706  001000                    MOV     #1000,SP        ;RESTORE THE STACK POINTER
1626  006226  000412                            BR      T0034           ;GO ON TO THE NEXT TEST
1627  006230  012777  177777  173004  G0033:    MOV     #-1,@TCWC       ;-1 TO WORD COUNT.
1628  006236  012777  036430  173000            MOV     #RBUF,@TCBA     ;SET BUS ADDR TO RBUF.
1629  006244  112777  000005  172766            MOVB    #RDATA!DO,@TCCM ;RDATA COMMAND.
1630  006252  000002                            RTI                     ;EXIT INTERRUPT.
1631                                  ;READ 256 WORDS WITH RDATA COMMAND UNDER MAINTENANCE MODE. ALL DATA SHOULD
1632                                  ;TRANSFER CORRECTLY. NO CONTROL ERRORS SHOULD OCCUR.
1633                                  .SBTTL T0034
1634                                  ;*************************************************************************
1635  006254  000004                 T0034:  SCOPE
1636  006256  012706  001000                    MOV     #1000,SP        ;SETUP THE STACK POINTER
1637  006262  004737  011766                    JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1638  006266  000034                            00034                   ;HERE LIES THE NUMBER OF THIS TEST
1639  006270  004737  012470          R0034:    JSR     PC,CLRBUF       ;CLEAR READ BUFFER.
1640  006274  004737  012174                    JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO YF.
1641  006300  006416                            F0034
1642  006302  005077  172732                    CLR     @TCCM
1643  006306  012777  020103  172724            MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
1644  006314                                    MTCOD   MTK7,267.
1645  006314  004537  012674                    JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1646  006320  033306                            MTK7                    ;ADDRESS OF MARK TRACK CODES.
1647  006322  000413                            267.                    ;MARK TRACK CODE COUNT.
1648  006324  005777  172710                    TST     @TCCM           ;ERROR BIT SET?
1649  006330  100002                            BPL     A0034           ;BR IF NO ERROR.
1650  006332  104041                            ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1651  006334  000425                            BR      D0034
1652  006336  005777  172700          A0034:    TST     @TCWC           ;WORD COUNT 0?
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1653  006342  001407                          BEQ     B0034           ;BR IF WORD COUNT IS 0.
1654  006344  017737  172672  001172          MOV     @TCWC,$REG4     ;PREPERE ERONIOUS WORD COUNT FOR PRINTOUT
1655  006352  005077  172604                  CLR     @$REG0          ;PREPARE GOOD WORD COUNT INFO FOR PRINTOUT
1656  006356  104044                          ERROR 44                ;WORD COUNT NOT 0.
1657  006360  000413                          BR      D0034
1658  006362  022777  037430  172654  B0034: CMP     #RBUF+512.,@TCBA;BUS ADDR CORRECT?
1659  006370  001402                          BEQ     C0034           ;BR IF TCBA OK.
1660  006372  104051                          ERROR 51                ;TCBA INCORRECT. SHOULD BE EQUAL TO
1661  006374  000405                          BR      D0034           ;RBUF+512.
1662  006376  004537  013166          C0034:  JSR     R5,CKDAT        ;COMPARE 256 WORDS STARTING AT RBUF.
1663  006402  001276                          SBDAT1                  ;REPORT ANY ERRORS.
1664  006404  036430                          RBUF
1665  006406  000400                          256.
1666  006410                          D0034:
1667  006410  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1668  006414  000421                          BR      T0035           ;GO ON TO THE NEXT TEST
1669  006416  005777  172616          F0034:  TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS. ERROR?
1670  006422  100004                          BPL     H0034           ;BR IF NO ERROR.
1671  006424  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1672
1673  006426  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1674  006432  000412                          BR      T0035           ;GO ON TO THE NEXT TEST
1675  006434  012777  177400  172600  H0034:  MOV     #-256.,@TCWC    ;-256 TO WORD COUNT.
1676  006442  012777  036430  172574          MOV     #RBUF,@TCBA     ;SET BUS ADDR TO RBUF.
1677  006450  112777  000005  172562          MOVB    #RDATA!D0,@TCCM ;READ DATA COMMAND.
1678  006456  000002                          RTI                     ;EXIT INTERRUPT.
1679                          ;READ 2 DATA BLOCKS (512 WORDS) WITH RDATA COMMAND UNDER MAINTENANCE MODE.
1680                          ;ALL DATA SHOULD TRANSFER CORRECTLY. NO ERRORS SHOULD OCCUR.
1681                          .SBTTL T0035
1682                          ;*****************************************************************************
1683  006460  000004         T0035:  SCOPE
1684  006462  012706  001000          MOV     #1000,SP        ;SETUP THE STACK POINTER
1685  006466  004737  011766          JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1686  006472  000035                  00035                   ;HERE LIES THE NUMBER OF THIS TEST
1687  006474  004737  012470  R0035:  JSR     PC,CLRBUF       ;CLEAR READ BUFFER.
1688  006500  004737  012174          JSR     PC,STTCV        ;SET INTERRUPT VECTOR TOZF.
1689  006504  006622                  F0035
1690  006506  005077  172526          CLR     @TCCM
1691  006512  012777  020103  172520  MOV     #MAINT!U0!FWD!IE!RNUM!D0,@TCCM
1692  006520                          MTCOD   MTK7,534.
1693  006520  004537  012674          JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1694  006524  033306                  MTK7                    ;ADDRESS OF MARK TRACK CODES.
1695  006526  001026                  534.                    ;MARK TRACK CODE COUNT.
1696  006530  005777  172504          TST     @TCCM           ;ERROR BIT SET?
1697  006534  100002                  BPL     A0035           ;BR IF NO ERROR.
1698  006536  104041                  ERROR 41                ;ERROR BIT SET EXAMINE TCST.
1699  006540  000425                  BR      D0035
1700  006542  005777  172474  A0035:  TST     @TCWC           ;WORD COUNT 0?
1701  006546  001407                  BEQ     B0035           ;BR IF WORD COUNT IS 0.
1702  006550  017737  172466  001172  MOV     @TCWC,$REG4     ;PREPERE ERONIOUS WORD COUNT FOR PRINTOUT
1703  006556  005077  172400          CLR     @$REG0  ;PREPARE GOOD WORD COUNT INFO FOR PRINTOUT
1704  006562  104044                  ERROR 44                ;WORD COUNT NOT 0.
1705  006564  000413                  BR      D0035
1706  006566  022777  040430  172450  B0035:  CMP     #RBUF+1024.,@TCBA;TCBA CORRECT?
1707  006574  001402                  BEQ     C0035           ;BR IF TCBA IS OK.
1708  006576  104045                  ERROR 45                ;TCBA INCORRECT. SHOULD BE RBUF+1024.
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1709  006600  000405                          BR      D0035
1710  006602  004537  013166          C0035:  JSR     R5,CKDAT        ;COMPARE 512 WORDS STARTING AT RBUF.
1711  006606  001276                          SBDAT1                  ;REPORT ANY ERRORS.
1712  006610  036430                          RBUF
1713  006612  001000                          512.
1714  006614                          D0035:
1715  006614  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1716  006620  000421                          BR      T0036           ;GO ON TO THE NEXT TEST
1717  006622  005777  172412          F0035:  TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS. ERROR?
1718  006626  100004                          BPL     H0035           ;BR IF NO ERROR.
1719  006630  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1720
1721  006632  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1722  006636  000412                          BR      T0036           ;GO ON TO THE NEXT TEST
1723  006640  012777  177000  172374  H0035:  MOV     #-512.,@TCWC    ;-512 TO WORD COUNT.
1724  006646  012777  036430  172370          MOV     #RBUF,@TCBA     ;SET BUS ADDR TO RBUF.
1725  006654  112777  000005  172356          MOVB    #RDATA!DO,@TCCM ;READ DATA COMMAND.
1726  006662  000002                          RTI                     ;EXIT INTERRUPT.
1727                          ;READ 1.5 BLOCKS (384 WORDS) WITH RDATA COMMAND UNDER MAINTENANCE MODE.
1728                          ;ALL DATA SHOULD TRANSFER CORRECTLY. NO ERRORS SHOULD OCCUR.
1729                          .SBTTL T0036
1730                          ;******************************************************************************
1731  006664  000004          T0036:  SCOPE
1732  006666  012706  001000          MOV     #1000,SP        ;SETUP THE STACK POINTER
1733  006672  004737  011766          JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PROPER SEQUENCE
1734  006676  000036                  00036                   ;HERE LIES THE NUMBER OF THIS TEST
1735  006700  004737  012470  R0036:  JSR     PC,CLRBUF       ;CLEAR READ BUFFER.
1736  006704  004737  012174          JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO A1F.
1737  006710  007024                  F0036
1738  006712  005077  172322          CLR     @TCCM
1739  006716  012777  020103  172314  MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
1740  006724                          MTCOD   MTK7,534.
1741  006724  004537  012674          JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1742  006730  033306                  MTK7                    ;ADDRESS OF MARK TRACK CODES.
1743  006732  001026                  534.                    ;MARK TRACK CODE COUNT.
1744  006734  005777  172300          TST     @TCCM           ;ERROR BIT SET?
1745  006740  100002                  BPL     A0036           ;BR IF NO ERROR.
1746  006742  104041                  ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1747  006744  000424                  BR      D0036
1748  006746  005777  172270  A0036:  TST     @TCWC           ;WORD COUNT 0?
1749  006752  001407                  BEQ     B0036           ;BR IF WORD COUNT 0.
1750  006754  017737  172262  001172  MOV     @TCWC,$REG4     ;PREPERE ERONIOUS WORD COUNT FOR PRINTOUT
1751  006762  005077  172174          CLR     @$REG0          ;PREPARE GOOD WORD COUNT INFO FOR PRINTOUT
1752  006766  104044                  ERROR 44                ;WORD COUNT NOT 0.
1753  006770  000412                  BR      D0036
1754  006772  022777  040030  172244  B0036:  CMP     #RBUF+768.,@TCBA        ;TCBA CORRECT?
1755  007000  001401                  BEQ     C0036           ;BR IF TCBA OK.
1756  007002  104045                  ERROR 45                ;TCBA INCORRECT. SHOULD BE RBUF+768.
1757  007004  004537  013166  C0036:  JSR     R5,CKDAT        ;COMPARE 384 WORDS STARTING AT RBUF.
1758  007010  001276                  SBDAT1                  ;REPORT ANY ERRORS.
1759  007012  036430                  RBUF
1760  007014  000600                  384.
1761  007016                  D0036:
1762  007016  012706  001000          MOV     #1000,SP        ;RESTORE THE STACK POINTER
1763  007022  000421                  BR      T0037           ;GO ON TO THE NEXT TEST
1764  007024  005777  172210  F0036:  TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS. ERROR?
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1765  007030  100004                          BPL     H0036           ;BR IF NO ERROR.
1766  007032  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1767
1768  007034  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1769  007040  000412                          BR      T0037           ;GO ON TO THE NEXT TEST
1770  007042  012777  177200  172172  H0036:  MOV     #-384.,@TCWC    ;-384 TO WORD COUNT.
1771  007050  012777  036430  172166          MOV     #RBUF,@TCBA     ;SET BUS ADDR TO RBUF.
1772  007056  112777  000005  172154          MOVB    #RDATA!DO,@TCCM ;READ DATA COMMAND.
1773  007064  000002                          RTI                     ;EXIT INTERRUPT.
1774                                  ;COMPLEMENT OBVERSE READ TEST.  READ ONE BLOCK (256 WORDS) WITH RDATA IN REVERSE.
1775                                  ;ALL DATA SHOULD COMPLEMENT OBVERSE CORRECTLY.  NO CONTROL ERRORS SHOULD OCCUR.
1776                                  .SBTTL T0037
1777                                  ;*****************************************************************************
1778  007066  000004                  T0037:  SCOPE
1779  007070  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1780  007074  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1781  007100  000037                          00037                   ;HERE LIES THE NUMBER OF THIS TEST
1782  007102  004737  012470          R0037:  JSR     PC,CLRBUF       ;CLEAR READ BUFFER
1783  007106  004737  012174                  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO B1D
1784  007112  007170                          C0037
1785  007114  005077  172120                  CLR     @TCCM
1786  007120  012777  024103  172112          MOV     #MAINT!UO!REV!IE!RNUM!DO,@TCCM
1787  007126                                  MTCOD   MTK7,267.
1788  007126  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1789  007132  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1790  007134  000413                          267.                    ;MARK TRACK CODE COUNT.
1791  007136  005777  172076                  TST     @TCCM           ;ERROR BIT SET?
1792  007142  100002                          BPL     A0037           ;BR IF NO ERROR.
1793  007144  104041                          ERROR 41                ;ERROR BIT SET.  EXAMINE TCST.
1794  007146  000405                          BR      B0037
1795  007150  004537  013166          A0037:  JSR     R5,CKDAT        ;COMPARE 256 WORDS STARTING AT RBUF.
1796  007154  001302                          SBDAT2                  ;REPORT ANY ERRORS.
1797  007156  036430                          RBUF
1798  007160  000400                          256.
1799  007162                          B0037:
1800  007162  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1801  007166  000421                          BR      T0040           ;GO ON TO THE NEXT TEST
1802  007170  005777  172044          C0037:  TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS.  ERROR.
1803  007174  100004                          BPL     F0037           ;BR IF NO ERROR.
1804  007176  104041                          ERROR 41                ;ERROR BIT SET.  EXAMINE TCST.
1805
1806  007200  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1807  007204  000412                          BR      T0040           ;GO ON TO THE NEXT TEST
1808  007206  012777  177400  172026  F0037:  MOV     #-256.,@TCWC    ;-256 TO AND COUNT.
1809  007214  012777  036430  172022          MOV     #RBUF,@TCBA     ;ADDR OF RBUF TO BUS ADDRESS.
1810  007222  112777  000005  172010          MOVB    #RDATA!DO,@TCCM ;READ DATA COMMAND.
1811  007230  000002                          RTI                     ;EXIT INTERRUPT
1812                                  ;CHECK FOR CORRECT OPERATION OF BLOCK MISS ERROR.
1813                                  .SBTTL T0040
1814                                  ;*****************************************************************************
1815  007232  000004                  T0040:  SCOPE
1816  007234  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1817  007240  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1818  007244  000040                          00040                   ;HERE LIES THE NUMBER OF THIS TEST
1819  007246  005077  171766          R0040:  CLR     @TCCM
1820  007252  012777  177776  171762          MOV     #-2,@TCWC       ;-2 TO WORD COUNT.
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1821  007260  012777  036430  171756          MOV     #RBUF,@TCBA     ;RBUF ADDR TO TCBA.
1822  007266  012777  020003  171744          MOV     #MAINT!UO!FWD!RNUM!DO,@TCCM
1823  007274                                  MTCOD   MTK7,5
1824  007274  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1825  007300  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1826  007302  000005                          5                       ;MARK TRACK CODE COUNT.
1827  007304  005777  171730                  TST     @TCCM           ;ERROR BIT SET?
1828  007310  100002                          BPL     A0040           ;BR IF NO ERROR.
1829  007312  104041          R0040A: ERROR 41                        ;ERROR BIT SET EXAMINE TCST.
1830  007314  000506                          BR      F0040
1831  007316  112777  000005  171714  A0040:  MOVB    #RDATA!DO,@TCCM ;ISSUE RDATA COMMAND.
1832  007324                                  MTCOD   MTK7A,2
1833  007324  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1834  007330  033344                          MTK7A                   ;ADDRESS OF MARK TRACK CODES.
1835  007332  000002                          2                       ;MARK TRACK CODE COUNT.
1836  007334  032777  002000  171674          BIT     #BIT10,@TCST    ;BLOCK MISS ERROR SET?
1837  007342  001405                          BEQ     B0040           ;BR IF NO BLOCK MISS.  OK.
1838  007344  017737  171672  001162          MOV     @TCWC,$REG0     ;MAKE WORD COUNT INFO PRINTABLE
1839  007352  104055                          ERROR 55                ;BLOCK MISS SET WHEN RDATA ISSUED JUST
1840  007354  000466                          BR      F0040           ;BEFORE REV CHECK MARK.  SHOULDN'T HAVE.
1841  007356  005077  171656          B0040:  CLR     @TCCM
1842  007362  012777  177776  171652          MOV     #-2,@TCWC       ;-2 TO WORD COUNT.
1843  007370  012777  036430  171646          MOV     #RBUF,@TCBA     ;RBUF ADDR TO TCBA.
1844  007376  012777  020003  171634          MOV     #MAINT!UO!FWD!RNUM!DO,@TCCM
1845  007404                                  MTCOD   MTK7,6
1846  007404  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1847  007410  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1848  007412  000006                          6                       ;MARK TRACK CODE COUNT.
1849  007414  005777  171620                  TST     @TCCM           ;ERROR BIT SET?
1850  007420  100734                          BMI     R0040A          ;BR IF ERROR BIT SET?
1851  007422  112777  000005  171610          MOVB    #RDATA!DO,@TCCM ;ISSUE RDATA COMMAND.
1852  007430                                  MTCOD   MTK7B,2
1853  007430  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1854  007434  033352                          MTK7B                   ;ADDRESS OF MARK TRACK CODES.
1855  007436  000002                          2                       ;MARK TRACK CODE COUNT.
1856  007440  032777  002000  171570          BIT     #BIT10,@TCST    ;BLOCK MISS ERROR SET?
1857  007446  001005                          BNE     C0040           ;BR IF BLOCK MISS.
1858  007450  017737  171566  001162          MOV     @TCWC,$REG0     ;MAKE WORD COUNT INFO PRINTABLE
1859  007456  104056                          ERROR 56                ;BLOCK MISS FAILED TO SET WHEN RDATA ISSUED
1860  007460  000424                          BR      F0040           ;RIGHT AFTER REV CHECK MARK.  IT SHOULD HAVE.
1861  007462  005777  171552          C0040:  TST     @TCCM           ;ERROR BIT SET?
1862  007466  100405                          BMI     D0040           ;BR IF ERROR BIT SET.
1863  007470  017737  171546  001162          MOV     @TCWC,$REG0     ;MAKE WORD COUNT INFO PRINTABLE
1864  007476  104057                          ERROR 57                ;BLOCK MISS FAILED TO SET ERROR BIT.
1865  007500  000414                          BR      F0040
1866  007502  005077  171532          D0040:  CLR     @TCCM           ;0 TO ERROR BIT.
1867  007506  032777  002000  171524          BIT     #BIT10,@TCCM    ;BLOCK MISS CLEARED?
1868  007514  001406                          BEQ     F0040           ;BR IF BLOCK MISS CLEARED.
1869  007516  017737  171520  001162          MOV     @TCWC,$REG0     ;MAKE WORD COUNT INFO PRINTABLE
1870  007524  104060                          ERROR 60                ;0 TO ERROR FAILED TO CLEAR BLOCK MISS.
1871  007526  004737  012220                  JSR     PC,SRSETT
1872  007532                          F0040:
1873  007532  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1874  007536  000400                          BR      T0041           ;GO ON TO THE NEXT TEST
1875                                  ;READ ALL TEST (RALL)
1876                                  ;AFTER BLOCK IS FOUND, SWITCH TO RALL.  READ 258 WORDS.  1ST WORD READ SHOULD BE
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                                        ;THE REVERSE CHECKSUM (SHOULD BE 0).  LAST WORD READ SHOULD BE THE FORWARD
                                        ;CHECKSUM (SHOULD BE 770000).  ALL OTHER WORDS SHOULD BE DATA.
                                        .SBTTL T0041
                                        ;*****************************************************************************
007540  000004                  T0041:  SCOPE
007542  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
007546  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
007552  000041                          00041                   ;HERE LIES THE NUMBER OF THIS TEST
007554  004737  012470          R0041:  JSR     PC,CLRBUF       ;CLEAR READ BUFFER.
007560  004737  012174                  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO E1F.
007564  007754                          F0041
007566  005077  171446                  CLR     @TCCM
007572  012777  020103  171440          MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
007600                                  MTCOD   MTK7,267.
007600  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
007604  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
007606  000413                          267.                    ;MARK TRACK CODE COUNT.
007610  005777  171424          R0041A: TST     @TCCM           ;ERROR BIT SET?
007614  100002                  BPL     R0041B                  ;BR IF NO ERROR.
007616  104041                  ERROR 41                        ;ERROR BIT SET. EXAMINE TCST.
007620  000461                  BR      G0041
007622  017724  171420          R0041B: MOV     @TCDT,(4)+      ;SAVE DATA IN READ BUFFER.
007626  005337  001274                  DEC     CTRA            ;258 WORDS READ?
007632  001401                  BEQ     A0041                   ;BR IF 258 WORDS READ.
007634  000002                  RTI                             ;NOT DONE YET.  EXIT INTERRUPT.
007636  005737  036430          A0041:  TST     RBUF            ;1ST WORD IN RBUF EQUAL 0?
007642  001416                  BEQ     D0041                   ;BR IF 1ST WORD IS 0.
007644  022737  055555  036430          CMP     #55555,RBUF     ;1ST WORD EQUAL 55555?
007652  001002                  BNE     B0041                   ;BR IF NOT 55555.
007654  104043                  ERROR 43                        ;55555.  1ST WORD READ WITH RALL WAS
007656  000442                  BR      G0041                   ;REV GUARD INSTEAD OF REV CHECKSUM.
007660  022737  066666  036430  B0041:  CMP     #66666,RBUF     ;1ST WORD EQUAL 66666?
007666  001002                  BNE     C0041                   ;BR IF NOT 66666.
007670  104043                  ERROR 43                        ;66666.  1ST WORD READ WITH RALL WAS
007672  000434                  BR      G0041                   ;REV LOCK INSTEAD OF REV CHECKSUM.
007674  104043                  C0041:  ERROR 43                ;1ST WORD READ WITH RALL WAS NOT
007676  000432                  BR      G0041                   ;REV CHECKSUM.  EXAMINE RBUF (1ST WORD).
007700  004537  013166          D0041:  JSR     R5,CKDAT
007704  001276                          SBDAT1
007706  036432                          RBUF+2
007710  000400                          256.
007712  022737  170000  037432          CMP     #170000,RBUF+514.;FWD CHKSUM EQUAL 170000? 1ST WORD READ.
007720  001402                  BEQ     D0041A
007722  104061                  ERROR 61                        ;LAST WORD READ SHOULD HAVE BEEN THE FWD CHECKSUM.
007724  000417                  BR      G0041                   ;IN CORE IT SHOULD BE 170000.
007726  005777  171310          D0041A: TST     @TCWC           ;WORD COUNT STILL 0?
007732  001402                  BEQ     D0041B
007734  104062                  ERROR 62                        ;TCWC (WORD COUNT) WAS MODIFIED DURING
007736  000412                  BR      G0041                   ;RALL.  SHOULDN'T HAVE.
007740  022777  036430  171276  D0041B: CMP     #RBUF,@TCBA     ;BUS ADDRESS STILL EQUAL #RBUF?
007746  001406                  BEQ     G0041
007750  104063                  ERROR 63                        ;TCBA (BUS ADDRESS) MODIFIED DURING
007752  000404                  BR      G0041                   ;RALL.  SHOULDN'T HAVE.
007754  005777  171260          F0041:  TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS.  ERROR!
007760  100004                  BPL     I0041                   ;BR IF NO ERROR.
007762  104041                  ERROR 41                        ;ERROR BIT SET.  EXAMINE TCST.
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1933  007764                                  G0041:
1934  007764  012706  001000                          MOV     #1000,SP        ;RESTORE THE STACK POINTER
1935  007770  000421                          BR      T0042           ;GO ON TO THE NEXT TEST
1936  007772  012737  000402  001274  I0041:  MOV     #258.,CTRA      ;NUMBER OF WORDS TO READ TO CTRA.
1937  010000  012704  036430                  MOV     #RBUF,R4        ;ADDR TO STORE DATA TO R4.
1938  010004  005077  171232                  CLR     @TCWC           ;ZERO WORD COUNT.
1939  010010  012777  036430  171226          MOV     #RBUF,@TCBA     ;SET BUS ADDRESS TO RBUF.
1940  010016  004737  012174                  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO E1AA.
1941  010022  007610                          R0041A
1942  010024  112777  000107  171206          MOVB    #RALL!IE!DO,@TCCM       ;RALL COMMAND.
1943  010032  000002                          RTI                     ;EXIT INTERRUPT.
1944                                  ;DATA MISS TEST. TEST THAT DATA MISS ERROR SETS WHEN DATA REGISTER (TCDT) IS
1945                                  ;NOT REFERENCED UNDER RALL COMMAND, BEFORE THE NEXT DATA WORD IS LOADED INTO
1946                                  ;THE DATA REGISTER. (READY BIT IS CLEARED WHEN IN RALL BY REFERENCING
1947                                  ;THE DATA REGISTER (TCDT).
1948                                  .SBTTL T0042
1949                                  ;*****************************************************************************
1950  010034  000004                  T0042:  SCOPE
1951  010036  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
1952  010042  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
1953  010046  000042                          00042                   ;HERE LIES THE NUMBER OF THIS TEST
1954  010050  004737  012174          R0042:  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO F1E.
1955  010054  010156                          D0042
1956  010056  005077  171156                  CLR     @TCCM
1957  010062  012777  020103  171150          MOV     #MAINT!UO!FWD!IE!RNUM!DO,@TCCM
1958  010070                                  MTCOD   MTK7,7
1959  010070  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
1960  010074  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
1961  010076  000007                          7                       ;MARK TRACK CODE COUNT.
1962  010100  032777  001000  171130          BIT     #BIT9,@TCST     ;DATA MISS ERROR SET?
1963  010106  001002                          BNE     A0042           ;BR IF DATA MISS IS SET.
1964  010110  104064                          ERROR 64                ;DATA MISS FAILED TO SET.
1965  010112  000416                          BR      C0042
1966  010114  005777  171120          A0042:  TST     @TCCM           ;ERROR BIT SET?
1967  010120  100402                          BMI     B0042           ;BR IF ERROR BIT SET.
1968  010122  104065                          ERROR 65                ;DATA MISS FAILED TO SET ERROR BIT.
1969  010124  000411                          BR      C0042
1970  010126  005077  171106          B0042:  CLR     @TCCM           ;0 TO ERROR BIT.
1971  010132  032777  001000  171076          BIT     #BIT9,@TCST     ;DATA MISS CLEARED?
1972  010140  001403                          BEQ     C0042           ;BR IF DATA MISS IS CLEAR.
1973  010142  104066                          ERROR 66                ;0 TO ERROR FAILED TO CLEAR DATA MISS.
1974  010144  004737  012220                  JSR     PC,SRSETT
1975  010150                          C0042:
1976  010150  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1977  010154  000422                          BR      T0043           ;GO ON TO THE NEXT TEST
1978  010156  005777  171056          D0042:  TST     @TCCM           ;HERE WHEN RNUM INTERRUPTS. ERROR?
1979  010162  100004                          BPL     G0042           ;BR IF NO ERROR.
1980  010164  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
1981
1982  010166  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
1983  010172  000413                          BR      T0043           ;GO ON TO THE NEXT TEST
1984  010174  004737  012174          G0042:  JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO F1H.
1985  010200  010212                          H0042
1986  010202  112777  000107  171030          MOVB    #RALL!IE!DO,@TCCM;ISSUE RALL. IE SET.
1987  010210  000002                          RTI                     ;EXIT INTERRUPT.
1988  010212  112777  000007  171020  H0042:  MOVB    #RALL!DO,@TCCM  ;HERE WHEN RALL INTERRUPTS. DISABLE INTERRUPTS,
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1989  010220  000002                          RTI                     ;DO NOT READ TCDT, EXIT INTERRUPT.
1990                                  ;WRITE DATA TEST. AFTER BLOCK NUMBER IS 'FOUND', ISSUE WDATA COMMAND
1991                                  ;UNDER MAINTENANCE MODE, WORD COUNT = -256, TCBA = RBUF. AFTER
1992                                  ;EACH MARK TRACK CODE IS PASSED, THE DATA IN THE DATA REGISTER IS SAVED.
1993                                  ;WHEN THE OPERATION IS COMPLETED, A COMPARE OF WRITE DATA AND THE DATA
1994                                  ;REGISTER DATA SAVED IS MADE TO SEE IF THEY MATCH. WORD COUNT AND TCBA
1995                                  ;ARE ALSO CHECKED FOR CORRECT CONTENTS.
1996                                  .SBTTL T0043
1997                                  ;*****************************************************************************
1998  010222  000004                  T0043:  SCOPE
1999  010224  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
2000  010230  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2001  010234  000043                          00043                   ;HERE LIES THE NUMBER OF THIS TEST
2002  010236  004737  013052          R0043:  JSR     PC,LBDAT1       ;SET UP WRITE DATA (256 WORDS).
2003  010242  005077  170772                  CLR     @TCCM
2004  010246  012777  020003  170764          MOV     #MAINT!UO!FWD!RNUM!DO,@TCCM
2005  010254                                  MTCOD   MTK7,5
2006  010254  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
2007  010260  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
2008  010262  000005                          5                       ;MARK TRACK CODE COUNT.
2009  010264  005777  170750                  TST     @TCCM           ;ERROR BIT SET?
2010  010270  100002                          BPL     A0043           ;BR IF NO ERROR.
2011  010272  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
2012  010274  000457                          BR      G0043
2013  010276  012777  177400  170736  A0043:  MOV     #-256.,@TCWC    ;-256 TO WORD COUNT.
2014  010304  012777  036430  170732          MOV     #RBUF,@TCBA     ;ADDR OF RBUF TO TCBA.
2015  010312  012704  037430                  MOV     #RBUF+512.,R4   ;ADDR TO SAVE TCDT DATA TO R4.
2016  010316  112777  000015  170714          MOVB    #WDATA!DO,@TCCM ;ISSUE WDATA COMMAND.
2017  010324                                  MTCOE   H0043,MTK7A,262.
2018  010324  004537  013044                  JSR     R5,LMTCOE       ;CALL LOAD MT CODES SUBROUTINE.
2019  010330  010442                          H0043                   ;ADDR TO GO AFTER EACH CODE PASSED.
2020  010332  033344                          MTK7A                   ;ADDRESS OF MARK TRACK CODES.
2021  010334  000406                          262.                    ;MARK TRACK CODE COUNT.
2022  010336  005777  170676                  TST     @TCCM           ;ERROR BIT SET?
2023  010342  100002                          BPL     B0043           ;BR IF NO ERROR.
2024  010344  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
2025  010346  000432                          BR      G0043
2026  010350  105777  170664          B0043:  TSTB    @TCCM           ;READY BIT SET?
2027  010354  100402                          BMI     C0043           ;BR IF READY IS SET.
2028  010356  104067                          ERROR 67                ;READY BIT FAILED TO SET.
2029  010360  000425                          BR      G0043
2030  010362  005777  170654          C0043:  TST     @TCWC           ;WORD COUNT 0?
2031  010366  001407                          BEQ     D0043           ;BR IF WORD COUNT IS 0.
2032  010370  017737  170646  001172          MOV     @TCWC,$REG4     ;PREPERE ERONIOUS WORD COUNT FOR PRINTOUT
2033  010376  005077  170560                  CLR     @$REG0          ;PREPARE GOOD WORD COUNT INFO FOR PRINTOUT
2034  010402  104044                          ERROR 44                ;WORD COUNT NOT 0.
2035  010404  000413                          BR      G0043
2036  010406  022777  037430  170630  D0043:  CMP     #RBUF+512.,@TCBA        ;TCBA CORRECT?
2037  010414  001402                          BEQ     F0043           ;BR IF TCBA CORRECT.
2038  010416  104045                          ERROR 45                ;TCBA INCORRECT. SHOULD BE RBUF+512.
2039  010420  000405                          BR      G0043
2040  010422  004537  013166          F0043:  JSR     R5,CKDAT        ;COMPARE WRITE DATA AGAINST TCDT SAVED
2041  010426  001276                          SBDAT1                  ;DATA. REPORT ERRORS.
2042  010430  037430                          RBUF+512.
2043  010432  000400                          256.
2044  010434                          G0043:
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2045  010434  012706  001000                    MOV     #1000,SP        ;RESTORE THE STACK POINTER
2046  010440  000403                            BR      T0044           ;GO ON TO THE NEXT TEST
2047  010442  017724  170600            H0043:  MOV     @TCDT,(4)+      ;HERE AFTER EACH MARK CODE IS PASSED.
2048  010446  000002                            RTI                     ;SAVE TCDT DATA AND EXIT IOT TRAP.
2049                                    ;WRITE DATA COMPLEMENT OBVERSE TEST.
2050                                    .SBTTL T0044
2051                                    ;*****************************************************************************
2052  010450  000004                    T0044:  SCOPE
2053  010452  012706  001000                    MOV     #1000,SP        ;SETUP THE STACK POINTER
2054  010456  004737  011766                    JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2055  010462  000044                            00044                   ;HERE LIES THE NUMBER OF THIS TEST
2056  010464  004737  013052            R0044:  JSR     PC,LBDAT1       ;SET UP WRITE DATA (256 WORDS).
2057  010470  005077  170544                    CLR     @TCCM
2058  010474  012777  024003  170536          MOV     #MAINT!U0!REV!RNUM!DO,@TCCM
2059  010502                                    MTCOD   MTK7,5
2060  010502  004537  012674                    JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
2061  010506  033306                            MTK7                    ;ADDRESS OF MARK TRACK CODES.
2062  010510  000005                            5                       ;MARK TRACK CODE COUNT.
2063  010512  005777  170522                    TST     @TCCM           ;ERROR BIT SET?
2064  010516  100002                            BPL     A0044           ;BR IF NO ERROR.
2065  010520  104041                            ERROR 41                ;ERROR BIT SET EXAMINE TCST.
2066  010522  000432                            BR      C0044
2067  010524  012777  177400  170510  A0044:  MOV     #-256.,@TCWC    ;-256 TO WORD COUNT.
2068  010532  012777  036430  170504          MOV     #RBUF,@TCBA     ;ADDR OF RBUF TO TCBA.
2069  010540  012704  037430                    MOV     #RBUF+512.,R4   ;ADDR TO SAVE TCDT DATA TO R4.
2070  010544  112777  000015  170466          MOVB    #WDATA!DO,@TCCM ;ISSUE WDATA COMMAND.
2071  010552                                    MTCOE   D0044,MTK7A,262.
2072  010552  004537  013044                    JSR     R5,LMTCOE       ;CALL LOAD MT CODES SUBROUTINE.
2073  010556  010616                            D0044                   ;ADDR TO GO AFTER EACH CODE PASSED.
2074  010560  033344                            MTK7A                   ;ADDRESS OF MARK TRACK CODES.
2075  010562  000406                            262.                    ;MARK TRACK CODE COUNT.
2076  010564  005777  170450                    TST     @TCCM           ;ERROR BIT SET?
2077  010570  100002                            BPL     B0044           ;BR IF NO ERROR.
2078  010572  104041                            ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
2079  010574  000405                            BR      C0044
2080  010576  004537  013166            B0044:  JSR     R5,CKDAT        ;CHECK THAT SAVED TCDT DATA WAS COMPLEMENT
2081  010602  001306                            SBDAT3                  ;OBVERSED CORRECTLY.
2082  010604  037430                            RBUF+512.
2083  010606  000400                            256.
2084  010610                            C0044:
2085  010610  012706  001000                    MOV     #1000,SP        ;RESTORE THE STACK POINTER
2086  010614  000403                            BR      T0045           ;GO ON TO THE NEXT TEST
2087  010616  017724  170424            D0044:  MOV     @TCDT,(4)+      ;HERE AFTER EACH MARK CODE IS PASSED.
2088  010622  000002                            RTI                     ;SAVE TCDT DATA AND EXIT IOT TRAP.
2089                                    ;WRITE ALL TEST.
2090                                    .SBTTL T0045
2091                                    ;*****************************************************************************
2092  010624  000004                    T0045:  SCOPE
2093  010626  012706  001000                    MOV     #1000,SP        ;SETUP THE STACK POINTER
2094  010632  004737  011766                    JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2095  010636  000045                            00045                   ;HERE LIES THE NUMBER OF THIS TEST
2096  010640  004737  013052            R0045:  JSR     PC,LBDAT1       ;SET UP WRITE DATA.
2097  010644  005077  170370                    CLR     @TCCM
2098  010650  012777  020003  170362          MOV     #MAINT!U0!FWD!RNUM!DO,@TCCM
2099  010656                                    MTCOD   MTK7,4
2100  010656  004537  012674                    JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
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2101  010662  033306                        MTK7                    ;ADDRESS OF MARK TRACK CODES.
2102  010664  000004                        4                       ;MARK TRACK CODE COUNT.
2103  010666  005777  170346                TST     @TCCM           ;ERROR BIT SET?
2104  010672  100002                        BPL     A0045           ;BR IF NO ERROR.
2105  010674  104041                        ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
2106  010676  000470                        BR      G0045
2107  010700  005077  170336        A0045:  CLR     @TCWC           ;0 TO WORD COUNT.
2108  010704  012777  036430  170332        MOV     #RBUF,@TCBA     ;ADDR OF RBUF TO TCBA.
2109  010712  012703  036426                MOV     #RBUF-2,R3
2110  010716  012704  037430                MOV     #RBUF+512.,R4
2111  010722  012737  000402  001274        MOV     #258.,CTRA      ;# OF WORDS TO WRITE TO CTRA.
2112  010730  004737  012174                JSR     PC,STTCV        ;SET INTERRUPT VECTOR TO I1C.
2113  010734  010756                        B0045
2114  010736  112777  000117  170274        MOVB    #WALL!IE!DO,@TCCM;ISSUE WRITE ALL COMMAND. INTERRUPT ENABLED.
2115  010744                                MTCOE   I0045,MTK5,260.
2116  010744  004537  013044                JSR     R5,LMTCOE       ;CALL LOAD MT CODES SUBROUTINE.
2117  010750  011066                        I0045                   ;ADDR TO GO AFTER EACH CODE PASSED.
2118  010752  033336                        MTK5                    ;ADDRESS OF MARK TRACK CODES.
2119  010754  000404                        260.                    ;MARK TRACK CODE COUNT.
2120  010756  005777  170256        B0045:  TST     @TCCM           ;ERROR BIT SET?
2121  010762  100002                        BPL     B0045A          ;BR IF NO ERROR.
2122  010764  104041                        ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
2123  010766  000434                        BR      G0045
2124  010770  012377  170252        B0045A: MOV     (3)+,@TCDT      ;WRITE DATA TO TCDT.
2125  010774  005337  001274                DEC     CTRA            ;WROTE 257 WORDS?
2126  011000  001401                        BEQ     C0045           ;BR IF 257 WORDS WRITTEN.
2127  011002  000002                        RTI                     ;NOT DONE. EXIT INTERRUPT.
2128  011004  005737  037430        C0045:  TST     @#RBUF+512.     ;1ST WORD WRITTEN EQUAL 0?
2129  011010  001404                        BEQ     D0045           ;BR IF FIRST WORD 0.
2130  011012  005037  001162                CLR     $REG0
2131  011016  104070                        ERROR 70                ;1ST WORD WRITTEN NOT 0. (REV CHECKSUM).
2132  011020  000417                        BR      G0045
2133  011022  004537  013166        D0045:  JSR     R5,CKDAT        ;CHECK THAT SAVED TCDT DATA MATCHES
2134  011026  001276                        SBDAT1                  ;WRITE DATA.
2135  011030  037432                        RBUF+514.
2136  011032  000400                        256.
2137  011034  005777  170202                TST     @TCWC           ;WORD COUNT STILL 0?
2138  011040  001402                        BEQ     F0C45           ;BR IF WORD COUNT IS 0.
2139  011042  104071                        ERROR 71                ;WORD COUNT MODIFIED DURING WRITE ALL.
2140  011044  000405                        BR      G0045
2141  011046  022777  036430  170170 F0045:  CMP     #RBUF,@TCBA     ;TCBA STILL EQUAL RBUF?
2142  011054  001401                        BEQ     G0045           ;BR IF TCBA STILL SAME.
2143  011056  104072                        ERROR 72                ;TCBA MODIFIED DURING WRITE ALL.
2144  011060                        G0045:
2145  011060  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
2146  011064  000403                        BR      T0046           ;GO ON TO THE NEXT TEST
2147  011066  017724  170154        I0045:  MOV     @TCDT,(4)+      ;HERE AFTER EACH MARK CODE IS PASSED.
2148  011072  000002                        RTI                     ;SAVE TCDT DATA AND EXIT IOT TRAP.
2149
2150                                .SBTTL T0046
2151                                ;*****************************************************************************
2152  011074  000004                T0046:  SCOPE
2153  011076  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
2154  011102  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2155  011106  000046                        00046                   ;HERE LIES THE NUMBER OF THIS TEST
2156  011110  004537  013314        R0046:  JSR     R5,CKSELE       ;SST TO U1.
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2157  011114  000400                        U1
2158  011116  104073                        ERROR 73                ;SST TO U1 DID NOT CAUSE SELECT ERROR.
2159
2160  011120  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
2161  011124  000400                        BR      T0047           ;GO ON TO THE NEXT TEST
2162                                .SBTTL T0047
2163                                ;******************************************************************************
2164  011126  000004               T0047:  SCOPE
2165  011130  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
2166
2167  011134  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2168  011140  000047                        00047                   ;HERE LIES THE NUMBER OF THIS TEST
2169  011142  004537  013314        R0047:  JSR     R5,CKSELE       ;SST TO U2.
2170  011146  001000                        U2
2171  011150  104073                        ERROR 73                ;SST TO U2 DID NOT CAUSE SELECT ERROR.
2172
2173  011152  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
2174                                .SBTTL T0050
2175                                ;******************************************************************************
2176  011156  000004               T0050:  SCOPE
2177  011160  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
2178  011164  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2179  011170  000050                        00050                   ;HERE LIES THE NUMBER OF THIS TEST
2180  011172  004537  013314        R0050:  JSR     R5,CKSELE       ;SST TO U1.
2181  011176  001400                        U3
2182  011200  104073                        ERROR 73                ;SST TO U3 DID NOT CAUSE SELECT ERROR.
2183
2184  011202  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
2185                                .SBTTL T0051
2186                                ;******************************************************************************
2187  011206  000004               T0051:  SCOPE
2188  011210  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
2189  011214  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2190  011220  000051                        00051                   ;HERE LIES THE NUMBER OF THIS TEST
2191  011222  004537  013314        R0051:  JSR     R5,CKSELE       ;ISSUE A SST COMMAND
2192  011226  002000                        U4
2193  011230  104073                        ERROR 73                ;SST TO U4 DID NOT CAUSE SELECT ERROR.
2194
2195  011232  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
2196                                .SBTTL T0052
2197                                ;******************************************************************************
2198  011236  000004               T0052:  SCOPE
2199  011240  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
2200  011244  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2201  011250  000052                        00052                   ;HERE LIES THE NUMBER OF THIS TEST
2202  011252  004537  013314        R0052:  JSR     R5,CKSELE       ;ISSUE A SST COMMAND
2203  011256  002400                        U5
2204  011260  104073                        ERROR 73                ;SST TO U5 DID NOT CAUSE SELECT ERROR.
2205
2206  011262  012706  001000                MOV     #1000,SP        ;RESTORE THE STACK POINTER
2207                                .SBTTL T0053
2208                                ;******************************************************************************
2209  011266  000004               T0053:  SCOPE
2210  011270  012706  001000                MOV     #1000,SP        ;SETUP THE STACK POINTER
2211  011274  004737  011766                JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2212  011300  000053                        00053                   ;HERE LIES THE NUMBER OF THIS TEST
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2213  011302  004537  013314          R0053:  JSR     R5,CKSELE       ;ISSUE A SST COMMAND
2214  011306  003000                          U6
2215  011310  104073                          ERROR 73                ;SST TO U6 DID NOT CAUSE SELECT ERROR.
2216  011312  000240                          NOP
2217  011314  000240                          NOP
2218  011316  000240                          NOP
2219
2220  011320  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
2221                                  .SBTTL T0054
2222                                  ;*****************************************************************************
2223  011324  000004                  T0054:  SCOPE
2224  011326  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
2225  011332  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2226  011336  000054                          00054                   ;HERE LIES THE NUMBER OF THIS TEST
2227  011340  004537  013314          R0054:  JSR     R5,CKSELE       ;ISSUE A SST COMMAND
2228  011344  003400                          U7
2229  011346  104073                          ERROR 73                ;SST TO U7 DID NOT CAUSE SELECT ERROR.
2230
2231  011350  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
2232                                  .SBTTL T0055
2233                                  ;*****************************************************************************
2234  011354  000004                  T0055:  SCOPE
2235  011356  012706  001000                  MOV     #1000,SP        ;SETUP THE STACK POINTER
2236  011362  004737  011766                  JSR     PC,TORDER       ;MAKE SURE TESTS ARE IN PRPOER SEQUENCE
2237  011366  000055                          00055                   ;HERE LIES THE NUMBER OF THIS TEST
2238  011370  004737  013104                  JSR     PC,LBBIND       ;LOAD BUFFER WITH BINARY DATA.
2239  011374  005077  167640                  CLR     @TCCM
2240  011400  012777  020003  167632          MOV     #MAINT!UO!FWD!RNUM!DO,@TCCM
2241  011406                                  MTCOD   MTK7,5
2242  011406  004537  012674                  JSR     R5,LMTCOD       ;CALL LOAD MT CODES SUB.
2243  011412  033306                          MTK7                    ;ADDRESS OF MARK TRACK CODES.
2244  011414  000005                          5                       ;MARK TRACK CODE COUNT.
2245  011416  005777  167616                  TST     @TCCM           ;ERROR BIT SET?
2246  011422  100002                          BPL     A0055           ;BR IF NO ERROR.
2247  011424  104041                          ERROR 41                ;ERROR BIT SET. EXAMINE TCST.
2248  011426  000441                          BR      D0055
2249  011430  012777  177400  167604  A0055:  MOV     #-256.,@TCWC    ;-256 TO WORD COUNT.
2250  011436  012777  036430  167600          MOV     #RBUF,@TCBA     ;RBUF ADDR TO TCBA.
2251  011444  012704  037430                  MOV     #RBUF+512.,R4   ;ADDR TO SAVE TCDT DATA TO R4.
2252  011450  112777  000015  167562          MOVB    #WDATA!DO,@TCCM ;ISSUE WRITE DATA COMMAND.
2253  011456                                  MTCOE   F0055,MTK7A,262.
2254  011456  004537  013044                  JSR     R5,LMTCOE       ;CALL LOAD MT CODES SUBROUTINE.
2255  011462  011540                          F0055                   ;ADDR TO GO AFTER EACH CODE PASSED.
2256  011464  033344                          MTK7A                   ;ADDRESS OF MARK TRACK CODES.
2257  011466  000406                          262.                    ;MARK TRACK CODE COUNT.
2258  011470  005777  167544                  TST     @TCCM           ;ERROR BIT SET?
2259  011474  100002                          BPL     B0055           ;BR IF NO ERROR.
2260  011476  104044                          ERROR 44                ;ERROR BIT SET. EXAMINE TCST.
2261  011500  000414                          BR      D0055
2262  011502  012701  037430  B0055:  MOV     #RBUF+512.,R1   ;ADDR OF DATA TO CHECK TO R1.
2263  011506  012703  036430          MOV     #RBUF,R3        ;ADDR OF EXPECTED DATA TO R3.
2264  011512  012702  000400          MOV     #256.,R2        ;# OF WORDS TO CHECK TO R2.
2265  011516  005037  013312          CLR     WDCNT
2266  011522  004737  013240  C0055:  JSR     PC,CDTCK        ;CHECK DATA WORD.
2267  011526  005302                  DEC     R2              ;ALL WORDS CHECKED?
2268  011530  001374                  BNE     C0055           ;BR IF NOT DONE YET.
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2269  011532                          D0055:
2270  011532  012706  001000                  MOV     #1000,SP        ;RESTORE THE STACK POINTER
2271  011536  000403                  BR      T0056           ;GO ON TO THE NEXT TEST
2272  011540  017724  167502          F0055:  MOV     @TCDT,(4)+      ;HERE AFTER EACH MARK CODE IS PASSED.
2273  011544  000002                  RTI                     ;SAVE TCDT DATA AND EXIT.
2274
2275                                  .SBTTL T0056
2276  011546  000004                  T0056:  SCOPE
2277  011550                          .$EOP STARTX,,PASCNT
2278                                  .SBTTL  END OF PASS ROUTINE
2279
2280  011550                          STARS
2281                                  ;;**********************************************************************
2282                                  ;*INCREMENT THE PASS NUMBER ($PASS)
2283                                  ;*TYPE 'END PASS #XXXXX' (WHERE XXXXX IS A DECIMAL NUMBER)
2284                                  ;*IF THERES A MONITOR GO TO IT
2285                                  ;*IF THERE ISN'T JUMP TO STARTX
2286
2287  011550                          $EOP:
2288  011550  000004                          SCOPE
2289                                  .LIST
2290  011552  005037  001102                  CLR     $TSTNM          ;;ZERO THE TEST NUMBER
2291  011556  005037  001222                  CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
2292  011562  005237  001100                  INC     $PASS           ;;INCREMENT THE PASS NUMBER
2293  011566  042737  100000  001100          BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
2294  011574  005327                  DEC     (PC)+           ;;LOOP?
2295  011576  000001                  $EOPCT: .WORD   1
2296  011600  003022                  BGT     $DOAGN          ;;YES
2297  011602  012737                  MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
2298  011604  000001                  $ENDCT: .WORD   1
2299  011606  011576                  $EOPCT
2300  011610  104401  011655                  TYPE    ,$ENDMG         ;;TYPE 'END PASS #'
2301  011614                          TYPDEC  $PASS
2302  011614  013746  001100          MOV     $PASS,-(SP)     ;;SAVE $PASS FOR TYPEOUT
2303  011620  104405                  TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
2304  011622  104401  011652          TYPE    ,$ENULL         ;;TYPE A NULL CHARACTER
2305  011626  013700  000042          $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
2306  011632  001405                  BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
2307                                  .LIST
2308  011634  000005                  RESET                   ;;CLEAR THE WORLD
2309  011636  004710                  $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
2310  011640  000240                  NOP                     ;;SAVE ROOM
2311  011642  000240                  NOP                     ;;FOR
2312  011644  000240                  NOP                     ;;ACT11
2313  011646                          $DOAGN:
2314  011646  000137                  JMP     @(PC)+          ;;RETURN
2315  011650  002632                  $RTNAD: .WORD   STARTX
2316  011652     377     377     000  $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
2317  011655     015  042412  042116  $ENDMG: .ASCIZ  <15><12>/END PASS #/
2318  011662  050040  051501  020123
2319  011670  000043
2320                                  ;*      THIS ROUTINE HANDLES FATAL TRAP ERRORS
2321  011672  012737  016041  011730  TRAP10: MOV     #TRPM10,TMESAD          ;ADDRESS OF TRAP TO 10 MESSAGE TO THE MESSAGE PO
2322  011700  000403                  BR      TRAPX           ;ENTER THE FATAL TRAP ERROR REPORT ROUTINE
2323  011702  012737  015717  011730  TRAP4:  MOV     #TRPM4S,TMESAD
2324  011710  011600                  TRAPX:  MOV     (SP),R0         ;SAVE PC OF WHERE TRAP OCCURRED
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2325  011712  162700  000002          SUB     #2,R0           ;MAKE IT POINT EXACTLY AT THE OFFENDING WORD
2326  011716  012706  001000          MOV     #1000,SP        ;MAKE SURE THAT THE STACK GIVES NO PROBLEMS
2327  011722  005046                  CLR     -(SP)           ;FAKEOUT THE PRINTOUT ROUTINE
2328  011724  004737  014266          JSR     PC,$TYPE        ;PRINT THE TRAP MESSAGE
2329  011730  000000          TMESAD: 000000                  ;ADDRESS OF THE TRAP MESSAGE GOES HERE
2330  011732  010016                  MOV     R0,(SP)         ;PUT ERROR PC BACK ONTO THE STACK
2331  011734  104402                  TYPOC
2332  011736  104401  001233  TRYAGN: TYPE    ,$CRLF
2333  011742  104401  015767          TYPE    ,TRPMES         ;THEN PRINTOUT THE TRAP MESSAGE
2334  011746  000240                  NOP                     ;PATCHING SPACE, THOUGHTFULLY PROVIDED
2335  011750  000240                  NOP                     ;PATCHING SPACE, THOUGHTFULLY PROVIDED
2336  011752  000240                  NOP                     ;PATCHING SPACE, THOUGHTFULLY PROVIDED
2337  011754  000240                  NOP                     ;PATCHING SPACE, THOUGHTFULLY PROVIDED
2338  011756  000240                  NOP                     ;PATCHING SPACE, THOUGHTFULLY PROVIDED
2339  011760  000005                  RESET
2340  011762  000137  002314          JMP     @#START
2341                          ;SUBROUTINE TO CHECK TO MAKE SURE THAT EACH TEST IN
2342                          ;RUNNING WHEN IT SHOULD
2343  011766  011637  001162  TORDER: MOV     (SP),$REG0      ;GET ADDRESS OF TEST #
2344  011772  062716  000002          ADD     #2,(SP)         ;BUMP PRETURN ADDRESS TO HOP OVER THE IN LINE TEST #
2345  011776  123777  001102  167156  CMPB    $TSTNM,@$REG0   ;FIND OUT IF THE TEST #'S MATCH
2346  012004  001410                  BEQ     TORDER          ;IF THEY DO HOP OVER THE ERROR SIGNAL STUFF
2347  012006  013737  001162  001164  MOV     $REG0,$REG1     ;SAVE ADDRESS OF TEST
2348  012014  017737  167142  001162  MOV     @$REG0,$REG0    ;GET TEST# WAS DATA READY FOR PRINTOUT
2349  012022  104026                  ERROR   26              ;PRINTOUT  'OUT OF ORDER' MESSAGE
2350  012024  000744                  BR      TRYAGN          ;GO TRY TO START OVER
2351  012026  000207          TORDER: RTS     PC      ;RETURN
2352                          ;SAVE REGS 0 TO 4 SUBROUTINE.
2353  012030  012666  177764  SV04:   MOV     (6)+,-12.(6)    ;MOVE PC UPSTACK.
2354  012034  012737  000207  012106  MOV     #RTSPC,SV05C
2355  012042  000412                  BR      SV05B
2356                          ;SUB TO SAVE REGS 0 TO 5 AND PLACE JSR PC IN R5.
2357  012044  012737  000240  012106  SV05S:  MOV     #NOP,SV05C
2358  012052  000403                  BR      SV05A
2359                          ;SUB TO SAVE REGS 0 TO 5.
2360  012054  012737  000207  012106  SV05:   MOV     #RTSPC,SV05C
2361  012062  012666  177762  SV05A:  MOV     (6)+,-14.(6)    ;MOVE PC UPSTACK.
2362  012066  010546                  MOV     R5,-(6)
2363  012070  010446          SV05B:  MOV     R4,-(6)
2364  012072  010346                  MOV     R3,-(6)
2365  012074  010246                  MOV     R2,-(6)
2366  012076  010146                  MOV     R1,-(6)
2367  012100  010046                  MOV     R0,-(6)
2368  012102  162706  000002          SUB     #2,SP
2369  012106  000207          SV05C:  RTS PC                  ;RTS PC OR NOP.
2370  012110  016605  000016          MOV     14.(6),R5       ;JSR PC TO R5.
2371  012114  000207                  RTS PC                  ;EXIT.
2372                          ;RESTORE REGS 0 TO 4 SUBROUTINE.
2373  012116  062706  000002  RS04:   ADD     #2,SP
2374  012122  012600                  MOV     (6)+,R0         ;RESTORE REGS 0 TO 4.
2375  012124  012601                  MOV     (6)+,R1
2376  012126  012602                  MOV     (6)+,R2
2377  012130  012603                  MOV     (6)+,R3
2378  012132  012604                  MOV     (6)+,R4
2379  012134  016646  177764          MOV     -12.(6),-(6)    ;MOVE PC  DOWN STACK.
2380  012140  000207                  RTS     PC              ;EXIT
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                                        ;SUB TO SET R5 IN EMT PC AND RESTORE REGS 0 TO5.
012142  010566  000016        RS05S:  MOV     R5,14.(6)       ;SET EMT PC TO R5 CONTENTS.
                                        ;SUB TO RESTORE REGS 0 TO 5.
012146  062706  000002        RS05:   ADD     #2,SP
012152  012600                        MOV     (6)+,R0
012154  012601                        MOV     (6)+,R1
012156  012602                        MOV     (6)+,R2
012160  012603                        MOV     (6)+,R3
012162  012604                        MOV     (6)+,R4
012164  012605                        MOV     (6)+,R5
012166  016646  177762                MOV     -14.(6),-(6)    ;MOVE PC DOWNSTACK.
012172  000207                        RTS     PC              ;EXIT
                                        ;ROUTINE TO SET TC11 INTERRUPT VECTOR AND PRIORITY
012174  004737  012044        STTCV:  JSR     PC,SV05S
012200  013701  001250                MOV     TCVTR,R1        ;VECTOR TO R1.
012204  012521                        MOV     (5)+,(1)+       ;SET DESIRED VECTOR.
012206  013721  001252                MOV     TCLVL,(1)+      ;SET TC11 PRIORITY.
012212  004737  012142                JSR     PC,RS05S
012216  000207                        RTS     PC
                                        ;ROUTINE TO ISSUE RESET.
012220  010046                SRSETT: MOV     R0,-(6)         ;PUSH R0.
012222  012700  052525                MOV     #52525,R0       ;DATA TO R0.
012226  005100                        COM     R0              ;COMPLEMENT (R0).
012230  010037  012224                MOV     R0,SRSETT+4     ;(R0) TO SRSETT+4.
012234  000005                        RESET                   ;ISSUE RESET. (R0) IS
012236  012600                        MOV     (6)+,R0         ;RESTORE R0.
012240  000207                        RTS     PC              ;EXIT
012242  004537  012646        RSTMTK: JSR     R5,BMOVE        ;RESTORE MTKVAR MARK CODE.
012246  033250                        MTKC10                  ;AND GOOD CHECKSUM.
012250  033360                        MTKVAR
012252  000006                        6
012254  004537  012646                JSR     R5,BMOVE
012260  033300                        MTK5P
012262  033336                        MTK5
012264  000006                        6
012266  004537  012646                JSR     R5,BMOVE
012272  036411                        GCKSM
012274  036352                        FCKSM
012276  000006                        6
012300  000207                        RTS     PC              ;EXIT.
                                ;COMMON HALT ROUTINE
012302  004737  012044        CHLT:   JSR     PC,SV05S
012306  010500                        MOV     R5,R0           ;DEVELOP ADDR OF CALLER.
012310  005740                        TST     -(0)
012312  000000                        HALT                    ;HALT CALL ADDR IN DATA LIGTHS.
012314  004737  012142                JSR     PC,RS05S
012320  000207                        RTS     PC              ;EXIT.
                                ;RANDOM NUMBER GENERATOR. ROUTINE EXITS WITH NUMBER IN REGISTER 0.
012322  013700  012370        RNGEN:  MOV     RP1,R0
012326  006100                        ROL     R0
012330  006100                        ROL     R0
012332  063700  012372                ADD     RP2,R0
012336  010037  012370                MOV     R0,RP1
012342  006100                        ROL     R0
012344  006100                        ROL     R0
012346  063700  012372                ADD     RP2,R0
```

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2437  012352  006100                        ROL     R0
2438  012354  006100                        ROL     R0
2439  012356  010037  012372                MOV     R0,RP2
2440  012362  013700  012370                MOV     RP1,R0
2441  012366  000207                        RTS     PC                      ;EXIT. NUMBER IN R0
2442  012370  001233                RP1:    1233
2443  012372  007622                RP2:    7622
2444                                  ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
2445  012374  004737  012044        DLY:    JSR     PC,SV05S
2446  012400  012500                        MOV     (5)+,R0                 ;DELAY COUNT TO R0.
2447  012402  005037  177776                CLR     PSW                     ;SET PRIORITY 0.
2448  012406  012701  000226        DLYA:   MOV     #226,R1                 ;1 MSEC COUNT TO R1.
2449  012412  005301                DLYB:   DEC     R1                      ;DECREMENT 1 MSEC COUNT.
2450  012414  001376                        BNE     DLYB                    ;BR IF NOT 0.
2451  012416  005300                        DEC     R0                      ;DECREMENT DELAY COUNT.
2452  012420  001372                        BNE     DLYA                    ;BR IF NOT DONE DELAYING.
2453  012422  004737  012142                JSR     PC,RS05S
2454  012426  000207                        RTS PC                          ;EXIT.
2455                                  ;SUBROUTINE TO STALL A RANDOM NUMBER OF MILLISECONDS. MAXIMUM STALL
2456                                  ;DETERMINED BY CONTENTS OF LOC STLMSK.
2457  012430  004737  012044        STAL:   JSR     PC,SV05S
2458  012434  004737  012322                JSR     PC,RNGEN                ;GO GET RANDOM NUMBER.
2459  012440  043700  012466                BIC     STLMSK,R0               ;# IN R0. APPLY STALL MASK.
2460  012444  001407                        BEQ     STALB                   ;BRANCH IF RESULT IS 0.
2461  012446  010037  012456                MOV     R0,STALA
2462  012452  004737  012374                JSR     PC,DLY                          ;DELAY
2463  012456  000000                STALA:  OPEN                            ;DELAY COUNT
2464  012460  004737  012142                JSR     PC,RS05S
2465  012464  000207                STALB:  RTS PC                          ;DONE. EXIT.
2466  012466  000000                STLMSK: OPEN                            ;STALL MASK.
2467                                  ;SUBROUTINE TO CLEAR DECTAPE READ BUFFER.
2468  012470  005037  036430        CLRBUF: CLR     RBUF                    ;CLEAR 512 WORD READ BUFFER.
2469  012474  004537  012646                JSR     R5,BMOVE                ;TO ALL 0'S.
2470  012500  036430                        RBUF
2471  012502  036431                        RBUF+1
2472  012504  001777                        1023.
2473  012506  000207                        RTS     PC                      ;EXIT.
2474                                  ;SUBROUTINE TO INITIALIZE BINARY COUNT PATTERNS
2475  012510  012737  177777  012532  INBIN:  MOV     #-1,RIND                ;SET ALL VARIABLES
2476  012516  004537  012646                JSR     R5,BMOVE                ;TO MINUS 1.
2477  012522  012532                        RIND
2478  012524  012533                        RIND+1
2479  012526  000013                        11.
2480  012530  000207                        RTS     PC                      ;EXIT
2481  012532  000000                RIND:   OPEN
2482  012534  000000                PT0:    OPEN
2483  012536  000000                PT1:    OPEN
2484  012540  000000                PIND:   OPEN
2485  012542  000000                PT0P:   OPEN
2486  012544  000000                PT1P:   OPEN
2487                                  ;SPECIAL BINARY COUNT PATTERN SUBROUTINE. EXITS WITH BIN CHAR IN R0
2488  012546  013737  012534  012536  GTBIN:  MOV     PT0,PT1                 ;PREVIOUS BIN CHAR TO PT1
2489  012554  005137  012536                COM     PT1
2490  012560  005137  012532                COM     RIND
2491  012564  001002                        BNE     .+6
2492  012566  005237  012536                INC     PT1
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2493  012572  013737  012536  012534          MOV     PT1,PT0         ;SAVE BIN CHAR IN PT0
2494  012600  013700  012536                  MOV     PT1,R0          ;BIN CHAR TO R0.
2495  012604  000207                          RTS     PC              ;EXIT.
2496  012606  013737  012542  012544  GTBINP: MOV     PT0P,PT1P       ;PREVIOUS BIN CHAR TO PT1P
2497  012614  005137  012544                  COM     PT1P
2498  012620  005137  012540                  COM     PIND
2499  012624  001002                          BNE     .+6
2500  012626  005237  012544                  INC     PT1P
2501  012632  013737  012544  012542          MOV     PT1P,PT0P       ;SAVE BIN CHAR IN PT0P.
2502  012640  013701  012544                  MOV     PT1P,R1         ;BIN CHAR TO R1.
2503  012644  000207                          RTS     PC              ;EXIT.
2504                                  ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES.
2505  012646  004737  012030          BMOVE:  JSR     PC,SV04                 ;SAVE REGS.
2506  012652  012501                          MOV     (5)+,R1         ;GET 'FROM' ADDRESS
2507  012654  012502                          MOV     (5)+,R2         ;GET 'TO' ADDRESS
2508  012656  012503                          MOV     (5)+,R3         ;GET COUNT
2509  012660  112122                  BMOVA:  MOVB    (1)+,(2)+       ;MOVE BYTE
2510  012662  005303                          DEC     R3              ;DECREMENT COUNT
2511  012664  001375                          BNE     BMOVA           ;BRANCH IF NOT DONE.
2512  012666  004737  012116                  JSR     PC,RS04                 ;RESTORE REGS.
2513  012672  000205                          RTS     R5              ;DONE EXIT
2514                                  ;SUB TO PASS TIMING, MARK, AND DATA TO TC11 CONTROL UNDER MAINTENANCE MODE.
2515  012674  005037  001260          LMTCOD: CLR     CODCAL          ;DO NOT CALL CODE AFTER EACH MARK
2516  012700  012537  013034          LMTCAA: MOV     (5)+,MTKADR     ;GET MARK TRACK ADDRESS.
2517  012704  012537  013040                  MOV     (5)+,CDCNT      ;GET NTH CODE COUNT.
2518  012710  052777  020000  166322          BIS     #BIT13,@TCCM    ;SET MAINTENANCE BIT.
2519  012716  013737  013040  013042          MOV     CDCNT,CDCTR     ;CODE COUNT TO CODE COUNTER.
2520  012724  013701  001236                  MOV     TCST,R1         ;ADDR CONTAINING TCST ADDR TO R1.
2521  012730  012702  000100                  MOV     #100,R2
2522  012734  013700  013034          LMTCA:  MOV     MTKADR,R0       ;MARK TRACK ADDR TO R0.
2523  012740  012737  000006  013036  LMTCB:  MOV     #6,BTCTR        ;6 TO BIT COUNTER.
2524  012746  111011                  LMTCC:  MOVB    (0),(1)         ;SET MARK TRACK BIT AND DATA .
2525  012750  150210                          BISB    R2,(0)
2526  012752  111011                          MOVB    (0),(1)         ;TP1. LOADS MARK TRACK.
2527  012754  111011                          MOVB    (0),(1)         ;RELOAD DATA.
2528  012756  140210                          BICB    R2,(0)
2529  012760  112011                          MOVB    (0)+,(1)        ;TP0. SHIFTS DATA IN RWB.
2530  012762  005337  013036                  DEC     BTCTR           ;6TH BIT SET?
2531  012766  001413                          BEQ     LMTCE           ;BR IF 6TH BIT SET.
2532  012770  022737  000002  013036          CMP     #2,BTCTR        ;NOT 6TH. 4TH BIT SET?
2533  012776  001363                          BNE     LMTCC           ;BRANCH IF NOT.
2534  013000  005737  001260                  TST     CODCAL          ;DO WE WANT TO CALL CODE
2535  013004  001760                          BEQ     LMTCC           ;DO NOT IF CODE CALL SWITCH = 0
2536  013006  005046                          CLR     -(6)            ;IF ITS NOT =0 FAKE A INTERRUPT
2537  013010  004777  166244                  JSR     PC,@CODCAL      ;TO LOCATION SPECIFIED IN CODE CALL SWITCH
2538  013014  000754                          BR      LMTCC
2539  013016  005337  013042          LMTCE:  DEC     CDCTR           ;NTH CODE SET?
2540  013022  001001                          BNE     LMTCD           ;BRANCH IF NOT.
2541  013024  000205                          RTS     R5              ;EXIT.
2542  013026  105710                  LMTCD:  TSTB    @R0             ;LAST CODE?
2543  013030  100343                          BPL     LMTCB           ;BRANCH IF NOT LAST CODE.
2544  013032  000740                          BR      LMTCA           ;LAST CODE.
2545  013034  000000                  MTKADR: OPEN
2546  013036  000000                  BTCTR:  OPEN
2547  013040  000000                  CDCNT:  OPEN
2548  013042  000000                  CDCTR:  OPEN
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2549  013044  012537  001260          LMTCOE: MOV     (5)+,CODCAL     ;SAVE ADDRESS TO GO TO AFTER EACH MARK
2550  013050  000713                          BR      LMTCAA
2551  013052  004737  012470          LBDAT1: JSR     PC,CLRBUF       ;CLEAR BUFFER AREA.
2552  013056  004537  012646                  JSR     R5,BMOVE        ;LOAD 256 WORD BUFFER WITH SBDAT1 DATA.
2553  013062  001276                          SBDAT1
2554  013064  036430                          RBUF
2555  013066  000004                          4
2556  013070  004537  012646                  JSR     R5,BMOVE
2557  013074  036430                          RBUF
2558  013076  036434                          RBUF+4
2559  013100  000774                          508.
2560  013102  000207                          RTS     PC              ;EXIT.
2561  013104  004737  012030          LBBIND: JSR     PC,SV04
2562  013110  004737  012470                  JSR     PC,CLRBUF       ;CLEAR BUFFER AREA AND FILL
2563  013114  012704  036430                  MOV     #RBUF,R4        ;256 WORD BUFFER WITH BINARY DATA.
2564  013120  012737  000400  013150          MOV     #256.,CTRLB
2565  013126  004737  012546          LBINDA: JSR     PC,GTBIN        ;GET BINARY WORD.
2566  013132  010024                          MOV     R0,(4)+         ;STORE PER R4.
2567  013134  005337  013150                  DEC     CTRLB           ;256 WORDS STORED?
2568  013140  001372                          BNE     LBINDA          ;BR IF NOT DONE YET.
2569  013142  004737  012116                  JSR     PC,RS04
2570  013146  000207                          RTS     PC              ;DONE. EXIT.
2571  013150  000000          CTRLB:  OPEN
2572  013152  004537  012646          MBCKSM: JSR     R5,BMOVE        ;BAD CHECKSUM TO FCKSM.
2573  013156  036417                          BCKSM
2574  013160  036352                          FCKSM
2575  013162  000006                          6
2576  013164  000207                          RTS     PC              ;EXIT.
2577  013166  004737  012030          CKDAT:  JSR     PC,SV04                 ;SAVE REGS.
2578  013172  012537  013306                  MOV     (5)+,SBDAT      ;ADDR OF S/B DATA TO SBDAT.
2579  013176  012501                          MOV     (5)+,R1         ;ADDR OF DATA TO R1.
2580  013200  012502                          MOV     (5)+,R2         ;WORD COUNT TO R2.
2581  013202  005037  013312                  CLR     WDCNT           ;CLEAR # OF WORD BEING CHECKED.
2582  013206  013703  013306          CKDTA:  MOV     SBDAT,R3        ;ADDR OF S/B DATA TO R3.
2583  013212  004737  013240                  JSR     PC,CDTCK        ;GO CHECK DATA.
2584  013216  005302                          DEC     R2              ;LAST WORD CHECKED?
2585  013220  001404                          BEQ     CKDTB           ;BR IF LAST WORD CHECKED.
2586  013222  004737  013240                  JSR     PC,CDTCK        ;CHECK ANOTHER WORD.
2587  013226  005302                          DEC     R2              ;LAST WORD CHECKED?
2588  013230  001366                          BNE     CKDTA           ;BR IF NOT LAST WORD.
2589  013232  004737  012116          CKDTB:  JSR     PC,RS04                 ;RESTORE REGS.
2590  013236  000205                          RTS     R5              ;EXIT.
2591  013240  010137  013310          CDTCK:  MOV     R1,DATADR       ;ADDR OF DATA TO DATADR.
2592  013244  012337  001270                  MOV     (3)+,CRBUF      ;S/B WORD TO CRBUF.
2593  013250  012137  001272                  MOV     (1)+,CRBUFA     ;WAS WORD TO CRBUFA.
2594  013254  005237  013312                  INC     WDCNT           ;INCREMENT WORD NUMBER.
2595  013260  023737  001270  001272          CMP     CRBUF,CRBUFA    ;COMPARE S/B AND WAS DATA.
2596  013266  001001                          BNE     CDTCKA          ;BR IF DATA NOT SAME.
2597  013270  000207                          RTS     PC              ;EXIT.
2598  013272  016737  000004  013304  CDTCKA: MOV     4(PC),MLPC      ;MAKE MAIN LINE PC ACCESSABLE
2599
2600  013300  104035                          ERROR   35              ;PRINTOUT ERROR MESSAGE
2601  013302  000207                          RTS     PC              ;EXIT
2602  013304  000000          MLPC:   000000
2603  013306  000000          SBDAT:  OPEN
2604  013310  000000          DATADR: OPEN
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 2605  013312  000000                    WDCNT:  OPEN
 2606  013314  012537  015364            CKSELE: MOV     (5)+,CKSELT     ;UNIT # TO CKSELT.
 2607  013320  052737  000011  015364            BIS     #SST!DO,CKSELT
 2608  013326  013777  015364  165704            MOV     CKSELT,@TCCM    ;ISSUE SST TO DESIRED UNIT.
 2609  013334  105777  165700                    TSTB    @TCCM           ;WAIT FOR READY.
 2610  013340  100375                            BPL     .-4
 2611  013342  032777  004000  165666            BIT     #BIT11,@TCST    ;SELECT ERROR SET?
 2612  013350  001001                            BNE     .+4             ;BR IF SELECT ERROR SET.
 2613  013352  000205                            RTS     R5              ;ERROR EXIT. SELECT ERROR SHOULD BE SET.
 2614  013354  062705  000006                    ADD     #6,R5
 2615  013360  000205                            RTS     R5              ;OK EXIT.
 2616  013362                            .$SCOPE 4,SCOMAC
 2617                                    .SBTTL  SCOPE HANDLER ROUTINE
 2618
 2619  013362                            STARS
 2620                                    ;;**********************************************************************
 2621                                    ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
 2622                                    ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
 2623                                    ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
 2624                                    ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
 2625                                    ;*SW14=1        LOOP ON TEST
 2626                                    ;*SW11=1        INHIBIT ITERATIONS
 2627                                    ;*SW09=1        LOOP ON ERROR
 2628                                    .LIST
 2629                                    ;*SW08=1        LOOP ON TEST IN SWR<7:0>
 2630                                    ;*CALL
 2631                                    ;*      SCOPE           ;;SCOPE=IOT
 2632
 2633  013362                            $SCOPE:
 2634                                    .IRP NEWINS,<SCOMAC>
 2635                                            NEWINS
 2636                                    .ENDM
 2637  013362                                    SCOMAC
 2638  013362  005077  165652                    CLR     @TCCM
 2639  013366  005066  000002                    CLR     2(SP)           ;PS TO =0 AFTER WE EXIT THE SCOPE ROUTINE
 2640  013372  004737  012220                    JSR     PC,SRSETT
 2641  013376  004737  012242                    JSR     PC,RSTMTK
 2642  013402  032777  040000  165530    1$:     BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
 2643  013410  001111                            BNE     $OVER           ;;YES IF SW14=1
 2644                                    ;#####START OF CODE FOR THE XOR TESTER#####
 2645  013412  000416                    $XTSTR: BR      6$              ;;IF RUNNING ON THE ''XOR'' TESTER CHANGE
 2646                                                                    ;;THIS INSTRUCTION TO A ''NOP'' (NOP=240)
 2647  013414  013746  000004                    MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
 2648  013420  012737  013440  000004            MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
 2649  013426  005737  177060                    TST     @#177060        ;;TIME OUT ON XOR?
 2650  013432  012637  000004                    MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
 2651  013436  000463                            BR      $SVLAD          ;;GO TO THE NEXT TEST
 2652  013440  022626                    5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
 2653  013442  012637  000004                    MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
 2654  013446  000423                            BR      7$              ;;LOOP ON THE PRESENT TEST
 2655  013450                            6$:;#####END OF CODE FOR THE XOR TESTER#####
 2656  013450  032777  000400  165462            BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
 2657  013456  001404                            BEQ     2$              ;;BR IF NO
 2658  013460  127737  165454  001102            CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
 2659  013466  001462                            BEQ     $OVER           ;;BR IF YES
 2660  013470  105737  001103            2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
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 2661  013474  001421                          BEQ     3$                ;;BR IF NO
 2662  013476  123737  001115  001103          CMPB    $ERMAX,$ERFLG     ;;MAX. ERRORS FOR THIS TEST OCCURRED?
 2663  013504  101015                          BHI     3$                ;;BR IF NO
 2664  013506  032777  001000  165424          BIT     #BIT09,@SWR       ;;LOOP ON ERROR?
 2665  013514  001404                          BEQ     4$                ;;BR IF NO
 2666  013516  013737  001110  001106  7$:     MOV     $LPERR,$LPADR     ;;SET LOOP ADDRESS TO LAST SCOPE
 2667  013524  000443                          BR      $OVER
 2668  013526  105037  001103          4$:     CLRB    $ERFLG            ;;ZERO THE ERROR FLAG
 2669  013532  005037  001222                  CLR     $TIMES            ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
 2670  013536  000415                          BR      1$                ;;ESCAPE TO THE NEXT TEST
 2671  013540  032777  004000  165372  3$:     BIT     #BIT11,@SWR       ;;INHIBIT ITERATIONS?
 2672  013546  001011                          BNE     1$                ;;BR IF YES
 2673  013550  005737  001100                  TST     $PASS             ;;IF FIRST PASS OF PROGRAM
 2674  013554  001406                          BEQ     1$                ;;      INHIBIT ITERATIONS
 2675  013556  005237  001104                  INC     $ICNT             ;;INCREMENT ITERATION COUNT
 2676  013562  023737  001222  001104          CMP     $TIMES,$ICNT      ;;CHECK THE NUMBER OF ITERATIONS MADE
 2677  013570  002021                          BGE     $OVER             ;;BR IF MORE ITERATION REQUIRED
 2678  013572  012737  000001  001104  1$:     MOV     #1,$ICNT          ;;REINITIALIZE THE ITERATION COUNTER
 2679  013600  013737  013650  001222          MOV     $MXCNT,$TIMES     ;;SET NUMBER OF ITERATIONS TO DO
 2680  013606  105237  001102          $SVLAD: INCB    $TSTNM            ;;COUNT TEST NUMBERS
 2681  013612  011637  001106                  MOV     (SP),$LPADR       ;;SAVE SCOPE LOOP ADDRESS
 2682  013616  011637  001110                  MOV     (SP),$LPERR       ;;SAVE ERROR LOOP ADDRESS
 2683  013622  005037  001224                  CLR     $ESCAPE           ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
 2684  013626  112737  000001  001115          MOVB    #1,$ERMAX         ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
 2685  013634  013777  001102  165300  $OVER:  MOV     $TSTNM,@DISPLAY   ;;DISPLAY TEST NUMBER
 2686  013642  013716  001106                  MOV     $LPADR,(SP)       ;;FUDGE RETURN ADDRESS
 2687  013646  000002                          RTI                       ;;FIXES PS
 2688  013650  000004                  $MXCNT: 4                         ;;MAX. NUMBER OF ITERATIONS
 2689                                  .MACRO  SAVE
 2690                                          MOV     SP,$REG6
 2691                                          SUB     #4,$REG6
 2692                                          MOV     2(SP),$REG7
 2693                                          CLR     $REG5
 2694                                          MOVB    $TSTNM,$REG5
 2695                                          MOV     @TCCM,$REG2
 2696                                          MOV     @TCST,$REG1
 2697                                          MOV     @TCBA,$REG3
 2698                                  .ENDM SAVE
 2699  013652                          .$ERROR $ERRTYP,SAVE
 2700                                  .SBTTL  ERROR HANDLER ROUTINE
 2701
 2702  013652                          STARS
 2703                                  ;;**********************************************************************
 2704                                  ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
 2705                                  ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
 2706                                  ;*AND GO TO $ERRTYP ON ERROR
 2707                                  ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
 2708                                  ;*SW15=1         HALT ON ERROR
 2709                                  ;*SW13=1         INHIBIT ERROR TYPEOUTS
 2710                                  ;*SW10=1         BELL ON ERROR
 2711                                  ;*SW09=1         LOOP ON ERROR
 2712                                  ;*CALL
 2713                                  ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER
 2714
 2715  013652                          $ERROR:
 2716                                  .IRP NEWINS,<SAVE>
```

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                                        NEWINS
                                .ENDM
013652                                  SAVE
013652  010637  001176                  MOV     SP,$REG6
013656  162737  000004  001176          SUB     #4,$REG6
013664  016637  000002  001200          MOV     2(SP),$REG7
013672  005037  001174                  CLR     $REG5
013676  113737  001102  001174          MOVB    $TSTNM,$REG5
013704  017737  165330  001166          MOV     @TCCM,$REG2
013712  017737  165320  001164          MOV     @TCST,$REG1
013720  017737  165320  001170          MOV     @TCBA,$REG3
013726  105237  001103          7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
013732  001775                          BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
013734  013777  001102  165200          MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
013742  032777  002000  165170          BIT     #BIT10,@SWR     ;;BELL ON ERROR?
013750  001402                          BEQ     1$              ;;NO - SKIP
013752  104401  001226                  TYPE    ,$BELL          ;;RING BELL
013756  005237  001112          1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
013762  011637  001116                  MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
013766  162737  000002  001116          SUB     #2,$ERRPC
013774  117737  165116  001114          MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
014002  032777  020000  165130          BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
014010  001004                          BNE     20$             ;;SKIP TYPEOUTS
014012  004737  015160                  JSR     PC,$ERRTYP      ;;GO TO USER ERROR ROUTINE
014016  104401  001233                  TYPE    ,$CRLF
014022                          20$:
014022  005777  165112          2$:     TST     @SWR            ;;HALT ON ERROR
014026  100001                          BPL     3$              ;;SKIP IF CONTINUE
014030  000000                          HALT                    ;;HALT ON ERROR!
014032  032777  001000  165100  3$:     BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
014040  001402                          BEQ     4$              ;;BR IF NO
014042  013716  001110                  MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
014046  005737  001224          4$:     TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
014052  001402                          BEQ     5$              ;;BR IF NONE
014054  013716  001224                  MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
014060                          5$:
                                .LIST
014060  022737  011636  000042          CMP     #$ENDAD,@#42    ;;ACT-11 AUTO-ACCEPT?
014066  001001                          BNE     6$              ;;BRANCH IF NO
014070  000000                          HALT                    ;;YES
014072                          6$:
014072  000002                          RTI                     ;;RETURN
014074                          .$POWER <<POWPUS>,<POWPOP>,<POWMES>>
                                .SBTTL  POWER DOWN AND UP ROUTINES

014074                          STARS
                                ;;*****************************************************************
                                ;POWER DOWN ROUTINE
014074  012737  014250  000024  $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
014102  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
014110                                  PUSH    <R0,R1,R2,R3,R4,R5>
                                .IRP    B,<R0,R1,R2,R3,R4,R5>
                                        MOV     B,-(SP)         ;;PUSH B ON STACK
                                .ENDM
014110  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
014112  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
```

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 2773  014114  010246                          MOV     R2,-(SP)          ;;PUSH R2 ON STACK
 2774  014116  010346                          MOV     R3,-(SP)          ;;PUSH R3 ON STACK
 2775  014120  010446                          MOV     R4,-(SP)          ;;PUSH R4 ON STACK
 2776  014122  010546                          MOV     R5,-(SP)          ;;PUSH R5 ON STACK
 2777  014124                                   PUSH    <<POWPUS>,<POWPOP>,<POWMES>>
 2778                                  .IRP    B,<<POWPUS>,<POWPOP>,<POWMES>>
 2779                                          MOV     B,-(SP)           ;;PUSH B ON STACK
 2780                                  .ENDM
 2781  014124  013746  001312                  MOV     POWPUS,-(SP)      ;;PUSH POWPUS ON STACK
 2782  014130  013746  001314                  MOV     POWPOP,-(SP)      ;;PUSH POWPOP ON STACK
 2783  014134  013746  016172                  MOV     POWMES,-(SP)      ;;PUSH POWMES ON STACK
 2784  014140                                   PUSH    @SWR
 2785                                  .IRP    B,<@SWR>
 2786                                          MOV     B,-(SP)           ;;PUSH B ON STACK
 2787                                  .ENDM
 2788  014140  017746  164774                  MOV     @SWR,-(SP)        ;;PUSH @SWR ON STACK
 2789  014144  010637  014254                  MOV     SP,$SAVR6         ;;SAVE SP
 2790  014150  012737  014162  000024          MOV     #$PWRUP,@#PWRVEC  ;;SET UP VECTOR
 2791  014156  000000                          HALT
 2792  014160  000776                          BR      .-2               ;;HANG UP
 2793
*2794  014162                                  STARS
 2795                                  ;;******************************************************************
 2796                                  ;POWER UP ROUTINE
 2797  014162  012737  014250  000024  $PWRUP: MOV     #$ILLUP,@#PWRVEC  ;;SET FOR FAST DOWN
 2798  014170  013706  014254                  MOV     $SAVR6,SP         ;;GET SP
 2799  014174  005037  014254                  CLR     $SAVR6            ;;WAIT LOOP FOR THE TTY
 2800  014200  005237  014254          1$:     INC     $SAVR6            ;;WAIT FOR THE INC
 2801  014204  001375                          BNE     1$                ;;OF <POWPUS>,<POWPOP>,<POWMES> WORD
 2802  014206                                   POP     @SWR
 2803                                  .IRP    B,<@SWR>
 2804                                          MOV     (SP)+,B           ;;POP STACK INTO B
 2805                                  .ENDM
 2806  014206  012677  164726                  MOV     (SP)+,@SWR        ;;POP STACK INTO @SWR
 2807  014212                                   POP     <R5,R4,R3,R2,R1,R0>
 2808                                  .IRP    B,<R5,R4,R3,R2,R1,R0>
 2809                                          MOV     (SP)+,B           ;;POP STACK INTO B
 2810                                  .ENDM
 2811  014212  012605                          MOV     (SP)+,R5          ;;POP STACK INTO R5
 2812  014214  012604                          MOV     (SP)+,R4          ;;POP STACK INTO R4
 2813  014216  012603                          MOV     (SP)+,R3          ;;POP STACK INTO R3
 2814  014220  012602                          MOV     (SP)+,R2          ;;POP STACK INTO R2
 2815  014222  012601                          MOV     (SP)+,R1          ;;POP STACK INTO R1
 2816  014224  012600                          MOV     (SP)+,R0          ;;POP STACK INTO R0
 2817  014226  012737  014074  000024          MOV     #$PWRDN,@#PWRVEC  ;;SET UP THE POWER DOWN VECTOR
 2818  014234  012737  000340  000026          MOV     #340,@#PWRVEC+2   ;;PRIO:7
 2819  014242  104401                          TYPE                      ;REPORT THE POWER FAILURE
 2820  014244  014256          $PWRMG: .WORD   $POWER                    ;;POWER FAIL MESSAGE POINTER
 2821  014246  000002                          RTI
 2822  014250  000000          $ILLUP: HALT                              ;;THE POWER UP SEQUENCE WAS STARTED
 2823  014252  000776                          BR      .-2               ;; BEFORE THE POWER DOWN WAS COMPLETE
 2824  014254  000000          $SAVR6: 0                                 ;;PUT THE SP HERE
 2825  014256  005015  047520  042527  $POWER: .ASCIZ   <15><12>'POWER'
 2826  014264  000122
 2827                                          .EVEN
 2828  014266                          .$TYPE
```

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                                .SBTTL  TYPE ROUTINE

014266                          STARS
                                ;;**********************************************************************
                                ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
                                ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
                                ;*NOTE1:         $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
                                ;*NOTE2:         $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
                                ;*NOTE3:         $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
                                ;*
                                ;*CALL:
                                ;*1) USING A TRAP INSTRUCTION
                                ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
                                ;*OR
                                ;*      TYPE
                                ;*      MESADR
                                ;*

014266  105737  001157          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
014272  100002                          BPL     1$              ;;BR IF YES
014274  000000                          HALT                    ;;HALT HERE IF NO TERMINAL
014276  000407                          BR      3$              ;;LEAVE
014300  010046                  1$:     MOV     R0,-(SP)        ;;SAVE R0
014302  017600  000002                  MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
014306  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
014310  001005                          BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
014312  005726                          TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
014314  012600                  60$:    MOV     (SP)+,R0        ;;RESTORE R0
014316  062716  000002          3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
014322  000002                          RTI                     ;;RETURN
014324  122716  000011          4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
014330  001430                          BEQ     8$
014332  122716  000200                  CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
014336  001006                          BNE     5$
014340  005726                          TST     (SP)+           ;;POP  <CR><LF> EQUIV
014342  104401                          TYPE                    ;;TYPE A CR AND LF
014344  001233                          $CRLF
014346  105037  014502                  CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
014352  000755                          BR      2$              ;;GET NEXT CHARACTER
014354  004737  014436          5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
014360  123726  001156          6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
014364  001350                          BNE     2$              ;;IF NO GO GET NEXT CHAR.
014366  013746  001154                  MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
                                                                ;;AND THE NULL CHAR.
014372  105366  000001          7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
014376  002770                          BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
014400  004737  014436                  JSR     PC,$TYPEC       ;;GO TYPE A NULL
014404  105337  014502                  DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
014410  000770                          BR      7$              ;;LOOP

                                ;HORIZONTAL TAB PROCESSOR

014412  112716  000040          8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
014416  004737  014436          9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
014422  132737  000007  014502          BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
014430  001372                          BNE     9$              ;;TAB STOP
```

```
2885  014432  005726                          TST     (SP)+           ;;POP SPACE OFF STACK
2886  014434  000724                          BR      2$              ;;GET NEXT CHARACTER
2887  014436  105777  164506          $TYPEC: TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
2888  014442  100375                          BPL     $TYPEC
2889  014444  116677  000002  164500        MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
2890  014452  122766  000015  000002        CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
2891  014460  001003                          BNE     1$              ;;BRANCH IF NO
2892  014462  105037  014502                CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
2893  014466  000406                          BR      $TYPEX          ;;EXIT
2894  014470  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
2895  014476  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
2896  014500  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
2897  014502  000000          $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
2898  014504  000207          $TYPEX: RTS     PC
2899
2900  014506                  .$TYPDEC
2901                          .SBTTL  CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
2902
2903  014506                  STARS
2904                          ;;**************************************************************
2905                          ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
2906                          ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
2907                          ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
2908                          ;*BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
2909                          ;*REPLACED WITH SPACES.
2910                          ;*CALL:
2911                          ;*      MOV     NUM,-(SP)       ;;PUT THE BINARY NUMBER ON THE STACK
2912                          ;*      TYPDS                   ;;GO TO THE ROUTINE
2913
2914  014506                  $TYPDS: PUSH    <R0,R1,R2,R3,R5>
2915                          .IRP    B,<R0,R1,R2,R3,R5>
2916                                  MOV     B,-(SP)         ;;PUSH B ON STACK
2917                          .ENDM
2918  014506  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
2919  014510  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
2920  014512  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
2921  014514  010346                          MOV     R3,-(SP)        ;;PUSH R3 ON STACK
2922  014516  010546                          MOV     R5,-(SP)        ;;PUSH R5 ON STACK
2923  014520  012746  020200                  MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
2924  014524  016605  000020                  MOV     20(SP),R5       ;;GET THE INPUT NUMBER
2925  014530  100004                          BPL     1$              ;;BR IF INPUT IS POS.
2926  014532  005405                          NEG     R5              ;;MAKE THE BINARY NUMBER POS.
2927  014534  112766  000055  000001        MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
2928  014542  005000          1$:     CLR     R0              ;;ZERO THE CONSTANTS INDEX
2929  014544  012703  014722                MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
2930  014550  112723  000040                MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
2931  014554  005002          2$:     CLR     R2              ;;CLEAR THE BCD NUMBER
2932  014556  016001  014712                MOV     $DTBL(R0),R1    ;;GET THE CONSTANT
2933  014562  160105          3$:     SUB     R1,R5           ;;FORM THIS BCD DIGIT
2934  014564  002402                          BLT     4$              ;;BR IF DONE
2935  014566  005202                          INC     R2              ;;INCREASE THE BCD DIGIT BY 1
2936  014570  000774                          BR      3$
2937  014572  060105          4$:     ADD     R1,R5           ;;ADD BACK THE CONSTANT
2938  014574  005702                          TST     R2              ;;CHECK IF BCD DIGIT=0
2939  014576  001002                          BNE     5$              ;;FALL THROUGH IF 0
2940  014600  105716                          TSTB    (SP)            ;;STILL DOING LEADING 0'S?
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```
                                    BMI     7$              ;;BR IF YES
                                5$: ASLB    (SP)            ;;MSD?
                                    BCC     6$              ;;BR IF NO
                                    MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
                                6$: BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
                                7$: BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
                                    MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
                                    TST     (R0)+           ;;JUST INCREMENTING
                                    CMP     R0,#10          ;;CHECK THE TABLE INDEX
                                    BLT     2$              ;;GO DO THE NEXT DIGIT
                                    BGT     8$              ;;GO TO EXIT
                                    MOV     R5,R2           ;;GET THE LSD
                                    BR      6$              ;;GO CHANGE TO ASCII
                                8$: TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
                                    BPL     9$              ;;BR IF NO
                                    MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
                                9$: CLRB    (R3)            ;;SET THE TERMINATOR
                                    POP     <R5,R3,R2,R1,R0>
                                .IRP    B,<R5,R3,R2,R1,R0>
                                    MOV     (SP)+,B         ;;POP STACK INTO B
                                .ENDM
                                    MOV     (SP)+,R5        ;;POP STACK INTO R5
                                    MOV     (SP)+,R3        ;;POP STACK INTO R3
                                    MOV     (SP)+,R2        ;;POP STACK INTO R2
                                    MOV     (SP)+,R1        ;;POP STACK INTO R1
                                    MOV     (SP)+,R0        ;;POP STACK INTO R0
                                    TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
                                    MOV     2(SP),4(SP)     ;;ADJUST THE STACK
                                    MOV     (SP)+,(SP)
                                    RTI                     ;;RETURN TO USER
                                $DTBL:  10000.
                                    1000.
                                    100.
                                    10.
                                $DBLK:  .BLKW   4
                                .$TYPOCT
                                .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE

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

```
                                        ;*
                                        ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
                                        ;*CALL:
                                        ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                        ;*      TYPOC                   ;;CALL FOR TYPEOUT
014732  017646  000000        $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
014736  116637  000001 015155          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
014744  112637  015157                MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
014750  062716  000002                ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
014754  000406                        BR      $TYPON
014756  112737  000001 015155 $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
014764  112737  000006 015157          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
014772  112737  000005 015154 $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
015000  010346                        MOV     R3,-(SP)        ;;SAVE R3
015002  010446                        MOV     R4,-(SP)        ;;SAVE R4
015004  010546                        MOV     R5,-(SP)        ;;SAVE R5
015006  113704  015157                MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
015012  005404                        NEG     R4
015014  062704  000006                ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
015020  110437  015156                MOVB    R4,$OMODE       ;;SAVE IT FOR USE
015024  113704  015155                MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
015030  016605  000012                MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
015034  005003                        CLR     R3              ;;CLEAR THE OUTPUT WORD
015036  006105              1$:       ROL     R5              ;;ROTATE MSB INTO "C"
015040  000404                        BR      3$              ;;GO DO MSB
015042  006105              2$:       ROL     R5              ;;FORM THIS DIGIT
015044  006105                        ROL     R5
015046  006105                        ROL     R5
015050  010503                        MOV     R5,R3
015052  006103              3$:       ROL     R3              ;;GET LSB OF THIS DIGIT
015054  105337  015156                DECB    $OMODE          ;;TYPE THIS DIGIT?
015060  100016                        BPL     7$              ;;BR IF NO
015062  042703  177770                BIC     #177770,R3      ;;GET RID OF JUNK
015066  001002                        BNE     4$              ;;TEST FOR 0
015070  005704                        TST     R4              ;;SUPPRESS THIS 0?
015072  001403                        BEQ     5$              ;;BR IF YES
015074  005204              4$:       INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
015076  052703  000060                BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
015102  052703  000040      5$:       BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
015106  110337  015152                MOVB    R3,8$           ;;SAVE FOR TYPING
015112  104401  015152                TYPE    ,8$             ;;GO TYPE THIS DIGIT
015116  105337  015154      7$:       DECB    $OCNT           ;;COUNT BY 1
015122  003347                        BGT     2$              ;;BR IF MORE TO DO
015124  002402                        BLT     6$              ;;BR IF DONE
015126  005204                        INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
015130  000744                        BR      2$              ;;GO DO THE LAST DIGIT
015132  012605              6$:       MOV     (SP)+,R5        ;;RESTORE R5
015134  012604                        MOV     (SP)+,R4        ;;RESTORE R4
015136  012603                        MOV     (SP)+,R3        ;;RESTORE R3
015140  016666  000002 000004        MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
015146  012616                        MOV     (SP)+,(SP)
015150  000002                        RTI                     ;;RETURN
015152     000              8$:       .BYTE   0               ;;STORAGE FOR ASCII DIGIT
015153     000                        .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
015154     000              $OCNT:    .BYTE   0               ;;OCTAL DIGIT COUNTER
```

```
3053  015155      000                 $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
3054  015156  000000                  $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
3055  015160                          .$ERRTYP
3056                                  .SBTTL  ERROR MESSAGE TYPEOUT ROUTINE
3057
3058  015160                          STARS
3059                                  ;;**************************************************************************
3060                                  ;*THIS ROUTINE USES THE ''ITEM CONTROL BYTE'' ($ITEMB) TO DETERMINE WHICH
3061                                  ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE 'ERROR TABLE'' ($ERRTB),
3062                                  ;*AND REPORTS THE APPROPRIATE INFORMATION CONCERNING THE ERROR.
3063
3064  015160                          $ERRTYP:
3065  015160  104401  001233                TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
3066  015164  010046                        MOV     R0,-(SP)        ;;SAVE R0
3067  015166  005000                        CLR     R0              ;;PICKUP THE ITEM INDEX
3068  015170  153700  001114              BISB    @#$ITEMB,R0
3069  015174  001004                        BNE     1$              ;;IF ITEM NUMBER IS ZERO, JUST
3070                                                                ;;TYPE THE PC OF THE ERROR
3071  015176                                TYPOCT  $ERRPC,<ERROR ADDRESS>
3072  015176  013746  001116              MOV     $ERRPC,-(SP)    ;;SAVE $ERRPC FOR TYPEOUT
3073                                                                ;;ERROR ADDRESS
3074  015202  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3075  015204  000426                        BR      6$              ;;GET OUT
3076  015206  005300                  1$:   DEC     R0              ;;ADJUST THE INDEX SO THAT IT WILL
3077  015210  006300                        ASL     R0              ;;      WORK FOR THE ERROR TABLE
3078  015212  006300                        ASL     R0
3079  015214  006300                        ASL     R0
3080  015216  062700  001324              ADD     #$ERRTB,R0      ;;FORM TABLE POINTER
3081  015222  012037  015232              MOV     (R0)+,2$        ;;PICKUP 'ERROR MESSAGE'' POINTER
3082  015226  001404                        BEQ     3$              ;;SKIP TYPEOUT IF NO POINTER
3083  015230  104401                        TYPE                    ;;TYPE THE 'ERROR MESSAGE''
3084  015232  000000                  2$:   .WORD   0               ;;'ERROR MESSAGE'' POINTER GOES HERE
3085  015234  104401  001233              TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
3086  015240  012037  015250        3$:   MOV     (R0)+,4$        ;;PICKUP 'DATA HEADER'' POINTER
3087  015244  001404                        BEQ     5$              ;;SKIP TYPEOUT IF 0
3088  015246  104401                        TYPE                    ;;TYPE THE 'DATA HEADER''
3089  015250  000000                  4$:   .WORD   0               ;;'DATA HEADER'' POINTER GOES HERE
3090  015252  104401  001233              TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
3091  015256  011000                  5$:   MOV     (R0),R0         ;;PICKUP 'DATA TABLE'' POINTER
3092  015260  001004                        BNE     7$              ;;GO TYPE THE DATA
3093  015262  012600                  6$:   MOV     (SP)+,R0        ;;RESTORE R0
3094  015264  104401  001233              TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
3095  015270  000207                        RTS     PC              ;;RETURN
3096  015272                          7$:   TYPOCT  @(R0)+          ;;TYPE AN OCTAL NUMBER
3097  015272  013046                        MOV     @(R0)+,-(SP)    ;;SAVE @(R0)+ FOR TYPEOUT
3098  015274  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3099  015276  005710                        TST     (R0)            ;;IS THERE ANOTHER NUMBER?
3100  015300  001770                        BEQ     6$              ;;BR IF NO
3101  015302  104401  015310              TYPE    ,8$             ;;TYPE TWO(2) SPACES
3102  015306  000771                        BR      7$              ;;LOOP
3103  015310  020040      000       8$:   .ASCIZ  /  /            ;;TWO(2) SPACES
3104          015314                        .EVEN
3105  015314                          .$TRAP
3106                                  .SBTTL  TRAP DECODER
3107
3108  015314                          STARS
```

```
3109                                    ;;**********************************************************************
3110                                    ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE ''TRAP'' INSTRUCTION
3111                                    ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
3112                                    ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
3113                                    ;*GO TO THAT ROUTINE.
3114
3115  015314  010046                    $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
3116  015316  016600  000002                   MOV     2(SP),R0        ;;GET TRAP ADDRESS
3117  015322  005740                           TST     -(R0)           ;;BACKUP BY 2
3118  015324  111000                           MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
3119  015326  006300                           ASL     R0              ;;POSITION FOR INDEXING
3120  015330  016000  015350                   MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
3121  015334  000200                           RTS     R0              ;;GO TO ROUTINE
3122
3123
3124                                    ;;THIS IS USE TO HANDLE THE ''GETPRI'' MACRO
3125
3126  015336  011646                    $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
3127  015340  016666  000004  000002           MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
3128  015346  000002                           RTI                     ;;RESTORE THE PSW
3129
3130                                    .MACRO  SETTRAP A,B,MSG
3131                                            $$SET   A,B,\<TRAP+$TRP>,\$TRP,<MSG>
3132                                    .NLIST
3133                                    $TRP=$TRP+1
3134                                    .LIST
3135                                    .ENDM   SETTRAP
3136                                    .MACRO  $$SET   A,B,C,D,COMNT
3137                                    .IF EQ $TRP-1
3138                                    .SBTTL  TRAP TABLE
3139
3140                                    ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
3141                                    ;*BY THE ''TRAP'' INSTRUCTION.
3142
3143                                    ;       ROUTINE
3144                                    ;       -------
3145                                    $TRPAD: .WORD   $TRAP2
3146                                    .ENDC
3147                                    .IIF NDF GNS,.NLIST
3148                                            A=      C
3149                                    .IIF NDF GNS,.LIST
3150                                            B       ;;CALL=A        TRAP+D(C)       COMNT
3151                                    .ENDM   $$SET
3152                                    .MACRO  TRMTRP
3153                                    $TERM=.-$TRPAD
3154                                    .ENDM   TRMTRP
3155                                    .LIST
3156  015350                                    SETTRAP TYPE,$TYPE,^/TTY TYPEOUT ROUTINE/
3157  015350                                    $$SET   TYPE,$TYPE,\<TRAP+$TRP>,\$TRP,<TTY TYPEOUT ROUTINE>
3158                                  .SBTTL  TRAP TABLE
3159
3160                                    ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
3161                                    ;*BY THE ''TRAP'' INSTRUCTION.
3162
3163                                    ;       ROUTINE
3164                                    ;       -------
```

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3165  015350  015336                  $TRPAD: .WORD   $TRAP2
3166                                  .LIST
3167  015352  014266                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
3168                                  .LIST
3169  015354                                  SETTRAP TYPOC,$TYPOC,^/TYPE OCTAL NUMBER (WITH LEADING ZEROS)/
3170  015354                                  $$SET   TYPOC,$TYPOC,\<TRAP+$TRP>,\$TRP,<TYPE OCTAL NUMBER (WITH LEADING ZEROS)>
3171                                  .LIST
3172  015354  014756                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
3173                                  .LIST
3174  015356                                  SETTRAP TYPOS,$TYPOS,^/TYPE OCTAL NUMBER (NO LEADING ZEROS)/
3175  015356                                  $$SET   TYPOS,$TYPOS,\<TRAP+$TRP>,\$TRP,<TYPE OCTAL NUMBER (NO LEADING ZEROS)>
3176                                  .LIST
3177  015356  014732                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
3178                                  .LIST
3179  015360                                  SETTRAP TYPON,$TYPON,^/TYPE OCTAL NUMBER (AS PER LAST CALL)/
3180  015360                                  $$SET   TYPON,$TYPON,\<TRAP+$TRP>,\$TRP,<TYPE OCTAL NUMBER (AS PER LAST CALL)>
3181                                  .LIST
3182  015360  014772                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
3183                                  .LIST
3184  015362                                  SETTRAP TYPDS,$TYPDS,^/TYPE DECIMAL NUMBER (WITH SIGN)/
3185  015362                                  $$SET   TYPDS,$TYPDS,\<TRAP+$TRP>,\$TRP,<TYPE DECIMAL NUMBER (WITH SIGN)>
3186                                  .LIST
3187  015362  014506                          $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)
3188                                  .LIST
3189
3190
3191  015364  000000                  CKSELT: OPEN
3192  015366  055103  041524  042502  STMES:  .ASCII  'CZTCBE0 TC2-TC11 TEST #2'<15><12>
3193  015374  020060  041524  026462
3194  015402  041524  030461  052040
3195  015410  051505  020124  031043
3196  015416  005015
3197  015420  042523  020124  047125          .ASCII  'SET UNITO TO REMOTE AND WRITE LOCK.'
3198  015426  052111  020060  047524
3199  015434  051040  046505  052117
3200  015442  020105  047101  020104
3201  015450  051127  052111  020105
3202  015456  047514  045503     056
3203  015463     101  046114  047440          .ASCII  'ALL OTHER UNITS OFF.'<15><12>
3204  015470  044124  051105  052440
3205  015476  044516  051524  047440
3206  015504  043106  006456     012
3207  015511     127  052122  020115          .ASCII  'WRTM SWITCH OFF, WALL SWITCH ON.'<15><12>
3208  015516  053523  052111  044103
3209  015524  047440  043106  020054
3210  015532  040527  046114  051440
3211  015540  044527  041524  020110
3212  015546  047117  006456     012
3213  015553     116  052117  035105          .ASCIZ  'NOTE: CACHE TURNED OFF (IF THERE) DURING TEST'<15><12>
3214  015560  041440  041501  042510
3215  015566  052040  051125  042516
3216  015574  020104  043117  020106
3217  015602  044450  020106  044124
3218  015610  051105  024505  042040
3219  015616  051125  047111  020107
3220  015624  042524  052123  005015
```

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3221  015632     000
3222  015633     015  051412  052105  ASETSR: .ASCIZ  <15><12>'SET SR OPTIONS. NORMAL SR = 0'
3223  015640  051440  020122  050117
3224  015646  044524  047117  027123
3225  015654  047040  051117  040515
3226  015662  020114  051123  036440
3227  015670  030040     000
3228  015673     015  044412  053116  AINCRT: .ASCIZ  <15><12>'INVALID TEST.'
3229  015700  046101  042111  052040
3230  015706  051505  027124     000
3231  015713     007             APGEND: .BYTE   007
3232  015714  025045     000             .ASCIZ  '%*'
3233  015717     106  052101  046101  TRPM4S: .ASCIZ  'FATAL ERROR TRAP TO LOCATION 4 FROM LOC''
3234  015724  042440  051122  051117
3235  015732  052040  040522  020120
3236  015740  047524  046040  041517
3237  015746  052101  047511  020116
3238  015754  020064  051106  046517
3239  015762  046040  041517     000
3240  015767     050  041077  042101  TRPMES: .ASCIZ  ''(?BAD CPU?) ATTEMPTING TO RESTART PROGRAM''
3241  015774  041440  052520  024477
3242  016002  040440  052124  046505
3243  016010  052120  047111  020107
3244  016016  047524  051040  051505
3245  016024  040524  052122  050040
3246  016032  047522  051107  046501
3247  016040     000
3248  016041     106  052101  046101  TRPM10: .ASCIZ  'FATAL ERROR TRAP TO LOCATION 10 FROM LOC ''
3249  016046  042440  051122  051117
3250  016054  052040  040522  020120
3251  016062  047524  046040  041517
3252  016070  052101  047511  020116
3253  016076  030061  043040  047522
3254  016104  020115  047514  020103
3255  016112     000
3256  016113     124  051505  051524  RESTART:        .ASCIZ  ''TESTS ARE OUT OF SEQUENCE - - - RESTARTING....''
3257  016120  040440  042522  047440
3258  016126  052125  047440  020106
3259  016134  042523  052521  047105
3260  016142  042503  026440  026440
3261  016150  026440  051040  051505
3262  016156  040524  052122  047111
3263  016164  027107  027056  000056
3264  016172  005015  042522  052123  POWMES: .ASCIZ <15> <12> ''RESTARTING AFTER A POWER FAILURE''<15> <12>
3265  016200  051101  044524  043516
3266  016206  040440  052106  051105
3267  016214  040440  050040  053517
3268  016222  051105  043040  044501
3269  016230  052514  042522  005015
3270  016236     000
3271  016237     123  052101  024040  EM1:    .ASCIZ ''SAT (STOP ALL TRANSPORTS) COMMAND DID NOT CLEAR READY''
3272  016244  052123  050117  040440
3273  016252  046114  052040  040522
3274  016260  051516  047520  052122
3275  016266  024523  041440  046517
3276  016274  040515  042116  042040
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3277  016302  042111  047040  052117
3278  016310  041440  042514  051101
3279  016316  051040  040505  054504
3280  016324    000
3281  016325    040  050040  020103  EH1:    .ASCIZ  '' PC      SP      PS     TEST#   TCCM    TCST''
3282  016332  020040  020040  051440
3283  016340  020120  020040  020040
3284  016346  050040  020123  020040
3285  016354  020040  042524  052123
3286  016362  020043  020040  041524
3287  016370  046503  020040  020040
3288  016376  041524  052123    000
3289          016404          .EVEN
3290  016404  001116  001176  001200  ET1:    $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3291  016412  001174  001166  001164
3292  016420  000000                          000000
3293
3294
3295  016422  051523  020124  051450  EM2:    .ASCIZ 'SST (STOP SELECTED TRANSPORT) DID NOT CLEAR READY''
3296  016430  047524  020120  042523
3297  016436  042514  052103  042105
3298  016444  052040  040522  051516
3299  016452  047520  052122  020051
3300  016460  044504  020104  047516
3301  016466  020124  046103  040505
3302  016474  020122  042522  042101
3303  016502  000131
3304  016504  020040  041520  020040  EH2:    .ASCIZ  '' PC      SP      PS     TEST#   TCCM    TCST''
3305  016512  020040  020040  050123
3306  016520  020040  020040  020040
3307  016526  051520  020040  020040
3308  016534  052040  051505  021524
3309  016542  020040  052040  041503
3310  016550  020115  020040  052040
3311  016556  051503  000124
3312                          .EVEN
3313  016562  001116  001176  001200  ET2:    $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3314  016570  001174  001166  001164
3315  016576  000000                          000000
3316
3317
3318  016600  042522  042101  020131  EM3:    .ASCIZ 'READY BIT DID NOT CAUSE AN INTERRUPT''
3319  016606  044502  020124  044504
3320  016614  020104  047516  020124
3321  016622  040503  051525  020105
3322  016630  047101  044440  052116
3323  016636  051105  052522  052120
3324  016644    000
3325  016645    040  050040  020103  EH3:    .ASCIZ  '' PC      SP      PS     TEST#   TCCM    TCST''
3326  016652  020040  020040  051440
3327  016660  020120  020040  020040
3328  016666  050040  020123  020040
3329  016674  020040  042524  052123
3330  016702  020043  020040  041524
3331  016710  046503  020040  020040
3332  016716  041524  052123    000
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 3333            016724
 3334  016724    001116  001176  001200  ET3:    .EVEN
 3335  016732    001174  001166  001164          $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3336  016740    000000                          000000
 3337
 3338
 3339  016742    042522  042101  020131  EM4:    .ASCIZ 'READY BIT CAUSED AN INTERRUPT WITH PROCESSOR AND TC11 AT SAME PRIORITY''
 3340  016750    044502  020124  040503
 3341  016756    051525  042105  040440
 3342  016764    020116  047111  042524
 3343  016772    051122  050125  020124
 3344  017000    044527  044124  050040
 3345  017006    047522  042503  051523
 3346  017014    051117  040440  042116
 3347  017022    052040  030503  020061
 3348  017030    052101  051440  046501
 3349  017036    020105  051120  047511
 3350  017044    044522  054524     000
 3351  017051       040  050040  020103  EH4:    .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST''
 3352  017056    020040  020040  051440
 3353  017064    020120  020040  020040
 3354  017072    050040  020123  020040
 3355  017100    020040  042524  052123
 3356  017106    020043  020040  041524
 3357  017114    046503  020040  020040
 3358  017122    041524  052123     000
 3359            017130                  .EVEN
 3360  017130    001116  001176  001200  ET4:    $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3361  017136    001174  001166  001164
 3362  017144    000000                          000000
 3363
 3364
 3365  017146    041524  030461  043040  EM5:    .ASCIZ 'TC11 FAILED TO INTERRUPT''
 3366  017154    044501  042514  020104
 3367  017162    047524  044440  052116
 3368  017170    051105  052522  052120
 3369  017176       000
 3370  017177       040  050040  020103  EH5:    .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST''
 3371  017204    020040  020040  051440
 3372  017212    020120  020040  020040
 3373  017220    050040  020123  020040
 3374  017226    020040  042524  052123
 3375  017234    020043  020040  041524
 3376  017242    046503  020040  020040
 3377  017250    041524  052123     000
 3378            017256                  .EVEN
 3379  017256    001116  001176  001200  ET5:    $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3380  017264    001174  001166  001164
 3381  017272    000000                          000000
 3382
 3383
 3384  017274    041524  030461  042040  EM6:    .ASCIZ 'TC11 DID NOT DROP INTERRUPT REQUEST AFTER IT WAS ACKNOLEDGED''
 3385  017302    042111  047040  052117
 3386  017310    042040  047522  020120
 3387  017316    047111  042524  051122
 3388  017324    050125  020124  042522
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3389  017332  052521  051505  020124
3390  017340  043101  042524  020122
3391  017346  052111  053440  051501
3392  017354  040440  045503  047516
3393  017362  042514  043504  042105
3394  017370     000
3395  017371     040  050040  020103  EH6:    .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3396  017376  020040  020040  051440
3397  017404  020120  020040  020040
3398  017412  050040  020123  020040
3399  017420  020040  042524  052123
3400  017426  020043  020040  041524
3401  017434  046503  020040  020040
3402  017442  041524  052123     000
3403          017450                .EVEN
3404  017450  001116  001176  001200  ET6:    $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3405  017456  001174  001166  001164
3406  017464  000000                        000000
3407
3408
3409  017466  047504  047111  020107  EM7:    .ASCIZ 'DOING A RESET INSTRUCTION DID NOT CLEAR UPS''
3410  017474  020101  042522  042523
3411  017502  020124  047111  052123
3412  017510  052522  052103  047511
3413  017516  020116  044504  020104
3414  017524  047516  020124  046103
3415  017532  040505  020122  050125
3416  017540  000123
3417  017542  020040  041520  020040  EH7:    .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3418  017550  020040  020040  050123
3419  017556  020040  020040  020040
3420  017564  051520  020040  020040
3421  017572  052040  051505  021524
3422  017600  020040  052040  041503
3423  017606  020115  020040  052040
3424  017614  051503  000124
3425                          .EVEN
3426  017620  001116  001176  001200  ET7:    $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3427  017626  001174  001166  001164
3428  017634  000000                        000000
3429
3430
3431  017636  047105  042524  044522  EM10:   .ASCIZ 'ENTERING MAINTANENCE MODE DID NOT SET UPS''
3432  017644  043516  046440  044501
3433  017652  052116  047101  047105
3434  017660  042503  046440  042117
3435  017666  020105  044504  020104
3436  017674  047516  020124  042523
3437  017702  020124  050125  000123
3438  017710  020040  041520  020040  EH10:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3439  017716  020040  020040  050123
3440  017724  020040  020040  020040
3441  017732  051520  020040  020040
3442  017740  052040  051505  021524
3443  017746  020040  052040  041503
3444  017754  020115  020040  052040
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                                                                E 6
3445  017762  051503  000124
3446                                    .EVEN
3447  017766  001116  001176  001200  ET10:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3448  017774  001174  001166  001164
3449  020002  000000                          000000
3450
3451
3452  020004  050125  020123  044504  EM11:   .ASCIZ 'UPS DID NOT CLEAR WHEN LEAVING MAINTANENCE MODE''
3453  020012  020104  047516  020124
3454  020020  046103  040505  020122
3455  020026  044127  047105  046040
3456  020034  040505  044526  043516
3457  020042  046440  044501  052116
3458  020050  047101  047105  042503
3459  020056  046440  042117  000105
3460  020064  020040  041520  020040  EH11:   .ASCIZ  '' PC      SP      PS     TEST#   TCCM    TCST''
3461  020072  020040  020040  050123
3462  020100  020040  020040  020040
3463  020106  051520  020040  020040
3464  020114  052040  051505  021524
3465  020122  020040  052040  041503
3466  020130  020115  020040  052040
3467  020136  051503  000124
3468                                    .EVEN
3469  020142  001116  001176  001200  ET11:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3470  020150  001174  001166  001164
3471  020156  000000                          000000
3472
3473
3474  020160  041524  052123  041040  EM12:   .ASCIZ 'TCST BIT 0 CAN BE SET WHILE IN MAINTANENCE MODE''
3475  020166  052111  030040  041440
3476  020174  047101  041040  020105
3477  020202  042523  020124  044127
3478  020210  046111  020105  047111
3479  020216  046440  044501  052116
3480  020224  047101  047105  042503
3481  020232  046440  042117  000105
3482  020240  020040  041520  020040  EH12:   .ASCIZ  '' PC      SP      PS     TEST#   TCCM    TCST''
3483  020246  020040  020040  050123
3484  020254  020040  020040  020040
3485  020262  051520  020040  020040
3486  020270  052040  051505  021524
3487  020276  020040  052040  041503
3488  020304  020115  020040  052040
3489  020312  051503  000124
3490                                    .EVEN
3491  020316  001116  001176  001200  ET12:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3492  020324  001174  001166  001164
3493  020332  000000                          000000
3494
3495
3496  020334  041524  052123  041040  EM13:   .ASCIZ 'TCST BIT 1 CAN BE SET WHILE IN MAINTANENCE MODE''
3497  020342  052111  030440  041440
3498  020350  047101  041040  020105
3499  020356  042523  020124  044127
3500  020364  046111  020105  047111
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3501   020372  046440  044501  052116
3502   020400  047101  047105  042503
3503   020406  046440  042117  000105
3504   020414  020040  041520  020040  EH13:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3505   020422  020040  020040  050123
3506   020430  020040  020040  020040
3507   020436  051520  020040  020040
3508   020444  052040  051505  021524
3509   020452  020040  052040  041503
3510   020460  020115  020040  052040
3511   020466  051503  000124
3512                            .EVEN
3513   020472  001116  001176  001200  ET13:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3514   020500  001174  001166  001164
3515   020506  000000                          000000
3516
3517
3518   020510  051127  046524  041440  EM14:   .ASCIZ 'WRTM COMMAND WITH WRTM SWITCH DISABLED FAILED TO SET ILO ERROR''
3519   020516  046517  040515  042116
3520   020524  053440  052111  020110
3521   020532  051127  046524  051440
3522   020540  044527  041524  020110
3523   020546  044504  040523  046102
3524   020554  042105  043040  044501
3525   020562  042514  020104  047524
3526   020570  051440  052105  044440
3527   020576  047514  042440  051122
3528   020604  051117     000
3529   020607     040  050040  020103  EH14:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3530   020614  020040  020040  051440
3531   020622  020120  020040  020040
3532   020630  050040  020123  020040
3533   020636  020040  042524  052123
3534   020644  020043  020040  041524
3535   020652  046503  020040  020040
3536   020660  041524  052123     000
3537           020666                   .EVEN
3538   020666  001116  001176  001200  ET14:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3539   020674  001174  001166  001164
3540   020702  000000                          000000
3541
3542
3543   020704  046111  020117  051105  EM15:   .ASCIZ ''ILO ERROR FAILED TO SET THE 'ERROR' BIT''
3544   020712  047522  020122  040506
3545   020720  046111  042105  052040
3546   020726  020117  042523  020124
3547   020734  044124  020105  042447
3548   020742  051122  051117  020047
3549   020750  044502  000124
3550   020754  020040  041520  020040  EH15:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3551   020762  020040  020040  050123
3552   020770  020040  020040  020040
3553   020776  051520  020040  020040
3554   021004  052040  051505  021524
3555   021012  020040  052040  041503
3556   021020  020115  020040  052040
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3557  021026  051503  000124
3558                                  .EVEN
3559  021032  001116  001176  001200  ET15:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3560  021040  001174  001166  001164
3561  021046  000000                        000000
3562
3563
3564  021050  046103  040505  044522  EM16:   .ASCIZ ''CLEARING ILLEGAL OP FAILED TO CLEAR ILO ERROR''
3565  021056  043516  044440  046114
3566  021064  043505  046101  047440
3567  021072  020120  040506  046111
3568  021100  042105  052040  020117
3569  021106  046103  040505  020122
3570  021114  046111  020117  051105
3571  021122  047522  000122
3572  021126  020040  041520  020040  EH16:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST''
3573  021134  020040  020040  050123
3574  021142  020040  020040  020040
3575  021150  051520  020040  020040
3576  021156  052040  051505  021524
3577  021164  020040  052040  041503
3578  021172  020115  020040  052040
3579  021200  051503  000124
3580                                  .EVEN
3581  021204  001116  001176  001200  ET16:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3582  021212  001174  001166  001164
3583  021220  000000                        000000
3584
3585
3586  021222  046103  040505  044522  EM17:   .ASCIZ ''CLEARING ILLEGAL OP FAILED TO CLEAR THE 'ERROR' BIT''
3587  021230  043516  044440  046114
3588  021236  043505  046101  047440
3589  021244  020120  040506  046111
3590  021252  042105  052040  020117
3591  021260  046103  040505  020122
3592  021266  044124  020105  042447
3593  021274  051122  051117  020047
3594  021302  044502  000124
3595  021306  020040  041520  020040  EH17:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST''
3596  021314  020040  020040  050123
3597  021322  020040  020040  020040
3598  021330  051520  020040  020040
3599  021336  052040  051505  021524
3600  021344  020040  052040  041503
3601  021352  020115  020040  052040
3602  021360  051503  000124
3603                                  .EVEN
3604  021364  001116  001176  001200  ET17:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3605  021372  001174  001166  001164
3606  021400  000000                        000000
3607
3608
3609  021402  051127  046524  053440  EM20:   .ASCIZ 'WRTM WITH WRTM SWITCH OFF DID NOT SET ILO ERROR BIT''
3610  021410  052111  020110  051127
3611  021416  046524  051440  044527
3612  021424  041524  020110  043117
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3613  021432  020106  044504  020104
3614  021440  047516  020124  042523
3615  021446  020124  046111  020117
3616  021454  051105  047522  020122
3617  021462  044502  000124
3618  021466  020040  041520  020040  EH20:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3619  021474  020040  020040  050123
3620  021502  020040  020040  020040
3621  021510  051520  020040  020040
3622  021516  052040  051505  021524
3623  021524  020040  052040  041503
3624  021532  020115  020040  052040
3625  021540  051503  000124
3626                          .EVEN
3627  021544  001116  001176  001200  ET20:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3628  021552  001174  001166  001164
3629  021560  000000                  000000
3630
3631
3632  021562  046111  020117  051105  EM21:   .ASCIZ ''ILO ERROR SETTING DID NOT CAUSE THE 'ERROR' BIT TO SET''
3633  021570  047522  020122  042523
3634  021576  052124  047111  020107
3635  021604  044504  020104  047516
3636  021612  020124  040503  051525
3637  021620  020105  044124  020105
3638  021626  042447  051122  051117
3639  021634  020047  044502  020124
3640  021642  047524  051440  052105
3641  021650     000
3642  021651     040  050040  020103  EH21:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3643  021656  020040  020040  051440
3644  021664  020120  020040  020040
3645  021672  050040  020123  020040
3646  021700  020040  042524  052123
3647  021706  020043  020040  041524
3648  021714  046503  020040  020040
3649  021722  041524  052123     000
3650          021730                  .EVEN
3651  021730  001116  001176  001200  ET21:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3652  021736  001174  001166  001164
3653  021744  000000                  000000
3654
3655
3656  021746  046103  040505  044522  EM22:   .ASCIZ ''CLEARING ERROR BIT ALSO CLEARED ILO ERROR''
3657  021754  043516  042440  051122
3658  021762  051117  041040  052111
3659  021770  040440  051514  020117
3660  021776  046103  040505  042522
3661  022004  020104  046111  020117
3662  022012  051105  047522  000122
3663  022020  020040  041520  020040  EH22:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3664  022026  020040  020040  050123
3665  022034  020040  020040  020040
3666  022042  051520  020040  020040
3667  022050  052040  051505  021524
3668  022056  020040  052040  041503
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 3669  022064  020115  020040  052040
 3670  022072  051503  000124
 3671                                  .EVEN
 3672  022076  001116  001176  001200  ET22:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3673  022104  001174  001166  001164
 3674  022112  000000                        000000
 3675
 3676
 3677  022114  044124  020105  042447  EM23:   .ASCIZ ''THE 'ERROR' BIT DID NOT SET''
 3678  022122  051122  051117  020047
 3679  022130  044502  020124  044504
 3680  022136  020104  047516  020124
 3681  022144  042523  000124
 3682  022150  020040  041520  020040  EH23:   .ASCIZ  '' PC      SP      PS     TEST#   TCCM    TCST''
 3683  022156  020040  020040  050123
 3684  022164  020040  020040  020040
 3685  022172  051520  020040  020040
 3686  022200  052040  051505  021524
 3687  022206  020040  052040  041503
 3688  022214  020115  020040  052040
 3689  022222  051503  000124
 3690                                  .EVEN
 3691  022226  001116  001176  001200  ET23:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3692  022234  001174  001166  001164
 3693  022242  000000                        000000
 3694
 3695
 3696  022244  044124  020105  042447  EM24:   .ASCIZ 'THE 'ERROR' BIT SET DID NOT CAUSE AN INTERRUPT''
 3697  022252  051122  051117  020047
 3698  022260  044502  020124  042523
 3699  022266  020124  044504  020104
 3700  022274  047516  020124  040503
 3701  022302  051525  020105  047101
 3702  022310  044440  052116  051105
 3703  022316  052522  052120     000
 3704  022323     040  050040  020103  EH24:   .ASCIZ  '' PC      SP      PS     TEST#   TCCM    TCST''
 3705  022330  020040  020040  051440
 3706  022336  020120  020040  020040
 3707  022344  050040  020123  020040
 3708  022352  020040  042524  052123
 3709  022360  020043  020040  041524
 3710  022366  046503  020040  020040
 3711  022374  041524  052123     000
 3712          022402                  .EVEN
 3713  022402  001116  001176  001200  ET24:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3714  022410  001174  001166  001164
 3715  022416  000000                        000000
 3716
 3717
 3718  022420  047504  047111  020107  EM25:   .ASCIZ 'DOING A RESET INSTRUCTION DID NOT SET THE READY BIT''
 3719  022426  020101  042522  042523
 3720  022434  020124  047111  052123
 3721  022442  052522  052103  047511
 3722  022450  020116  044504  020104
 3723  022456  047516  020124  042523
 3724  022464  020124  044124  020105
```

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3725  022472  042522  042101  020131
3726  022500  044502  000124
3727  022504  020040  041520  020040  EH25:   .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST''
3728  022512  020040  020040  050123
3729  022520  020040  020040  020040
3730  022526  051520  020040  020040
3731  022534  052040  051505  021524
3732  022542  020040  052040  041503
3733  022550  020115  020040  052040
3734  022556  051503  000124
3735                                  .EVEN
3736  022562  001116  001176  001200  ET25:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3737  022570  001174  001166  001164
3738  022576  000000                        000000
3739
3740
3741  022600  042524  052123  042440  EM26:   .ASCIZ 'TEST EXECUTION IS OUT OF ORDER''
3742  022606  042530  052503  044524
3743  022614  047117  044440  020123
3744  022622  052517  020124  043117
3745  022630  047440  042122  051105
3746  022636     000
3747  022637     040  050040  020103  EH26:   .ASCIZ  ''  PC      SP      PS      TEST#  TEST# S/B''
3748  022644  020040  020040  051440
3749  022652  020120  020040  020040
3750  022660  050040  020123  020040
3751  022666  020040  042524  052123
3752  022674  020043  052040  051505
3753  022702  021524  051440  041057
3754  022710     000
3755        022712                    .EVEN
3756  022712  001116  001176  001200  ET26:   $ERRPC,$REG6,$REG7,$REG0,$REG5
3757  022720  001162  001174
3758  022724  000000                        000000
3759
3760
3761  022726  051105  047522  020122  EM27:   .ASCIZ 'ERROR TRYING TO READ A BLOCK MARK''
3762  022734  051124  044531  043516
3763  022742  052040  020117  042522
3764  022750  042101  040440  041040
3765  022756  047514  045503  046440
3766  022764  051101  000113
3767  022770  020040  041520  020040  EH27:   .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST''
3768  022776  020040  020040  050123
3769  023004  020040  020040  020040
3770  023012  051520  020040  020040
3771  023020  052040  051505  021524
3772  023026  020040  052040  041503
3773  023034  020115  020040  052040
3774  023042  051503  000124
3775                                  .EVEN
3776  023046  001116  001176  001200  ET27:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3777  023054  001174  001166  001164
3778  023062  000000                        000000
3779
3780
```

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 3781  023064  042522  042101  020131  EM30:   .ASCIZ 'READY WAS NOT SET AFTER BLOCK MARK WAS SHIFTED INTO THE WINDOW REGISTER''
 3782  023072  040527  020123  047516
 3783  023100  020124  042523  020124
 3784  023106  043101  042524  020122
 3785  023114  046102  041517  020113
 3786  023122  040515  045522  053440
 3787  023130  051501  051440  044510
 3788  023136  052106  042105  044440
 3789  023144  052116  020117  044124
 3790  023152  020105  044527  042116
 3791  023160  053517  051040  043505
 3792  023166  051511  042524  000122
 3793  023174  020040  041520  020040  EH30:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST''
 3794  023202  020040  020040  050123
 3795  023210  020040  020040  020040
 3796  023216  051520  020040  020040
 3797  023224  052040  051505  021524
 3798  023232  020040  052040  041503
 3799  023240  020115  020040  052040
 3800  023246  051503  000124
 3801                          .EVEN
 3802  023252  001116  001176  001200  ET30:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3803  023260  001174  001166  001164
 3804  023266  000000                          000000
 3805
 3806
 3807  023270  047111  047503  051122  EM31:   .ASCIZ ''INCORRECT BLOCK # IN DATA REG AFTER BLOCK MARK WAS DETECTED''
 3808  023276  041505  020124  046102
 3809  023304  041517  020113  020043
 3810  023312  047111  042040  052101
 3811  023320  020101  042522  020107
 3812  023326  043101  042524  020122
 3813  023334  046102  041517  020113
 3814  023342  040515  045522  053440
 3815  023350  051501  042040  052105
 3816  023356  041505  042524  000104
 3817  023364  020040  041520  020040  EH31:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST    TCDT  TCDT S/B''
 3818  023372  020040  020040  050123
 3819  023400  020040  020040  020040
 3820  023406  051520  020040  020040
 3821  023414  052040  051505  021524
 3822  023422  020040  052040  041503
 3823  023430  020115  020040  052040
 3824  023436  051503  020124  020040
 3825  023444  052040  042103  020124
 3826  023452  052040  042103  020124
 3827  023460  027523  000102
 3828                          .EVEN
 3829  023464  001116  001176  001200  ET31:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG4,$REG0
 3830  023472  001174  001166  001164
 3831  023500  001172  001162
 3832  023504  000000                          000000
 3833
 3834
 3835  023506  052115  020105  040527  EM32:   .ASCIZ 'MTE WAS NOT SET BY AN ILLEGAL MARK TRACK CODE''
 3836  023514  020123  047516  020124
```

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3837  023522  042523  020124  054502
3838  023530  040440  020116  046111
3839  023536  042514  040507  020114
3840  023544  040515  045522  052040
3841  023552  040522  045503  041440
3842  023560  042117  000105
3843  023564  020040  041520  020040  EH32:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3844  023572  020040  020040  050123
3845  023600  020040  020040  020040
3846  023606  051520  020040  020040
3847  023614  052040  051505  021524
3848  023622  020040  052040  041503
3849  023630  020115  020040  052040
3850  023636  051503  000124
3851                          .EVEN
3852  023642  001116  001176  001200  ET32:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3853  023650  001174  001166  001164
3854  023656  000000                          000000
3855
3856
3857  023660  052115  020105  042523  EM33:   .ASCIZ 'MTE SETTING FAILED TO SET THE 'ERROR' BIT''
3858  023666  052124  047111  020107
3859  023674  040506  046111  042105
3860  023702  052040  020117  042523
3861  023710  020124  044124  020105
3862  023716  042447  051122  051117
3863  023724  020047  044502  000124
3864  023732  020040  041520  020040  EH33:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3865  023740  020040  020040  050123
3866  023746  020040  020040  020040
3867  023754  051520  020040  020040
3868  023762  052040  051505  021524
3869  023770  020040  052040  041503
3870  023776  020115  020040  052040
3871  024004  051503  000124
3872                          .EVEN
3873  024010  001116  001176  001200  ET33:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3874  024016  001174  001166  001164
3875  024024  000000                          000000
3876
3877
3878  024026  047105  055104  041040  EM34:   .ASCIZ 'ENDZ BIT DID NOT SET WHEN ENDZ MARK DETECTED''
3879  024034  052111  042040  042111
3880  024042  047040  052117  051440
3881  024050  052105  053440  042510
3882  024056  020116  047105  055104
3883  024064  046440  051101  020113
3884  024072  042504  042524  052103
3885  024100  042105     000
3886  024103     040  050040  020103  EH34:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
3887  024110  020040  020040  051440
3888  024116  020120  020040  020040
3889  024124  050040  020123  020040
3890  024132  020040  042524  052123
3891  024140  020043  020040  041524
3892  024146  046503  020040  020040
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 3893  024154  041524  052123     000
 3894          024162                    .EVEN
 3895  024162  001116  001176  001200    ET34:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3896  024170  001174  001166  001164
 3897  024176  000000                            000000
 3898
 3899
 3900  024200  040504  040524  052040    EM35:   .ASCIZ  'DATA TRANSFERED INCORECTLY''
 3901  024206  040522  051516  042506
 3902  024214  042522  020104  047111
 3903  024222  047503  042522  052103
 3904  024230  054514     000
 3905  024233     040  050040  020103    EH35:   .ASCIZ  '' PC       SP       PS     TEST#    TCCM    TCST  DATA S/B DATA WAS''
 3906  024240  020040  020040  020040
 3907  024246  050123  020040  020040
 3908  024254  020040  051520  020040
 3909  024262  020040  042524  052123
 3910  024270  020043  020040  052040
 3911  024276  041503  020115  020040
 3912  024304  052040  051503  020124
 3913  024312  042040  052101  020101
 3914  024320  027523  020102  040504
 3915  024326  040524  053440  051501
 3916  024334     000
 3917          024336                    .EVEN
 3918  024336  001116  001176  001200    ET35:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,CRBUF,CRBUFA
 3919  024344  001174  001166  001164
 3920  024352  001270  001272
 3921  024356  040515  045522  052040    EM36:   .ASCIZ 'MARK TRACK CODE 55 WAS MISTAKEN FOR END ZONE''
 3922  024364  040522  045503  041440
 3923  024372  042117  020105  032465
 3924  024400  053440  051501  046440
 3925  024406  051511  040524  042513
 3926  024414  020116  047506  020122
 3927  024422  047105  020104  047532
 3928  024430  042516     000
 3929  024433     040  050040  020103    EH36:   .ASCIZ  '' PC       SP       PS     TEST#    TCCM    TCST''
 3930  024440  020040  020040  051440
 3931  024446  020120  020040  020040
 3932  024454  050040  020123  020040
 3933  024462  020040  042524  052123
 3934  024470  020043  020040  041524
 3935  024476  046503  020040  020040
 3936  024504  041524  052123     000
 3937          024512                    .EVEN
 3938  024512  001116  001176  001200    ET36:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 3939  024520  001174  001166  001164
 3940  024526  000000                            000000
 3941
 3942
 3943  024530  051105  047522  000122    EM37:   .ASCIZ 'ERROR''
 3944  024536  020040  041520  020040    EH37:   .ASCIZ  ''  PC       SP       PS     TEST#    TCCM    TCST''
 3945  024544  020040  020040  050123
 3946  024552  020040  020040  020040
 3947  024560  051520  020040  020040
 3948  024566  052040  051505  021524
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3949  024574  020040  052040  041503
3950  024602  020115  020040  052040
3951  024610  051503  000124
3952                                  .EVEN
3953  024614  001116  001176  001200  ET37:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3954  024622  001174  001166  001164
3955  024630  000000                        000000
3956
3957
3958  024632  042522  042101  020131  EM40:   .ASCIZ 'READY BIT DID NOT SET''
3959  024640  044502  020124  044504
3960  024646  020104  047516  020124
3961  024654  042523  000124
3962  024660  020040  041520  020040  EH40:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST''
3963  024666  020040  020040  050123
3964  024674  020040  020040  020040
3965  024702  051520  020040  020040
3966  024710  052040  051505  021524
3967  024716  020040  052040  041503
3968  024724  020115  020040  052040
3969  024732  051503  000124
3970                                  .EVEN
3971  024736  001116  001176  001200  ET40:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3972  024744  001174  001166  001164
3973  024752  000000                        000000
3974
3975
3976  024754  044124  020105  042447  EM41:   .ASCIZ 'THE 'ERROR' BIT SHOULD NOT HAVE SET''
3977  024762  051122  051117  020047
3978  024770  044502  020124  044123
3979  024776  052517  042114  047040
3980  025004  052117  044040  053101
3981  025012  020105  042523  000124
3982  025020  020040  041520  020040  EH41:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST''
3983  025026  020040  020040  050123
3984  025034  020040  020040  020040
3985  025042  051520  020040  020040
3986  025050  052040  051505  021524
3987  025056  020040  052040  041503
3988  025064  020115  020040  052040
3989  025072  051503  000124
3990                                  .EVEN
3991  025076  001116  001176  001200  ET41:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
3992  025104  001174  001166  001164
3993  025112  000000                        000000
3994
3995
3996  025114  042522  042101  020131  EM42:   .ASCIZ 'READY BIT SHOULD NOT HAVE SET''
3997  025122  044502  020124  044123
3998  025130  052517  042114  047040
3999  025136  052117  044040  053101
4000  025144  020105  042523  000124
4001  025152  020040  041520  020040  EH42:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST''
4002  025160  020040  020040  050123
4003  025166  020040  020040  020040
4004  025174  051520  020040  020040
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4005  025202  052040  051505  021524
4006  025210  020040  052040  041503
4007  025216  020115  020040  052040
4008  025224  051503  000124
4009                                  .EVEN
4010  025230  001116  001176  001200  ET42:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
4011  025236  001174  001166  001164
4012  025244  000000                        000000
4013
4014
4015  025246  047527  042122  052040  EM43:   .ASCIZ 'WORD TRANSFERED INCORRECTLY TO CORE'
4016  025254  040522  051516  042506
4017  025262  042522  020104  047111
4018  025270  047503  051122  041505
4019  025276  046124  020131  047524
4020  025304  041440  051117  000105
4021  025312  020040  041520  020040  EH43:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST    RBUF    RBUF S/B''
4022  025320  020040  020040  050123
4023  025326  020040  020040  020040
4024  025334  051520  020040  020040
4025  025342  052040  051505  021524
4026  025350  020040  052040  041503
4027  025356  020115  020040  052040
4028  025364  051503  020124  020040
4029  025372  051040  052502  020106
4030  025400  020040  051040  052502
4031  025406  020106  027523  000102
4032                                  .EVEN
4033  025414  001116  001176  001200  ET43:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF,$REG0
4034  025422  001174  001166  001164
4035  025430  036430  001162
4036  025434  000000                        000000
4037
4038
4039  025436  047527  042122  041440  EM44:   .ASCIZ 'WORD COUNT INCREMENTED IMPROPERLY'
4040  025444  052517  052116  044440
4041  025452  041516  042522  042515
4042  025460  052116  042105  044440
4043  025466  050115  047522  042520
4044  025474  046122  000131
4045  025500  020040  041520  020040  EH44:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST    TCWC    TCWC S/B''
4046  025506  020040  020040  050123
4047  025514  020040  020040  020040
4048  025522  051520  020040  020040
4049  025530  052040  051505  021524
4050  025536  020040  052040  041503
4051  025544  020115  020040  052040
4052  025552  051503  020124  020040
4053  025560  052040  053503  020103
4054  025566  020040  041524  041527
4055  025574  051440  041057     000
4056          025602
4057  025602  001116  001176  001200  ET44:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG4,$REG0
4058  025610  001174  001166  001164
4059  025616  001172  001162
4060  025622  000000                        000000
```

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 4061
 4062
 4063  025624  041524  040502  044440  EM45:   .ASCIZ 'TCBA INCREMENTED IMPROPERLY''
 4064  025632  041516  042522  042515
 4065  025640  052116  042105  044440
 4066  025646  050115  047522  042520
 4067  025654  046122  000131
 4068  025660  020040  041520  020040  EH45:   .ASCIZ '' PC      SP      PS      TEST#   TCCM    TCST    TCBA    TCBA S/B''
 4069  025666  020040  020040  050123
 4070  025674  020040  020040  020040
 4071  025702  051520  020040  020040
 4072  025710  052040  051505  021524
 4073  025716  020040  052040  041503
 4074  025724  020115  020040  052040
 4075  025732  051503  020124  020040
 4076  025740  052040  041103  020101
 4077  025746  020040  041524  040502
 4078  025754  051440  041057     000
 4079          025762                  .EVEN
 4080  025762  001116  001176  001200  ET45:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG4,RBUF+2
 4081  025770  001174  001166  001164
 4082  025776  001172  036432
 4083  026002  000000                  000000
 4084
 4085
 4086  026004  040520  044522  054524  EM46:   .ASCIZ 'PARITY ERROR''
 4087  026012  042440  051122  051117
 4088  026020     000
 4089  026021     040  050040  020103  EH46:   .ASCIZ '' PC      SP      PS      TEST#   TCCM    TCST''
 4090  026026  020040  020040  051440
 4091  026034  020120  020040  020040
 4092  026042  050040  020123  020040
 4093  026050  020040  042524  052123
 4094  026056  020043  020040  041524
 4095  026064  046503  020040  020040
 4096  026072  041524  052123     000
 4097          026100                  .EVEN
 4098  026100  001116  001176  001200  ET46:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 4099  026106  001174  001166  001164
 4100  026114  000000                  000000
 4101
 4102
 4103  026116  042522  042101  020131  EM47:   .ASCIZ 'READY DID NOT SET AFTER READING WAS COMPLETED''
 4104  026124  044504  020104  047516
 4105  026132  020124  042523  020124
 4106  026140  043101  042524  020122
 4107  026146  042522  042101  047111
 4108  026154  020107  040527  020123
 4109  026162  047503  050115  042514
 4110  026170  042524  000104
 4111  026174  020040  041520  020040  EH47:   .ASCIZ '' PC      SP      PS      TEST#   TCCM    TCST''
 4112  026202  020040  020040  050123
 4113  026210  020040  020040  020040
 4114  026216  051520  020040  020040
 4115  026224  052040  051505  021524
 4116  026232  020040  052040  041503
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 4117  026240  020115  020040  052040
 4118  026246  051503  000124
 4119                                  .EVEN
 4120  026252  001116  001176  001200  ET47:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 4121  026260  001174  001166  001164
 4122  026266  000000                        000000
 4123
 4124
 4125  026270  051124  047101  043123  EM50:   .ASCIZ 'TRANSFERED TOO MANY WORDS''
 4126  026276  051105  042105  052040
 4127  026304  047517  046440  047101
 4128  026312  020131  047527  042122
 4129  026320  000123
 4130  026322  020040  041520  020040  EH50:   .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST    RBUF+2''
 4131  026330  020040  020040  050123
 4132  026336  020040  020040  020040
 4133  026344  051520  020040  020040
 4134  026352  052040  051505  021524
 4135  026360  020040  052040  041503
 4136  026366  020115  020040  052040
 4137  026374  051503  020124  020040
 4138  026402  051040  052502  025506
 4139  026410  000062
 4140                                  .EVEN
 4141  026412  001116  001176  001200  ET50:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF+2
 4142  026420  001174  001166  001164
 4143  026426  036432
 4144  026430  000000                        000000
 4145
 4146
 4147  026432  041524  040502  041440  EM51:   .ASCIZ 'TCBA CONTAINS AN INCORRECT ADDRESS''
 4148  026440  047117  040524  047111
 4149  026446  020123  047101  044440
 4150  026454  041516  051117  042522
 4151  026462  052103  040440  042104
 4152  026470  042522  051523     000
 4153  026475     040  050040  020103  EH51:   .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST    TCBA    TCBA S/B''
 4154  026502  020040  020040  051440
 4155  026510  020120  020040  020040
 4156  026516  050040  020123  020040
 4157  026524  020040  042524  052123
 4158  026532  020043  020040  041524
 4159  026540  046503  020040  020040
 4160  026546  041524  052123  020040
 4161  026554  020040  041524  040502
 4162  026562  020040  052040  041103
 4163  026570  020101  027523  000102
 4164                                  .EVEN
 4165  026576  001116  001176  001200  ET51:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG3,RBUF+512
 4166  026604  001174  001166  001164
 4167  026612  001170  037142
 4168  026616  000000                        000000
 4169
 4170
 4171  026620  040520  051122  052111  EM52:   .ASCIZ 'PARRITY ERROR WAS NOT DETECTED''
 4172  026626  020131  051105  047522
```

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 026634  020122  040527  020123
 026642  047516  020124  042504
 026650  042524  052103  042105
 026656     000
 026657     040  050040  020103  EH52:   .ASCIZ  ''  PC       SP       PS       TEST#   TCCM    TCST    TCWC''
 026664  020040  020040  051440
 026672  020120  020040  020040
 026700  050040  020123  020040
 026706  020040  042524  052123
 026714  020043  020040  041524
 026722  046503  020040  020040
 026730  041524  052123  020040
 026736  020040  041524  041527
 026744     000
         026746                  .EVEN
 026746  001116  001176  001200  ET52:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
 026754  001174  001166  001164
 026762  001162
 026764  000000                          000000


 026766  040520  044522  054524  EM53:   .ASCIZ 'PARITY ERROR DID NOT SET THE 'ERROR' BIT''
 026774  042440  051122  051117
 027002  042040  042111  047040
 027010  052117  051440  052105
 027016  052040  042510  023440
 027024  051105  047522  023522
 027032  041040  052111     000
 027037     040  050040  020103  EH53:   .ASCIZ  ''  PC       SP       PS       TEST#   TCCM    TCST    TCWC''
 027044  020040  020040  051440
 027052  020120  020040  020040
 027060  050040  020123  020040
 027066  020040  042524  052123
 027074  020043  020040  041524
 027102  046503  020040  020040
 027110  041524  052123  020040
 027116  020040  041524  041527
 027124     000
         027126                  .EVEN
 027126  001116  001176  001200  ET53:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
 027134  001174  001166  001164
 027142  001162
 027144  000000                          000000


 027146  040520  044522  054524  EM54:   .ASCIZ 'PARITY ERROR BIT WILL NOT CLEAR''
 027154  042440  051122  051117
 027162  041040  052111  053440
 027170  046111  020114  047516
 027176  020124  046103  040505
 027204  000122
 027206  020040  041520  020040  EH54:   .ASCIZ  ''  PC       SP       PS       TEST#   TCCM    TCST    TCWC''
 027214  020040  020040  050123
 027222  020040  020040  020040
 027230  051520  020040  020040
 027236  052040  051505  021524
```

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4229  027244  020040  052040  041503
4230  027252  020115  020040  052040
4231  027260  051503  020124  020040
4232  027266  052040  053503  000103
4233                          .EVEN
4234  027274  001116  001176  001200  ET54:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
4235  027302  001174  001166  001164
4236  027310  001162
4237  027312  000000                  000000
4238
4239
4240  027314  046102  041517  020113  EM55:   .ASCIZ 'BLOCK MISS SHOULD NOT HAVE SET''
4241  027322  044515  051523  051440
4242  027330  047510  046125  020104
4243  027336  047516  020124  040510
4244  027344  042526  051440  052105
4245  027352     000
4246  027353     040  050040  020103  EH55:   .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST    TCWC''
4247  027360  020040  020040  051440
4248  027366  020120  020040  020040
4249  027374  050040  020123  020040
4250  027402  020040  042524  052123
4251  027410  020043  020040  041524
4252  027416  046503  020040  020040
4253  027424  041524  052123  020040
4254  027432  020040  041524  041527
4255  027440     000
4256          027442                  .EVEN
4257  027442  001116  001176  001200  ET55:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
4258  027450  001174  001166  001164
4259  027456  001162
4260  027460  000000                  000000
4261
4262
4263  027462  042122  052101  020101  EM56:   .ASCIZ 'RDATA WAS ISSUED BUT BLOCK MISS FAILED TO SET''
4264  027470  040527  020123  051511
4265  027476  052523  042105  041040
4266  027504  052125  041040  047514
4267  027512  045503  046440  051511
4268  027520  020123  040506  046111
4269  027526  042105  052040  020117
4270  027534  042523  000124
4271  027540  020040  041520  020040  EH56:   .ASCIZ  ''  PC      SP      PS      TEST#   TCCM    TCST    TCWC''
4272  027546  020040  020040  050123
4273  027554  020040  020040  020040
4274  027562  051520  020040  020040
4275  027570  052040  051505  021524
4276  027576  020040  052040  041503
4277  027604  020115  020040  052040
4278  027612  051503  020124  020040
4279  027620  052040  053503  000103
4280                          .EVEN
4281  027626  001116  001176  001200  ET56:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
4282  027634  001174  001166  001164
4283  027642  001162
4284  027644  000000                  000000
```

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                                                                    G 7
 4285
 4286
 4287  027646  046102  041517  020113  EM57:   .ASCIZ 'BLOCK MISS SETTING DID NOT SET THE 'ERROR' BIT''
 4288  027654  044515  051523  051440
 4289  027662  052105  044524  043516
 4290  027670  042040  042111  047040
 4291  027676  052117  051440  052105
 4292  027704  052040  042510  023440
 4293  027712  051105  047522  023522
 4294  027720  041040  052111     000
 4295  027725     040  050040  020103  EH57:   .ASCIZ '' PC      SP      PS      TEST#   TCCM    TCST    TCWC''
 4296  027732  020040  020040  051440
 4297  027740  020120  020040  020040
 4298  027746  050040  020123  020040
 4299  027754  020040  042524  052123
 4300  027762  020043  020040  041524
 4301  027770  046503  020040  020040
 4302  027776  041524  052123  020040
 4303  030004  020040  041524  041527
 4304  030012     000
 4305          030014                  .EVEN
 4306  030014  001116  001176  001200  ET57:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
 4307  030022  001174  001166  001164
 4308  030030  001162
 4309  030032  000000                          000000
 4310
 4311
 4312  030034  046103  040505  044522  EM60:   .ASCIZ ''CLEARING ERROR BIT FAILED TO CLEAR BLOCK MISS''
 4313  030042  043516  042440  051122
 4314  030050  051117  041040  052111
 4315  030056  043040  044501  042514
 4316  030064  020104  047524  041440
 4317  030072  042514  051101  041040
 4318  030100  047514  045503  046440
 4319  030106  051511  000123
 4320  030112  020040  041520  020040  EH60:   .ASCIZ '' PC      SP      PS      TEST#   TCCM    TCST    TCWC''
 4321  030120  020040  020040  050123
 4322  030126  020040  020040  020040
 4323  030134  051520  020040  020040
 4324  030142  052040  051505  021524
 4325  030150  020040  052040  041503
 4326  030156  020115  020040  052040
 4327  030164  051503  020124  020040
 4328  030172  052040  053503  000103
 4329                          .EVEN
 4330  030200  001116  001176  001200  ET60:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
 4331  030206  001174  001166  001164
 4332  030214  001162
 4333  030216  000000                          000000
 4334
 4335
 4336  030220  047506  053522  051101  EM61:   .ASCIZ 'FORWARD CHECKSUM WAS WRITTEN INCORRECTLY INTO CORE''
 4337  030226  020104  044103  041505
 4338  030234  051513  046525  053440
 4339  030242  051501  053440  044522
 4340  030250  052124  047105  044440
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 4341  030256  041516  051117  042522
 4342  030264  052103  054514  044440
 4343  030272  052116  020117  047503
 4344  030300  042522     000
 4345  030303     040  050040  020103  EH61:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST   RBUF+514 TCWC''
 4346  030310  020040  020040  051440
 4347  030316  020120  020040  020040
 4348  030324  050040  020123  020040
 4349  030332  020040  042524  052123
 4350  030340  020043  020040  041524
 4351  030346  046503  020040  020040
 4352  030354  041524  052123  020040
 4353  030362  051040  052502  025506
 4354  030370  030465  020064  041524
 4355  030376  041527     000
 4356          030402                  .EVEN
 4357  030402  001116  001176  001200  ET61:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF+514,$REG0
 4358  030410  001174  001166  001164
 4359  030416  037144  001162
 4360  030422  000000                  000000
 4361
 4362
 4363  030424  041524  041527  053440  EM62:   .ASCIZ 'TCWC WAS MODIFIED DURRING RAL''
 4364  030432  051501  046440  042117
 4365  030440  043111  042511  020104
 4366  030446  052504  051122  047111
 4367  030454  020107  040522  000114
 4368  030462  020040  041520  020040  EH62:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST    TCWC''
 4369  030470  020040  020040  050123
 4370  030476  020040  020040  020040
 4371  030504  051520  020040  020040
 4372  030512  052040  051505  021524
 4373  030520  020040  052040  041503
 4374  030526  020115  020040  052040
 4375  030534  051503  020124  020040
 4376  030542  052040  053503  000103
 4377                          .EVEN
 4378  030550  001116  001176  001200  ET62:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCWC
 4379  030556  001174  001166  001164
 4380  030564  001242
 4381  030566  000000                  000000
 4382
 4383
 4384  030570  041524  040502  053440  EM63:   .ASCIZ 'TCBA WAS MODIFIED DURRING RAL''
 4385  030576  051501  046440  042117
 4386  030604  043111  042511  020104
 4387  030612  052504  051122  047111
 4388  030620  020107  040522  000114
 4389  030626  020040  041520  020040  EH63:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST    TCBA    TCBA S/B''
 4390  030634  020040  020040  050123
 4391  030642  020040  020040  020040
 4392  030650  051520  020040  020040
 4393  030656  052040  051505  021524
 4394  030664  020040  052040  041503
 4395  030672  020115  020040  052040
 4396  030700  051503  020124  020040
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                                                                I 7
 4397  030706  052040  041103  020101
 4398  030714  020040  052040  041103
 4399  030722  020101  027523  000102
 4400                                  .EVEN
 4401  030730  001116  001176  001200  ET63:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG3
 4402  030736  001174  001166  001164
 4403  030744  001170
 4404  030746  000000                        000000
 4405
 4406
 4407  030750  040504  040524  046440  EM64:   .ASCIZ 'DATA MISS DID NOT SET''
 4408  030756  051511  020123  044504
 4409  030764  020104  047516  020124
 4410  030772  042523  000124
 4411  030776  020040  041520  020040  EH64:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST    TCWC''
 4412  031004  020040  020040  050123
 4413  031012  020040  020040  020040
 4414  031020  051520  020040  020040
 4415  031026  052040  051505  021524
 4416  031034  020040  052040  041503
 4417  031042  020115  020040  052040
 4418  031050  051503  020124  020040
 4419  031056  052040  053503  000103
 4420                                  .EVEN
 4421  031064  001116  001176  001200  ET64:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG0
 4422  031072  001174  001166  001164
 4423  031100  001162
 4424  031102  000000                        000000
 4425
 4426
 4427  031104  040504  040524  046440  EM65:   .ASCIZ 'DATA MISS SETTING DID NOT CAUSE THE 'ERROR' BIT TO SET''
 4428  031112  051511  020123  042523
 4429  031120  052124  047111  020107
 4430  031126  044504  020104  047516
 4431  031134  020124  040503  051525
 4432  031142  020105  044124  020105
 4433  031150  042447  051122  051117
 4434  031156  020047  044502  020124
 4435  031164  047524  051440  052105
 4436  031172     000
 4437  031173     040  050040  020103  EH65:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
 4438  031200  020040  020040  051440
 4439  031206  020120  020040  020040
 4440  031214  050040  020123  020040
 4441  031222  020040  042524  052123
 4442  031230  020043  020040  041524
 4443  031236  046503  020040  020040
 4444  031244  041524  052123     000
 4445          031252                  .EVEN
 4446  031252  001116  001176  001200  ET65:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 4447  031260  001174  001166  001164
 4448  031266  000000                        000000
 4449
 4450
 4451  031270  046103  040505  044522  EM66:   .ASCIZ ''CLEARING THE 'ERROR' BIT DID NOT CAUSE DATA MISS TO BE CLEARED''
 4452  031276  043516  052040  042510
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 4453  031304  023440  051105  047522
 4454  031312  023522  041040  052111
 4455  031320  042040  042111  047040
 4456  031326  052117  041440  052501
 4457  031334  042523  042040  052101
 4458  031342  020101  044515  051523
 4459  031350  052040  020117  042502
 4460  031356  041440  042514  051101
 4461  031364  042105     000
 4462  031367     040  050040  020103  EH66:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
 4463  031374  020040  020040  051440
 4464  031402  020120  020040  020040
 4465  031410  050040  020123  020040
 4466  031416  020040  042524  052123
 4467  031424  020043  020040  041524
 4468  031432  046503  020040  020040
 4469  031440  041524  052123     000
 4470          031446                  .EVEN
 4471  031446  001116  001176  001200  ET66:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 4472  031454  001174  001166  001164
 4473  031462  000000                          000000
 4474
 4475
 4476  031464  042522  042101  020131  EM67:   .ASCIZ 'READY BIT WAS NOT SET AFTER THE DATA WAS WRITTEN''
 4477  031472  044502  020124  040527
 4478  031500  020123  047516  020124
 4479  031506  042523  020124  043101
 4480  031514  042524  020122  044124
 4481  031522  020105  040504  040524
 4482  031530  053440  051501  053440
 4483  031536  044522  052124  047105
 4484  031544     000
 4485  031545     040  050040  020103  EH67:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST''
 4486  031552  020040  020040  051440
 4487  031560  020120  020040  020040
 4488  031566  050040  020123  020040
 4489  031574  020040  042524  052123
 4490  031602  020043  020040  041524
 4491  031610  046503  020040  020040
 4492  031616  041524  052123     000
 4493          031624                  .EVEN
 4494  031624  001116  001176  001200  ET67:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 4495  031632  001174  001166  001164
 4496  031640  000000                          000000
 4497
 4498
 4499  031642  044124  020105  042522  EM70:   .ASCIZ 'THE REVERSE CHECKSUM WAS WRITTEN INCORRECTLY''
 4500  031650  042526  051522  020105
 4501  031656  044103  041505  051513
 4502  031664  046525  053440  051501
 4503  031672  053440  044522  052124
 4504  031700  047105  044440  041516
 4505  031706  051117  042522  052103
 4506  031714  054514     000
 4507  031717     040  050040  020103  EH70:   .ASCIZ  '' PC      SP      PS      TEST#   TCCM    TCST    RBUF+512 RBUF+512 S/B''
 4508  031724  020040  020040  051440
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 4509  031732  020120  020040  020040
 4510  031740  050040  020123  020040
 4511  031746  020040  042524  052123
 4512  031754  020043  020040  041524
 4513  031762  046503  020040  020040
 4514  031770  041524  052123  020040
 4515  031776  051040  052502  025506
 4516  032004  030465  020062  041122
 4517  032012  043125  032453  031061
 4518  032020  051440  041057     000
 4519          032026                  .EVEN
 4520  032026  001116  001176  001200  ET70:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,RBUF+512,$REG0
 4521  032034  001174  001166  001164
 4522  032042  037142  001162
 4523  032046  000000                          000000
 4524
 4525
 4526  032050  047527  042122  041440  EM71:   .ASCIZ 'WORD COUNT MODIFIED DURRING WRITE ALL''
 4527  032056  052517  052116  046440
 4528  032064  042117  043111  042511
 4529  032072  020104  052504  051122
 4530  032100  047111  020107  051127
 4531  032106  052111  020105  046101
 4532  032114  000114
 4533  032116  020040  041520  020040  EH71:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST    TCWC''
 4534  032124  020040  020040  050123
 4535  032132  020040  020040  020040
 4536  032140  051520  020040  020040
 4537  032146  052040  051505  021524
 4538  032154  020040  052040  041503
 4539  032162  020115  020040  052040
 4540  032170  051503  020124  020040
 4541  032176  052040  053503  000103
 4542                          .EVEN
 4543  032204  001116  001176  001200  ET71:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,TCWC
 4544  032212  001174  001166  001164
 4545  032220  001242
 4546  032222  000000                          000000
 4547
 4548
 4549  032224  041524  040502  046440  EM72:   .ASCIZ 'TCBA MODIFIED DURRING WRITE ALL''
 4550  032232  042117  043111  042511
 4551  032240  020104  052504  051122
 4552  032246  047111  020107  051127
 4553  032254  052111  020105  046101
 4554  032262  000114
 4555  032264  020040  041520  020040  EH72:   .ASCIZ  ''  PC      SP      PS     TEST#   TCCM    TCST    TCBA''
 4556  032272  020040  020040  050123
 4557  032300  020040  020040  020040
 4558  032306  051520  020040  020040
 4559  032314  052040  051505  021524
 4560  032322  020040  052040  041503
 4561  032330  020115  020040  052040
 4562  032336  051503  020124  020040
 4563  032344  052040  041103  000101
 4564                          .EVEN
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 4565  032352  001116  001176  001200  ET72:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1,$REG3
 4566  032360  001174  001166  001164
 4567  032366  001170
 4568  032370  000000                          000000
 4569
 4570
 4571  032372  051523  020124  044504  EM73:   .ASCIZ "SST DID NOT CAUSE A SELECT ERROR"
 4572  032400  020104  047516  020124
 4573  032406  040503  051525  020105
 4574  032414  020101  042523  042514
 4575  032422  052103  042440  051122
 4576  032430  051117     000
 4577  032433     040  050040  020103  EH73:   .ASCIZ  "  PC      SP      PS     TEST#   TCCM    TCST"
 4578  032440  020040  020040  051440
 4579  032446  020120  020040  020040
 4580  032454  050040  020123  020040
 4581  032462  020040  042524  052123
 4582  032470  020043  020040  041524
 4583  032476  046503  020040  020040
 4584  032504  041524  052123     000
 4585          032512                  .EVEN
 4586  032512  001116  001176  001200  ET73:   $ERRPC,$REG6,$REG7,$REG5,$REG2,$REG1
 4587  032520  001174  001166  001164
 4588  032526  000000                          000000
 4589
 4590  032530  051124  050101  042520  EM74:   .ASCIZ  "TRAPPED TO LOC 4 ATTEMPTING TO ACCESS TCCM"
 4591  032536  020104  047524  046040
 4592  032544  041517  032040  040440
 4593  032552  052124  046505  052120
 4594  032560  047111  020107  047524
 4595  032566  040440  041503  051505
 4596  032574  020123  041524  046503
 4597  032602     000
 4598  032603     040  050040  020103  EH74:   .ASCIZ "  PC      SP      PS     TEST#"
 4599  032610  020040  020040  051440
 4600  032616  020120  020040  020040
 4601  032624  050040  020123  020040
 4602  032632  020040  042524  052123
 4603  032640  000043
 4604                                  .EVEN
 4605  032642  001116  001176  001200  ET74:   $ERRPC,$REG6,$REG7,$REG5
 4606  032650  001174
 4607  032652  000000                          000000
 4608  032654  051124  050101  042520  EM75:   .ASCIZ  "TRAPPED TO LOC 4 ATTEMPTING TO ACCESS TCST"
 4609  032662  020104  047524  046040
 4610  032670  041517  032040  040440
 4611  032676  052124  046505  052120
 4612  032704  047111  020107  047524
 4613  032712  040440  041503  051505
 4614  032720  020123  041524  052123
 4615  032726     000
 4616  032727     040  050040  020103  EH75:   .ASCIZ "  PC      SP      PS     TEST#"
 4617  032734  020040  020040  051440
 4618  032742  020120  020040  020040
 4619  032750  050040  020123  020040
 4620  032756  020040  042524  052123
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 4621  032764  000043
 4622                                  .EVEN
 4623  032766  001116  001176  001200  ET75:   $ERRPC,$REG6,$REG7,$REG5
 4624  032774  001174
 4625  032776  000000                          000000
 4626  033000  051124  050101  042520  EM76:   .ASCIZ  'TRAPPED TO LOC 4 ATTEMPTING TO ACCESS TCWC'
 4627  033006  020104  047524  046040
 4628  033014  041517  032040  040440
 4629  033022  052124  046505  052120
 4630  033030  047111  020107  047524
 4631  033036  040440  041503  051505
 4632  033044  020123  041524  041527
 4633  033052     000
 4634  033053     040  050040  020103  EH76:   .ASCIZ '' PC      SP      PS      TEST#''
 4635  033060  020040  020040  051440
 4636  033066  020120  020040  020040
 4637  033074  050040  020123  020040
 4638  033102  020040  042524  052123
 4639  033110  000043
 4640                                  .EVEN
 4641  033112  001116  001176  001200  ET76:   $ERRPC,$REG6,$REG7,$REG5
 4642  033120  001174
 4643  033122  000000                          000000
 4644  033124  051124  050101  042520  EM77:   .ASCIZ  'TRAPPED TO LOC 4 ATTEMPTING TO ACCESS TCBA'
 4645  033132  020104  047524  046040
 4646  033140  041517  032040  040440
 4647  033146  052124  046505  052120
 4648  033154  047111  020107  047524
 4649  033162  040440  041503  051505
 4650  033170  020123  041524  040502
 4651  033176     000
 4652  033177     040  050040  020103  EH77:   .ASCIZ '' PC      SP      PS      TEST#''
 4653  033204  020040  020040  051440
 4654  033212  020120  020040  020040
 4655  033220  050040  020123  020040
 4656  033226  020040  042524  052123
 4657  033234  000043
 4658                                  .EVEN
 4659  033236  001116  001176  001200  ET77:   $ERRPC,$REG6,$REG7,$REG5
 4660  033244  001174
 4661  033246  000000                          000000
 4662  033250                          MTKC10:
 4663  033250                                  C10     V7,V2,V7,V2,V7,V2
 4664  033250     034     010     074          .BYTE   0!V7,0!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 10.
 4665  033253     010     034     010
 4666  033256                          MTKER:
 4667  033256                                  EMTE
 4668  033256     040     040     040          .BYTE   I,I,I,0,0,I
 4669  033261     000     000     040
 4670  033264                          MTKEND:
 4671  033264                                  C22
 4672  033264     000     040     000          .BYTE   0,I,0,0,I,0             ;MTK CODE 22. FWD END ZONE.
 4673  033267     000     040     000
 4674  033272                          MTK55:
 4675  033272                                  C55
 4676  033272     040     000     040          .BYTE   I,0,I,I,0,I             ;MTK CODE 55. REV END ZONE MARK.
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4677  033275  040  000  040
4678  033300                    MTK5P:
4679  033300                          C10     V0,V6,V6,V6,V6,V6
4680  033300  000  030  070            .BYTE   0!V0,0!V6,I!V6,0!V6,0!V6,0!V6   ;MTK CODE 10.
4681  033303  030  030  030
4682  033306                    MTK7:
4683  033306                          C25
4684  033306  000  040  000            .BYTE   0,I,0,I,0,I                     ;MTK CODE 25. EXTENSION MARK.
4685  033311  040  000  040
4686  033314                          C25
4687  033314  000  040  000            .BYTE   0,I,0,I,0,I                     ;MTK CODE 25. EXTENSION MARK.
4688  033317  040  000  040
4689  033322                          C26     V0,V5,V2,V5,V2,V5
4690  033322  000  064  010            .BYTE   0!V0,I!V5,0!V2,I!V5,I!V2,0!V5   ;FWD BLOCK MARK.
4691  033325  064  050  024
4692  033330                          C32     V0,V5,V5,V5,V5,V5
4693  033330  000  064  064            .BYTE   0!V0,I!V5,I!V5,0!V5,I!V5,0!V5   ;REV GUARD.
4694  033333  024  064  024
4695  033336                    MTK5:
4696  033336                          C10     V0,V6,V6,V6,V6,V6
4697  033336  000  030  070            .BYTE   0!V0,0!V6,I!V6,0!V6,0!V6,0!V6   ;MTK CODE 10.
4698  033341  030  030  030
4699  033344                    MTK7A:
4700  033344                          C10     V0,V0,V0,V0,V0,V0
4701  033344  000  000  040            .BYTE   0!V0,0!V0,I!V0,0!V0,0!V0,0!V0   ;MTK CODE 10.
4702  033347  000  000  000
4703  033352                    MTK7B:
4704  033352                          C10     V0,V5,V0,V5,V0,V5
4705  033352  000  024  040            .BYTE   0!V0,0!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 10.
4706  033355  024  000  024
4707  033360                    MTKVAR:
4708  033360                          C10     V7,V2,V7,V2,V7,V2
4709  033360  034  010  074            .BYTE   0!V7,0!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 10.
4710  033363  010  034  010
4711          000176                    .REPT   126.
4712                                    C70     V0,V5,V0,V5,V0,V5
4713                                    C70     V7,V2,V7,V2,V7,V2
4714                                    .ENDR
4715  033366                          C70     V0,V5,V0,V5,V0,V5
4716  033366  040  064  040            .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4717  033371  024  000  024
4718  033374                          C70     V7,V2,V7,V2,V7,V2
4719  033374  074  050  074            .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4720  033377  010  034  010
4721  033402                          C70     V0,V5,V0,V5,V0,V5
4722  033402  040  064  040            .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4723  033405  024  000  024
4724  033410                          C70     V7,V2,V7,V2,V7,V2
4725  033410  074  050  074            .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4726  033413  010  034  010
4727  033416                          C70     V0,V5,V0,V5,V0,V5
4728  033416  040  064  040            .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4729  033421  024  000  024
4730  033424                          C70     V7,V2,V7,V2,V7,V2
4731  033424  074  050  074            .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4732  033427  010  034  010
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4733  033432                          C70     V0,V5,V0,V5,V0,V5
4734  033432  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4735  033435  024     000     024
4736  033440                          C70     V7,V2,V7,V2,V7,V2
4737  033440  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4738  033443  010     034     010
4739  033446                          C70     V0,V5,V0,V5,V0,V5
4740  033446  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4741  033451  024     000     024
4742  033454                          C70     V7,V2,V7,V2,V7,V2
4743  033454  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4744  033457  010     034     010
4745  033462                          C70     V0,V5,V0,V5,V0,V5
4746  033462  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4747  033465  024     000     024
4748  033470                          C70     V7,V2,V7,V2,V7,V2
4749  033470  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4750  033473  010     034     010
4751  033476                          C70     V0,V5,V0,V5,V0,V5
4752  033476  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4753  033501  024     000     024
4754  033504                          C70     V7,V2,V7,V2,V7,V2
4755  033504  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4756  033507  010     034     010
4757  033512                          C70     V0,V5,V0,V5,V0,V5
4758  033512  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4759  033515  024     000     024
4760  033520                          C70     V7,V2,V7,V2,V7,V2
4761  033520  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4762  033523  010     034     010
4763  033526                          C70     V0,V5,V0,V5,V0,V5
4764  033526  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4765  033531  024     000     024
4766  033534                          C70     V7,V2,V7,V2,V7,V2
4767  033534  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4768  033537  010     034     010
4769  033542                          C70     V0,V5,V0,V5,V0,V5
4770  033542  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4771  033545  024     000     024
4772  033550                          C70     V7,V2,V7,V2,V7,V2
4773  033550  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4774  033553  010     034     010
4775  033556                          C70     V0,V5,V0,V5,V0,V5
4776  033556  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4777  033561  024     000     024
4778  033564                          C70     V7,V2,V7,V2,V7,V2
4779  033564  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4780  033567  010     034     010
4781  033572                          C70     V0,V5,V0,V5,V0,V5
4782  033572  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4783  033575  024     000     024
4784  033600                          C70     V7,V2,V7,V2,V7,V2
4785  033600  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4786  033603  010     034     010
4787  033606                          C70     V0,V5,V0,V5,V0,V5
4788  033606  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
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 4789  033611      024       000       024
 4790  033614
 4791  033614      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4792  033617      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4793  033622
 4794  033622      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4795  033625      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4796  033630
 4797  033630      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4798  033633      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4799  033636
 4800  033636      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4801  033641      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4802  033644
 4803  033644      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4804  033647      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4805  033652
 4806  033652      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4807  033655      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4808  033660
 4809  033660      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4810  033663      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4811  033666
 4812  033666      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4813  033671      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4814  033674
 4815  033674      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4816  033677      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4817  033702
 4818  033702      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4819  033705      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4820  033710
 4821  033710      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4822  033713      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4823  033716
 4824  033716      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4825  033721      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4826  033724
 4827  033724      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4828  033727      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4829  033732
 4830  033732      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4831  033735      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4832  033740
 4833  033740      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4834  033743      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4835  033746
 4836  033746      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4837  033751      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4838  033754
 4839  033754      074       050       074          C70     V7,V2,V7,V2,V7,V2
 4840  033757      010       034       010          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4841  033762
 4842  033762      040       064       040          C70     V0,V5,V0,V5,V0,V5
 4843  033765      024       000       024          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4844  033770                                       C70     V7,V2,V7,V2,V7,V2
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 4845  033770  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4846  033773  010  034  010
 4847  033776                       C70     V0,V5,V0,V5,V0,V5
 4848  033776  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4849  034001  024  000  024
 4850  034004                       C70     V7,V2,V7,V2,V7,V2
 4851  034004  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4852  034007  010  034  010
 4853  034012                       C70     V0,V5,V0,V5,V0,V5
 4854  034012  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4855  034015  024  000  024
 4856  034020                       C70     V7,V2,V7,V2,V7,V2
 4857  034020  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4858  034023  010  034  010
 4859  034026                       C70     V0,V5,V0,V5,V0,V5
 4860  034026  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4861  034031  024  000  024
 4862  034034                       C70     V7,V2,V7,V2,V7,V2
 4863  034034  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4864  034037  010  034  010
 4865  034042                       C70     V0,V5,V0,V5,V0,V5
 4866  034042  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4867  034045  024  000  024
 4868  034050                       C70     V7,V2,V7,V2,V7,V2
 4869  034050  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4870  034053  010  034  010
 4871  034056                       C70     V0,V5,V0,V5,V0,V5
 4872  034056  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4873  034061  024  000  024
 4874  034064                       C70     V7,V2,V7,V2,V7,V2
 4875  034064  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4876  034067  010  034  010
 4877  034072                       C70     V0,V5,V0,V5,V0,V5
 4878  034072  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4879  034075  024  000  024
 4880  034100                       C70     V7,V2,V7,V2,V7,V2
 4881  034100  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4882  034103  010  034  010
 4883  034106                       C70     V0,V5,V0,V5,V0,V5
 4884  034106  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4885  034111  024  000  024
 4886  034114                       C70     V7,V2,V7,V2,V7,V2
 4887  034114  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4888  034117  010  034  010
 4889  034122                       C70     V0,V5,V0,V5,V0,V5
 4890  034122  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4891  034125  024  000  024
 4892  034130                       C70     V7,V2,V7,V2,V7,V2
 4893  034130  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4894  034133  010  034  010
 4895  034136                       C70     V0,V5,V0,V5,V0,V5
 4896  034136  040  064  040          .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4897  034141  024  000  024
 4898  034144                       C70     V7,V2,V7,V2,V7,V2
 4899  034144  074  050  074          .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4900  034147  010  034  010
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4901  034152                          C70     V0,V5,V0,V5,V0,V5
4902  034152  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4903  034155  024     000     024
4904  034160                          C70     V7,V2,V7,V2,V7,V2
4905  034160  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4906  034163  010     034     010
4907  034166                          C70     V0,V5,V0,V5,V0,V5
4908  034166  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4909  034171  024     000     024
4910  034174                          C70     V7,V2,V7,V2,V7,V2
4911  034174  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4912  034177  010     034     010
4913  034202                          C70     V0,V5,V0,V5,V0,V5
4914  034202  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4915  034205  024     000     024
4916  034210                          C70     V7,V2,V7,V2,V7,V2
4917  034210  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4918  034213  010     034     010
4919  034216                          C70     V0,V5,V0,V5,V0,V5
4920  034216  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4921  034221  024     000     024
4922  034224                          C70     V7,V2,V7,V2,V7,V2
4923  034224  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4924  034227  010     034     010
4925  034232                          C70     V0,V5,V0,V5,V0,V5
4926  034232  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4927  034235  024     000     024
4928  034240                          C70     V7,V2,V7,V2,V7,V2
4929  034240  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4930  034243  010     034     010
4931  034246                          C70     V0,V5,V0,V5,V0,V5
4932  034246  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4933  034251  024     000     024
4934  034254                          C70     V7,V2,V7,V2,V7,V2
4935  034254  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4936  034257  010     034     010
4937  034262                          C70     V0,V5,V0,V5,V0,V5
4938  034262  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4939  034265  024     000     024
4940  034270                          C70     V7,V2,V7,V2,V7,V2
4941  034270  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4942  034273  010     034     010
4943  034276                          C70     V0,V5,V0,V5,V0,V5
4944  034276  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4945  034301  024     000     024
4946  034304                          C70     V7,V2,V7,V2,V7,V2
4947  034304  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4948  034307  010     034     010
4949  034312                          C70     V0,V5,V0,V5,V0,V5
4950  034312  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
4951  034315  024     000     024
4952  034320                          C70     V7,V2,V7,V2,V7,V2
4953  034320  074     050     074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
4954  034323  010     034     010
4955  034326                          C70     V0,V5,V0,V5,V0,V5
4956  034326  040     064     040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
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 4957  034331  024  000  024
 4958  034334                    C70     V7,V2,V7,V2,V7,V2
 4959  034334  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4960  034337  010  034  010
 4961  034342                    C70     V0,V5,V0,V5,V0,V5
 4962  034342  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4963  034345  024  000  024
 4964  034350                    C70     V7,V2,V7,V2,V7,V2
 4965  034350  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4966  034353  010  034  010
 4967  034356                    C70     V0,V5,V0,V5,V0,V5
 4968  034356  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4969  034361  024  000  024
 4970  034364                    C70     V7,V2,V7,V2,V7,V2
 4971  034364  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4972  034367  010  034  010
 4973  034372                    C70     V0,V5,V0,V5,V0,V5
 4974  034372  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4975  034375  024  000  024
 4976  034400                    C70     V7,V2,V7,V2,V7,V2
 4977  034400  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4978  034403  010  034  010
 4979  034406                    C70     V0,V5,V0,V5,V0,V5
 4980  034406  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4981  034411  024  000  024
 4982  034414                    C70     V7,V2,V7,V2,V7,V2
 4983  034414  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4984  034417  010  034  010
 4985  034422                    C70     V0,V5,V0,V5,V0,V5
 4986  034422  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4987  034425  024  000  024
 4988  034430                    C70     V7,V2,V7,V2,V7,V2
 4989  034430  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4990  034433  010  034  010
 4991  034436                    C70     V0,V5,V0,V5,V0,V5
 4992  034436  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4993  034441  024  000  024
 4994  034444                    C70     V7,V2,V7,V2,V7,V2
 4995  034444  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 4996  034447  010  034  010
 4997  034452                    C70     V0,V5,V0,V5,V0,V5
 4998  034452  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 4999  034455  024  000  024
 5000  034460                    C70     V7,V2,V7,V2,V7,V2
 5001  034460  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5002  034463  010  034  010
 5003  034466                    C70     V0,V5,V0,V5,V0,V5
 5004  034466  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5005  034471  024  000  024
 5006  034474                    C70     V7,V2,V7,V2,V7,V2
 5007  034474  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5008  034477  010  034  010
 5009  034502                    C70     V0,V5,V0,V5,V0,V5
 5010  034502  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5011  034505  024  000  024
 5012  034510                    C70     V7,V2,V7,V2,V7,V2
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5013  034510  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5014  034513  010  034  010
5015  034516                      C70     V0,V5,V0,V5,V0,V5
5016  034516  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5017  034521  024  000  024
5018  034524                      C70     V7,V2,V7,V2,V7,V2
5019  034524  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5020  034527  010  034  010
5021  034532                      C70     V0,V5,V0,V5,V0,V5
5022  034532  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5023  034535  024  000  024
5024  034540                      C70     V7,V2,V7,V2,V7,V2
5025  034540  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5026  034543  010  034  010
5027  034546                      C70     V0,V5,V0,V5,V0,V5
5028  034546  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5029  034551  024  000  024
5030  034554                      C70     V7,V2,V7,V2,V7,V2
5031  034554  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5032  034557  010  034  010
5033  034562                      C70     V0,V5,V0,V5,V0,V5
5034  034562  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5035  034565  024  000  024
5036  034570                      C70     V7,V2,V7,V2,V7,V2
5037  034570  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5038  034573  010  034  010
5039  034576                      C70     V0,V5,V0,V5,V0,V5
5040  034576  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5041  034601  024  000  024
5042  034604                      C70     V7,V2,V7,V2,V7,V2
5043  034604  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5044  034607  010  034  010
5045  034612                      C70     V0,V5,V0,V5,V0,V5
5046  034612  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5047  034615  024  000  024
5048  034620                      C70     V7,V2,V7,V2,V7,V2
5049  034620  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5050  034623  010  034  010
5051  034626                      C70     V0,V5,V0,V5,V0,V5
5052  034626  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5053  034631  024  000  024
5054  034634                      C70     V7,V2,V7,V2,V7,V2
5055  034634  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5056  034637  010  034  010
5057  034642                      C70     V0,V5,V0,V5,V0,V5
5058  034642  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5059  034645  024  000  024
5060  034650                      C70     V7,V2,V7,V2,V7,V2
5061  034650  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5062  034653  010  034  010
5063  034656                      C70     V0,V5,V0,V5,V0,V5
5064  034656  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5065  034661  024  000  024
5066  034664                      C70     V7,V2,V7,V2,V7,V2
5067  034664  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5068  034667  010  034  010
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5069  034672
5070  034672  040  064  040        C70     V0,V5,V0,V5,V0,V5
5071  034675  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5072  034700
5073  034700  074  050  074        C70     V7,V2,V7,V2,V7,V2
5074  034703  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5075  034706
5076  034706  040  064  040        C70     V0,V5,V0,V5,V0,V5
5077  034711  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5078  034714
5079  034714  074  050  074        C70     V7,V2,V7,V2,V7,V2
5080  034717  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5081  034722
5082  034722  040  064  040        C70     V0,V5,V0,V5,V0,V5
5083  034725  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5084  034730
5085  034730  074  050  074        C70     V7,V2,V7,V2,V7,V2
5086  034733  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5087  034736
5088  034736  040  064  040        C70     V0,V5,V0,V5,V0,V5
5089  034741  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5090  034744
5091  034744  074  050  074        C70     V7,V2,V7,V2,V7,V2
5092  034747  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5093  034752
5094  034752  040  064  040        C70     V0,V5,V0,V5,V0,V5
5095  034755  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5096  034760
5097  034760  074  050  074        C70     V7,V2,V7,V2,V7,V2
5098  034763  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5099  034766
5100  034766  040  064  040        C70     V0,V5,V0,V5,V0,V5
5101  034771  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5102  034774
5103  034774  074  050  074        C70     V7,V2,V7,V2,V7,V2
5104  034777  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5105  035002
5106  035002  040  064  040        C70     V0,V5,V0,V5,V0,V5
5107  035005  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5108  035010
5109  035010  074  050  074        C70     V7,V2,V7,V2,V7,V2
5110  035013  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5111  035016
5112  035016  040  064  040        C70     V0,V5,V0,V5,V0,V5
5113  035021  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5114  035024
5115  035024  074  050  074        C70     V7,V2,V7,V2,V7,V2
5116  035027  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5117  035032
5118  035032  040  064  040        C70     V0,V5,V0,V5,V0,V5
5119  035035  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5120  035040
5121  035040  074  050  074        C70     V7,V2,V7,V2,V7,V2
5122  035043  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5123  035046
5124  035046  040  064  040        C70     V0,V5,V0,V5,V0,V5
                                   .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
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5125  035051  024  000  024
5126  035054                    C70     V7,V2,V7,V2,V7,V2
5127  035054  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5128  035057  010  034  010
5129  035062                    C70     V0,V5,V0,V5,V0,V5
5130  035062  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5131  035065  024  000  024
5132  035070                    C70     V7,V2,V7,V2,V7,V2
5133  035070  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5134  035073  010  034  010
5135  035076                    C70     V0,V5,V0,V5,V0,V5
5136  035076  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5137  035101  024  000  024
5138  035104                    C70     V7,V2,V7,V2,V7,V2
5139  035104  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5140  035107  010  034  010
5141  035112                    C70     V0,V5,V0,V5,V0,V5
5142  035112  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5143  035115  024  000  024
5144  035120                    C70     V7,V2,V7,V2,V7,V2
5145  035120  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5146  035123  010  034  010
5147  035126                    C70     V0,V5,V0,V5,V0,V5
5148  035126  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5149  035131  024  000  024
5150  035134                    C70     V7,V2,V7,V2,V7,V2
5151  035134  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5152  035137  010  034  010
5153  035142                    C70     V0,V5,V0,V5,V0,V5
5154  035142  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5155  035145  024  000  024
5156  035150                    C70     V7,V2,V7,V2,V7,V2
5157  035150  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5158  035153  010  034  010
5159  035156                    C70     V0,V5,V0,V5,V0,V5
5160  035156  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5161  035161  024  000  024
5162  035164                    C70     V7,V2,V7,V2,V7,V2
5163  035164  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5164  035167  010  034  010
5165  035172                    C70     V0,V5,V0,V5,V0,V5
5166  035172  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5167  035175  024  000  024
5168  035200                    C70     V7,V2,V7,V2,V7,V2
5169  035200  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5170  035203  010  034  010
5171  035206                    C70     V0,V5,V0,V5,V0,V5
5172  035206  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5173  035211  024  000  024
5174  035214                    C70     V7,V2,V7,V2,V7,V2
5175  035214  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5176  035217  010  034  010
5177  035222                    C70     V0,V5,V0,V5,V0,V5
5178  035222  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5179  035225  024  000  024
5180  035230                    C70     V7,V2,V7,V2,V7,V2
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5181  035230  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5182  035233  010  034  010
5183  035236                      C70     V0,V5,V0,V5,V0,V5
5184  035236  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5185  035241  024  000  024
5186  035244                      C70     V7,V2,V7,V2,V7,V2
5187  035244  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5188  035247  010  034  010
5189  035252                      C70     V0,V5,V0,V5,V0,V5
5190  035252  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5191  035255  024  000  024
5192  035260                      C70     V7,V2,V7,V2,V7,V2
5193  035260  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5194  035263  010  034  010
5195  035266                      C70     V0,V5,V0,V5,V0,V5
5196  035266  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5197  035271  024  000  024
5198  035274                      C70     V7,V2,V7,V2,V7,V2
5199  035274  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5200  035277  010  034  010
5201  035302                      C70     V0,V5,V0,V5,V0,V5
5202  035302  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5203  035305  024  000  024
5204  035310                      C70     V7,V2,V7,V2,V7,V2
5205  035310  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5206  035313  010  034  010
5207  035316                      C70     V0,V5,V0,V5,V0,V5
5208  035316  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5209  035321  024  000  024
5210  035324                      C70     V7,V2,V7,V2,V7,V2
5211  035324  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5212  035327  010  034  010
5213  035332                      C70     V0,V5,V0,V5,V0,V5
5214  035332  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5215  035335  024  000  024
5216  035340                      C70     V7,V2,V7,V2,V7,V2
5217  035340  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5218  035343  010  034  010
5219  035346                      C70     V0,V5,V0,V5,V0,V5
5220  035346  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5221  035351  024  000  024
5222  035354                      C70     V7,V2,V7,V2,V7,V2
5223  035354  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5224  035357  010  034  010
5225  035362                      C70     V0,V5,V0,V5,V0,V5
5226  035362  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5227  035365  024  000  024
5228  035370                      C70     V7,V2,V7,V2,V7,V2
5229  035370  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5230  035373  010  034  010
5231  035376                      C70     V0,V5,V0,V5,V0,V5
5232  035376  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5233  035401  024  000  024
5234  035404                      C70     V7,V2,V7,V2,V7,V2
5235  035404  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5236  035407  010  034  010
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5237  035412
5238  035412  040  064  040        C70     V0,V5,V0,V5,V0,V5
5239  035415  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5240  035420
5241  035420  074  050  074        C70     V7,V2,V7,V2,V7,V2
5242  035423  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5243  035426
5244  035426  040  064  040        C70     V0,V5,V0,V5,V0,V5
5245  035431  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5246  035434
5247  035434  074  050  074        C70     V7,V2,V7,V2,V7,V2
5248  035437  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5249  035442
5250  035442  040  064  040        C70     V0,V5,V0,V5,V0,V5
5251  035445  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5252  035450
5253  035450  074  050  074        C70     V7,V2,V7,V2,V7,V2
5254  035453  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5255  035456
5256  035456  040  064  040        C70     V0,V5,V0,V5,V0,V5
5257  035461  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5258  035464
5259  035464  074  050  074        C70     V7,V2,V7,V2,V7,V2
5260  035467  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5261  035472
5262  035472  040  064  040        C70     V0,V5,V0,V5,V0,V5
5263  035475  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5264  035500
5265  035500  074  050  074        C70     V7,V2,V7,V2,V7,V2
5266  035503  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5267  035506
5268  035506  040  064  040        C70     V0,V5,V0,V5,V0,V5
5269  035511  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5270  035514
5271  035514  074  050  074        C70     V7,V2,V7,V2,V7,V2
5272  035517  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5273  035522
5274  035522  040  064  040        C70     V0,V5,V0,V5,V0,V5
5275  035525  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5276  035530
5277  035530  074  050  074        C70     V7,V2,V7,V2,V7,V2
5278  035533  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5279  035536
5280  035536  040  064  040        C70     V0,V5,V0,V5,V0,V5
5281  035541  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5282  035544
5283  035544  074  050  074        C70     V7,V2,V7,V2,V7,V2
5284  035547  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5285  035552
5286  035552  040  064  040        C70     V0,V5,V0,V5,V0,V5
5287  035555  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5288  035560
5289  035560  074  050  074        C70     V7,V2,V7,V2,V7,V2
5290  035563  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5291  035566
5292  035566  040  064  040        C70     V0,V5,V0,V5,V0,V5
                                    .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
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 5293  035571  024  000  024
 5294  035574                    C70     V7,V2,V7,V2,V7,V2
 5295  035574  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5296  035577  010  034  010
 5297  035602                    C70     V0,V5,V0,V5,V0,V5
 5298  035602  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5299  035605  024  000  024
 5300  035610                    C70     V7,V2,V7,V2,V7,V2
 5301  035610  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5302  035613  010  034  010
 5303  035616                    C70     V0,V5,V0,V5,V0,V5
 5304  035616  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5305  035621  024  000  024
 5306  035624                    C70     V7,V2,V7,V2,V7,V2
 5307  035624  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5308  035627  010  034  010
 5309  035632                    C70     V0,V5,V0,V5,V0,V5
 5310  035632  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5311  035635  024  000  024
 5312  035640                    C70     V7,V2,V7,V2,V7,V2
 5313  035640  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5314  035643  010  034  010
 5315  035646                    C70     V0,V5,V0,V5,V0,V5
 5316  035646  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5317  035651  024  000  024
 5318  035654                    C70     V7,V2,V7,V2,V7,V2
 5319  035654  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5320  035657  010  034  010
 5321  035662                    C70     V0,V5,V0,V5,V0,V5
 5322  035662  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5323  035665  024  000  024
 5324  035670                    C70     V7,V2,V7,V2,V7,V2
 5325  035670  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5326  035673  010  034  010
 5327  035676                    C70     V0,V5,V0,V5,V0,V5
 5328  035676  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5329  035701  024  000  024
 5330  035704                    C70     V7,V2,V7,V2,V7,V2
 5331  035704  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5332  035707  010  034  010
 5333  035712                    C70     V0,V5,V0,V5,V0,V5
 5334  035712  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5335  035715  024  000  024
 5336  035720                    C70     V7,V2,V7,V2,V7,V2
 5337  035720  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5338  035723  010  034  010
 5339  035726                    C70     V0,V5,V0,V5,V0,V5
 5340  035726  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5341  035731  024  000  024
 5342  035734                    C70     V7,V2,V7,V2,V7,V2
 5343  035734  074  050  074     .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5344  035737  010  034  010
 5345  035742                    C70     V0,V5,V0,V5,V0,V5
 5346  035742  040  064  040     .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5347  035745  024  000  024
 5348  035750                    C70     V7,V2,V7,V2,V7,V2
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 5349  035750  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5350  035753  010  034  010
 5351  035756                      C70     V0,V5,V0,V5,V0,V5
 5352  035756  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5353  035761  024  000  024
 5354  035764                      C70     V7,V2,V7,V2,V7,V2
 5355  035764  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5356  035767  010  034  010
 5357  035772                      C70     V0,V5,V0,V5,V0,V5
 5358  035772  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5359  035775  024  000  024
 5360  036000                      C70     V7,V2,V7,V2,V7,V2
 5361  036000  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5362  036003  010  034  010
 5363  036006                      C70     V0,V5,V0,V5,V0,V5
 5364  036006  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5365  036011  024  000  024
 5366  036014                      C70     V7,V2,V7,V2,V7,V2
 5367  036014  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5368  036017  010  034  010
 5369  036022                      C70     V0,V5,V0,V5,V0,V5
 5370  036022  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5371  036025  024  000  024
 5372  036030                      C70     V7,V2,V7,V2,V7,V2
 5373  036030  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5374  036033  010  034  010
 5375  036036                      C70     V0,V5,V0,V5,V0,V5
 5376  036036  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5377  036041  024  000  024
 5378  036044                      C70     V7,V2,V7,V2,V7,V2
 5379  036044  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5380  036047  010  034  010
 5381  036052                      C70     V0,V5,V0,V5,V0,V5
 5382  036052  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5383  036055  024  000  024
 5384  036060                      C70     V7,V2,V7,V2,V7,V2
 5385  036060  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5386  036063  010  034  010
 5387  036066                      C70     V0,V5,V0,V5,V0,V5
 5388  036066  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5389  036071  024  000  024
 5390  036074                      C70     V7,V2,V7,V2,V7,V2
 5391  036074  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5392  036077  010  034  010
 5393  036102                      C70     V0,V5,V0,V5,V0,V5
 5394  036102  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5395  036105  024  000  024
 5396  036110                      C70     V7,V2,V7,V2,V7,V2
 5397  036110  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5398  036113  010  034  010
 5399  036116                      C70     V0,V5,V0,V5,V0,V5
 5400  036116  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
 5401  036121  024  000  024
 5402  036124                      C70     V7,V2,V7,V2,V7,V2
 5403  036124  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
 5404  036127  010  034  010
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5405  036132
5406  036132  040  064  040        C70     V0,V5,V0,V5,V0,V5
5407  036135  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5408  036140
5409  036140  074  050  074        C70     V7,V2,V7,V2,V7,V2
5410  036143  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5411  036146
5412  036146  040  064  040        C70     V0,V5,V0,V5,V0,V5
5413  036151  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5414  036154
5415  036154  074  050  074        C70     V7,V2,V7,V2,V7,V2
5416  036157  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5417  036162
5418  036162  040  064  040        C70     V0,V5,V0,V5,V0,V5
5419  036165  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5420  036170
5421  036170  074  050  074        C70     V7,V2,V7,V2,V7,V2
5422  036173  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5423  036176
5424  036176  040  064  040        C70     V0,V5,V0,V5,V0,V5
5425  036201  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5426  036204
5427  036204  074  050  074        C70     V7,V2,V7,V2,V7,V2
5428  036207  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5429  036212
5430  036212  040  064  040        C70     V0,V5,V0,V5,V0,V5
5431  036215  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5432  036220
5433  036220  074  050  074        C70     V7,V2,V7,V2,V7,V2
5434  036223  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5435  036226
5436  036226  040  064  040        C70     V0,V5,V0,V5,V0,V5
5437  036231  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5438  036234
5439  036234  074  050  074        C70     V7,V2,V7,V2,V7,V2
5440  036237  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5441  036242
5442  036242  040  064  040        C70     V0,V5,V0,V5,V0,V5
5443  036245  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5444  036250
5445  036250  074  050  074        C70     V7,V2,V7,V2,V7,V2
5446  036253  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5447  036256
5448  036256  040  064  040        C70     V0,V5,V0,V5,V0,V5
5449  036261  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5450  036264
5451  036264  074  050  074        C70     V7,V2,V7,V2,V7,V2
5452  036267  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5453  036272
5454  036272  040  064  040        C70     V0,V5,V0,V5,V0,V5
5455  036275  024  000  024        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5456  036300
5457  036300  074  050  074        C70     V7,V2,V7,V2,V7,V2
5458  036303  010  034  010        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5459  036306
5460  036306  040  064  040        C70     V0,V5,V0,V5,V0,V5
                                    .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
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5461  036311  024  000  024
5462  036314                        C70     V7,V2,V7,V2,V7,V2
5463  036314  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5464  036317  010  034  010
5465  036322                        C70     V0,V5,V0,V5,V0,V5
5466  036322  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,0!V0,0!V5   ;MTK CODE 70. DATA MARK.
5467  036325  024  000  024
5468  036330                        C70     V7,V2,V7,V2,V7,V2
5469  036330  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,0!V7,0!V2   ;MTK CODE 70. DATA MARK.
5470  036333  010  034  010
5471  036336                        C73     V0,V5,V0,V5,V0,V5
5472  036336  040  064  040        .BYTE   I!V0,I!V5,I!V0,0!V5,I!V0,I!V5   ;MTK CODE 73. DATA MARK.
5473  036341  024  040  064
5474  036344                        C73     V7,V2,V7,V2,V7,V2
5475  036344  074  050  074        .BYTE   I!V7,I!V2,I!V7,0!V2,I!V7,I!V2   ;MTK CODE 73. DATA MARK.
5476  036347  010  074  050
5477  036352                  FCKSM:
5478  036352                        C73     V0,V0,V0,V0,V0,V0
5479  036352  040  040  040        .BYTE   I!V0,I!V0,I!V0,0!V0,I!V0,I!V0   ;MTK CODE 73. DATA MARK.
5480  036355  000  040  040
5481  036360                        C73     V0,V0,V0,V0,V0,V0
5482  036360  040  040  040        .BYTE   I!V0,I!V0,I!V0,0!V0,I!V0,I!V0   ;MTK CODE 73. DATA MARK.
5483  036363  000  040  040
5484  036366                        C51     V0,V0,V0,V0,V0,V0
5485  036366  040  000  040        .BYTE   I!V0,0!V0,I!V0,0!V0,0!V0,I!V0   ;MTK CODE 51. FWD GUARD.
5486  036371  000  000  040
5487  036374                        C45     V0,V0,V0,V0,V0,V0
5488  036374  040  000  000        .BYTE   I!V0,0!V0,0!V0,I!V0,0!V0,I!V0   ;MTK CODE 45. REV BLOCK MARK.
5489  036377  040  000  040
5490  036402                        C25
5491  036402  000  040  000        .BYTE   0,I,0,I,0,I                     ;MTK CODE 25. EXTENSION MARK.
5492  036405  040  000  040
5493  036410                        CEND
5494  036410  377                   .BYTE   -1
5495  036411                  GCKSM:
5496  036411                        C73     V7,V7,V0,V0,V0,V0
5497  036411  074  074  040        .BYTE   I!V7,I!V7,I!V0,0!V0,I!V0,I!V0   ;MTK CODE 73. DATA MARK.
5498  036414  000  040  040
5499  036417                  BCKSM:
5500  036417                        C73     V0,V0,V0,V0,V0,V0
5501  036417  040  040  040        .BYTE   I!V0,I!V0,I!V0,0!V0,I!V0,I!V0   ;MTK CODE 73. DATA MARK.
5502  036422  000  040  040
5503          036426                .EVEN
5504  036426  000000                OPEN
5505          036430                RBUF=.
5506          040430                .=RBUF+1024.
5507          000001                .END
```

```
A     = 100000   192#
AINCRT  015673  3228#
APGEND  015713  3231#
ASETSR  015633  3222#
A0001   002734   936   945#
A0002   003004   950   959#
A0003   003054   964   973#
A0004   003124   978   987#
A0005   003210  1005  1007#
A0006   003252  1022  1024#
A0007   003324  1036  1042#
A0010   003376  1059#  1065
A0011   003472  1075  1083#
A0012   003552  1104#  1112   1115
A0013   003642  1125  1128#
A0014   003766  1152  1154#
A0015   004042  1168  1170#
A0016   004114  1187  1190#
A0017   004230  1218  1221#
A0020   004342  1248  1251#
A0021   004442  1267  1274#
A0022   004534  1296  1299#
A0023   004634  1323  1326#
A0024   004752  1353  1359#
A0025   005040  1381  1384#
A0026   005134  1409  1412#
A0027   005234  1437  1440#
A0030   005330  1463  1466#
A0031   005422  1489  1492#
A0032   005664  1545  1548#
A0033   006142  1604  1608#
A0034   006336  1649  1652#
A0035   006542  1697  1700#
A0036   006746  1745  1748#
A0037   007150  1792  1795#
A0040   007316  1828  1831#
A0041   007636  1900  1902#
A0042   010114  1963  1966#
A0043   010276  2010  2013#
A0044   010524  2064  2067#
A0045   010700  2104  2107#
A0055   011430  2246  2249#
B     = 040000   193#
BCKSM   036417  2573  5499#
BELL  = 000007   186#
BIT0  = 000001   147#   225   1150   1151
BIT00 = 000001   137#   147
BIT01 = 000002   136#   146
BIT02 = 000004   135#   145
BIT03 = 000010   134#   144
BIT04 = 000020   133#   143
BIT05 = 000040   132#   142
BIT06 = 000100   131#   141
BIT07 = 000200   130#   140
BIT08 = 000400   129#   139   2656
BIT09 = 001000   128#   138   2664   2746
```

```
BIT1   = 000002  146# 218  220  222  224  1166 1167
BIT10  = 002000  127# 212  213  214  215  1836 1856 1867 2731
BIT11  = 004000  126# 205  2611 2671
BIT12  = 010000  125# 204  1186 1195 1217 1226 1252
BIT13  = 020000  124# 194  203  1128 1133 1137 1149 1165 1380 2518 2738
BIT14  = 040000  123# 193  1544 1603 2642
BIT15  = 100000  122# 181  192  1251
BIT2   = 000004  145# 219  220  223  224
BIT3   = 000010  144# 221  222  223  224
BIT4   = 000020  143#
BIT5   = 000040  142#
BIT6   = 000100  141# 216  1039 1057 1079 1101 1270
BIT7   = 000200  140# 1124 1129 1134
BIT8   = 000400  139# 209  211  213  215
BIT9   = 001000  138# 210  211  214  215  1962 1971
BMOVA    012660  2509# 2511
BMOVE    012646  1371 1399 1426 2408 2412 2416 2469 2476 2505# 2552 2556 2572
BPTVEC= 000014  154#
BTCTR    013036  2523* 2530* 2532 2546#
B0010    003410  1054 1063#
B0011    003474  1082 1084#
B0012    003564  1098 1108#
B0013    003664  1130 1133#
B0016    004126  1191 1194#
B0017    004242  1222 1225#
B0020    004362  1250 1253 1255#
B0021    004456  1275 1277#
B0022    004552  1298 1301 1303#
B0023    004644  1325 1327 1333#
B0025    005050  1383 1385 1387#
B0026    005144  1411 1413 1415#
B0027    005244  1439 1441 1443#
B0031    005434  1493 1496#
B0032    005670  1543 1550#
B0033    006162  1609 1613#
B0034    006362  1653 1658#
B0035    006566  1701 1706#
B0036    006772  1749 1754#
B0037    007162  1794 1799#
B0040    007356  1837 1841#
B0041    007660  1905 1908#
B0042    010126  1967 1970#
B0043    010350  2023 2026#
B0044    010576  2077 2080#
B0045    010756  2113 2120#
B0045A   010770  2121 2124#
B0055    011502  2259 2262#
C      = 020000  194#
CCR      001322  475# 917*
CDCNT    013040  2517* 2519 2547#
CDCTR    013042  2519* 2539* 2548#
CDTCK    013240  2266 2583 2586 2591#
CDTCKA   013272  2596 2598#
CHGE1    002574  915#
CHLT     012302  2422#
CKDAT    013166  1662 1710 1757 1795 1914 2040 2080 2133 2577#
```

```
CKDTA   013206  2582# 2588
CKDTB   013232  2585  2589#
CKSELE  013314  2156  2169  2180  2191  2202  2213  2227  2606#
CKSELT  015364  2606* 2607* 2608  3191#
CLRBUF  012470  1479  1533  1594  1639  1687  1735  1782  1885  2468#  2551  2562
CODCAL  001260   458# 2515* 2534  2537  2549*
CR    = 000015    62# 2890  2900
CRBUF   001270   462# 2592* 2595  3918
CRBUFA  001272   463# 2593* 2595  3918
CRLF  = 000200    63# 2861  2900
CTRA    001274   464# 1899* 1936* 2111* 2125*
CTRLB   013150  2564* 2567* 2571#
CURTST  001266   461#
C0012   003600  1109  1111#
C0013   003704  1127  1132  1135  1137#
C0016   004146  1196  1199#
C0017   004262  1227  1230#
C0021   004472  1274  1281#
C0031   005456  1497  1501#
C0032   005702  1551  1554#
C0033   006204  1607  1612  1615  1618#
C0034   006376  1659  1662#
C0035   006602  1707  1710#
C0036   007004  1755  1757#
C0037   007170  1784  1802#
C0040   007462  1857  1861#
C0041   007674  1909  1912#
C0042   010150  1965  1969  1972  1975#
C0043   010362  2027  2030#
C0044   010610  2066  2079  2084#
C0045   011004  2126  2128#
C0055   011522  2266# 2268
DATADR  013310  2591* 2604#
DDISP = 177570    69#  369  898
DINH  = 010000   204#
DISPLA  001142   369#  898* 906* 2685* 2730*
DISPRE  000174   173#  906
DLY     012374  2445# 2462
DLYA    012406  2448# 2452
DLYB    012412  2449# 2450
DO    = 000001   225# 1299  1317  1347  1375  1403  1431  1457  1483  1522  1537  1583  1598
                1629  1643  1677  1691  1725  1739  1772  1786  1810  1822  1831  1844  1851
                1889  1942  1957  1986  1988  2004  2016  2058  2070  2098  2114  2240  2252
                2607
DSWR  = 177570    68#  368  897
D0012   003604  1108  1113#
D0016   004156  1189  1193  1198  1200  1202#
D0017   004272  1220  1224  1229  1231  1233#
D0021   004474  1273  1280  1282#
D0030   005332  1455  1465  1467#
D0031   005502  1502  1507#
D0032   005724  1555  1559#
D0033   006212  1596  1621#
D0034   006410  1651  1657  1661  1666#
D0035   006614  1699  1705  1709  1714#
D0036   007016  1747  1753  1761#
```

```
D0040   007502   1862   1866#
D0041   007700   1903   1914#
D0041A  007726   1919   1922#
D0041B  007740   1923   1926#
D0042   010156   1955   1978#
D0043   010406   2031   2036#
D0044   010616   2073   2087#
D0045   011022   2129   2133#
D0055   011532   2248   2261    2269#
EH1     016325    494   3281#
EH10    017710    536   3438#
EH11    020064    542   3460#
EH12    020240    548   3482#
EH13    020414    554   3504#
EH14    020607    560   3529#
EH15    020754    566   3550#
EH16    021126    572   3572#
EH17    021306    578   3595#
EH2     016504    500   3304#
EH20    021466    584   3618#
EH21    021651    590   3642#
EH22    022020    596   3663#
EH23    022150    602   3682#
EH24    022323    608   3704#
EH25    022504    614   3727#
EH26    022637    620   3747#
EH27    022770    626   3767#
EH3     016645    506   3325#
EH30    023174    632   3793#
EH31    023364    638   3817#
EH32    023564    644   3843#
EH33    023732    650   3864#
EH34    024103    656    662    3886#
EH35    024233   3905#
EH36    024433    666   3929#
EH37    024536    672   3944#
EH4     017051    512   3351#
EH40    024660    678   3962#
EH41    025020    684   3982#
EH42    025152    690   4001#
EH43    025312    696   4021#
EH44    025500    702   4045#
EH45    025660    708   4068#
EH46    026021    714   4089#
EH47    026174    720   4111#
EH5     017177    518   3370#
EH50    026322    726   4130#
EH51    026475    732   4153#
EH52    026657    738   4177#
EH53    027037    744   4201#
EH54    027206    750   4224#
EH55    027353    756   4246#
EH56    027540    762   4271#
EH57    027725    768   4295#
EH6     017371    524   3395#
EH60    030112    774   4320#
```

```
EH61    030303          780    4345#
EH62    030462          786    4368#
EH63    030626          792    4389#
EH64    030776          798    4411#
EH65    031173          804    4437#
EH66    031367          810    4462#
EH67    031545          816    4485#
EH7     017542          530    3417#
EH70    031717          822    4507#
EH71    032116          828    4533#
EH72    032264          834    4555#
EH73    032433          840    4577#
EH74    032603          844    4598#
EH75    032727          849    4616#
EH76    033053          854    4634#
EH77    033177          859    4652#
EMTVEC= 000030          157#    879*    880*
EMTX  = 000000          226#
EM1     016237          493    3271#
EM10    017636          535    3431#
EM11    020004          541    3452#
EM12    020160          547    3474#
EM13    020334          553    3496#
EM14    020510          559    3518#
EM15    020704          565    3543#
EM16    021050          571    3564#
EM17    021222          577    3586#
EM2     016422          499    3295#
EM20    021402          583    3609#
EM21    021562          589    3632#
EM22    021746          595    3656#
EM23    022114          601    3677#
EM24    022244          607    3696#
EM25    022420          613    3718#
EM26    022600          619    3741#
EM27    022726          625    3761#
EM3     016600          505    3318#
EM30    023064          631    3781#
EM31    023270          637    3807#
EM32    023506          643    3835#
EM33    023660          649    3857#
EM34    024026          655     661    3878#
EM35    024200         3900#
EM36    024356          665    3921#
EM37    024530          671    3943#
EM4     016742          511    3339#
EM40    024632          677    3958#
EM41    024754          683    3976#
EM42    025114          689    3996#
EM43    025246          695    4015#
EM44    025436          701    4039#
EM45    025624          707    4063#
EM46    026004          713    4086#
EM47    026116          719    4103#
EM5     017146          517    3365#
EM50    026270          725    4125#
```

EM51	026432	731	4147#								
EM52	026620	737	4171#								
EM53	026766	743	4194#								
EM54	027146	749	4218#								
EM55	027314	755	4240#								
EM56	027462	761	4263#								
EM57	027646	767	4287#								
EM6	017274	523	3384#								
EM60	030034	773	4312#								
EM61	030220	779	4336#								
EM62	030424	785	4363#								
EM63	030570	791	4384#								
EM64	030750	797	4407#								
EM65	031104	803	4427#								
EM66	031270	809	4451#								
EM67	031464	815	4476#								
EM7	017466	529	3409#								
EM70	031642	821	4499#								
EM71	032050	827	4526#								
EM72	032224	833	4549#								
EM73	032372	839	4571#								
EM74	032530	843	4590#								
EM75	032654	848	4608#								
EM76	033000	853	4626#								
EM77	033124	858	4644#								
ERRVEC=	000004	150#	895	896*	907*	915	916*	921*	2647	2648*	2650*	2653*
ET1	016404	495	3290#								
ET10	017766	537	3447#								
ET11	020142	543	3469#								
ET12	020316	549	3491#								
ET13	020472	555	3513#								
ET14	020666	561	3538#								
ET15	021032	567	3559#								
ET16	021204	573	3581#								
ET17	021364	579	3604#								
ET2	016562	501	3313#								
ET20	021544	585	3627#								
ET21	021730	591	3651#								
ET22	022076	597	3672#								
ET23	022226	603	3691#								
ET24	022402	609	3713#								
ET25	022562	615	3736#								
ET26	022712	621	3756#								
ET27	023046	627	3776#								
ET3	016724	507	3334#								
ET30	023252	633	3802#								
ET31	023464	639	3829#								
ET32	023642	645	3852#								
ET33	024010	651	3873#								
ET34	024162	657	663	3895#							
ET35	024336	3918#									
ET36	024512	667	3938#								
ET37	024614	673	3953#								
ET4	017130	513	3360#								
ET40	024736	679	3971#								
ET41	025076	685	3991#								

```
ET42    025230             691    4010#
ET43    025414             697    4033#
ET44    025602             703    4057#
ET45    025762             709    4080#
ET46    026100             715    4098#
ET47    026252             721    4120#
ET5     017256             519    3379#
ET50    026412             727    4141#
ET51    026576             733    4165#
ET52    026746             739    4188#
ET53    027126             745    4212#
ET54    027274             751    4234#
ET55    027442             757    4257#
ET56    027626             763    4281#
ET57    030014             769    4306#
ET6     017450             525    3404#
ET60    030200             775    4330#
ET61    030402             781    4357#
ET62    030550             787    4378#
ET63    030730             793    4401#
ET64    031064             799    4421#
ET65    031252             805    4446#
ET66    031446             811    4471#
ET67    031624             817    4494#
ET7     017620             531    3426#
ET70    032026             823    4520#
ET71    032204             829    4543#
ET72    032352             835    4565#
ET73    032512             841    4586#
ET74    032642             845    4605#
ET75    032766             850    4623#
ET76    033112             855    4641#
ET77    033236             860    4659#
FCKSM   036352            2418    2574   5477#
FWD   = 000000             206#   1184   1215   1245   1277   1299   1317   1347   1375   1403   1431   1457   1483
                          1537    1598   1643   1691   1739   1822   1844   1889   1957   2004   2098   2240
F0031   005522            1491    1495   1500   1506   1508   1511#
F0032   005736            1560    1563#
F0034   006416            1641    1669#
F0035   006622            1689    1717#
F0036   007024            1737    1764#
F0037   007206            1803    1808#
F0040   007532            1830    1840   1860   1865   1868   1872#
F0041   007754            1887    1930#
F0043   010422            2037    2040#
F0045   011046            2138    2141#
F0055   011540            2255    2272#
GCKSM   036411            2417    5495#
GETRDY  002642             925     927#
GNS   = ****** U           171    3166   3171   3176   3181   3186
GTBIN   012546            2488#   2565
GTBINP  012606            2496#
G0031   005530            1481    1514#
G0032   005762            1564    1569#
G0033   006230            1622    1627#
G0041   007764            1897    1907   1911   1913   1921   1925   1927   1929   1933#
```

```
G0042   010174          1979    1984#
G0043   010434          2012    2025    2029    2035    2039    2044#
G0045   011060          2106    2123    2132    2140    2142    2144#
HT    = 000011            60#   2859    2900
H0032   005774          1547    1549    1553    1558    1562    1568    1570    1572#
H0034   006434          1670    1675#
H0035   006640          1718    1723#
H0036   007042          1765    1770#
H0042   010212          1985    1988#
H0043   010442          2019    2047#
I     = 000040           190#   4664    4668    4672    4676    4680    4684    4687    4690    4693    4697    4701    4705
                        4709    4716    4719    4722    4725    4728    4731    4734    4737    4740    4743    4746    4749
                        4752    4755    4758    4761    4764    4767    4770    4773    4776    4779    4782    4785    4788
                        4791    4794    4797    4800    4803    4806    4809    4812    4815    4818    4821    4824    4827
                        4830    4833    4836    4839    4842    4845    4848    4851    4854    4857    4860    4863    4866
                        4869    4872    4875    4878    4881    4884    4887    4890    4893    4896    4899    4902    4905
                        4908    4911    4914    4917    4920    4923    4926    4929    4932    4935    4938    4941    4944
                        4947    4950    4953    4956    4959    4962    4965    4968    4971    4974    4977    4980    4983
                        4986    4989    4992    4995    4998    5001    5004    5007    5010    5013    5016    5019    5022
                        5025    5028    5031    5034    5037    5040    5043    5046    5049    5052    5055    5058    5061
                        5064    5067    5070    5073    5076    5079    5082    5085    5088    5091    5094    5097    5100
                        5103    5106    5109    5112    5115    5118    5121    5124    5127    5130    5133    5136    5139
                        5142    5145    5148    5151    5154    5157    5160    5163    5166    5169    5172    5175    5178
                        5181    5184    5187    5190    5193    5196    5199    5202    5205    5208    5211    5214    5217
                        5220    5223    5226    5229    5232    5235    5238    5241    5244    5247    5250    5253    5256
                        5259    5262    5265    5268    5271    5274    5277    5280    5283    5286    5289    5292    5295
                        5298    5301    5304    5307    5310    5313    5316    5319    5322    5325    5328    5331    5334
                        5337    5340    5343    5346    5349    5352    5355    5358    5361    5364    5367    5370    5373
                        5376    5379    5382    5385    5388    5391    5394    5397    5400    5403    5406    5409    5412
                        5415    5418    5421    5424    5427    5430    5433    5436    5439    5442    5445    5448    5451
                        5454    5457    5460    5463    5466    5469    5472    5475    5479    5482    5485    5488    5491
                        5497    5501
IE    = 000100           216#   1457    1483    1537    1598    1643    1691    1739    1786    1889    1942    1957    1986
                        2114
INBIN   012510          2475#
IOTVEC= 000020           155#    877*    878*
I0031   005546          1515    1520#
I0032   006002          1535    1575#
I0041   007772          1931    1936#
I0045   011066          2117    2147#
K0032   006020          1576    1581#
LBBIND  013104          2238    2561#
LBDAT1  013052          2002    2056    2096    2551#
LBINDA  013126          2565#   2568
LF    = 000012            61#   2894    2900
LMTCA   012734          2522#   2544
LMTCAA  012700          2516#   2550
LMTCB   012740          2523#   2543
LMTCC   012746          2524#   2533    2535    2538
LMTCD   013026          2540    2542#
LMTCE   013016          2531    2539#
LMTCOD  012674          1319    1349    1377    1405    1433    1459    1485    1539    1600    1645    1693    1741    1788
                        1824    1833    1846    1853    1891    1959    2006    2060    2100    2242    2515#
LMTCOE  013044          2018    2072    2116    2254    2549#
MAINT = 020000           203#   1184    1215    1245    1277    1299    1317    1347    1375    1403    1431    1457    1483
                        1537    1598    1643    1691    1739    1786    1822    1844    1889    1957    2004    2058    2098
```

```
                    2240
MANUAL= 100000       181#
MBCKSM  013152      1593    2572#
MLPC    013304      2598*   2602#
MTKADR  013034      2516*   2522    2545#
MTKC10  033250      2409    4662#
MTKEND  033264      1400    4670#
MTKER   033256      1372    4666#
MTKVAR  033360      1373    2410    4707#
MTK5    033336      1401    1428    2118    2414    4695#
MTK5P   033300      2413    4678#
MTK55   033272      1427    4674#
MTK7    033306      1320    1350    1378    1406    1434    1460    1486    1540    1601    1646    1694    1742    1789
                    1825    1847    1892    1960    2007    2061    2101    2243    4682#
MTK7A   033344      1834    2020    2074    2256    4699#
MTK7B   033352      1854    4703#
NOP   = 000240       179#    2357
NXTST   001264       460#
OPEN  = 000000       180#     458     459     460     461     462     463     464     473     474    2463    2466    2481
                    2482    2483    2484    2485    2486    2545    2546    2547    2548    2571    2603    2604    2605
                    3191    5504
PIND    012540      2484#   2498*
PIRQ  = 177772        67#
PIRQVE= 000240       161#
POPSP = 005726       184#
POPSP2= 022626       185#    1083    1113    1281
POWMES  016172      2783    3264#
POWPOP  001314       472#    2782
POWPUS  001312       471#    2781
PR0   = 000000        84#
PR1   = 000040        85#
PR2   = 000100        86#
PR3   = 000140        87#
PR4   = 000200        88#
PR5   = 000240        89#
PR6   = 000300        90#
PR7   = 000340        91#
PS    = 177776        64#      65
PSW   = 177776        65#     927*    1038*   1055*   1077*   1078*   1100*   1269*   2447*
PT0     012534      2482#   2488    2493*
PT0P    012542      2485#   2496    2501*
PT1     012536      2483#   2488*   2489*   2492*   2493    2494
PT1P    012544      2486#   2496*   2497*   2500*   2501    2502
PUSH  = 005746       182#
PUSH2 = 024646       183#
PWRVEC= 000024       156#     883*    884*   2765*   2766*   2790*   2797*   2817*   2818*
RALL  = 000006       220#    1942    1986    1988
RBUF  = 036430      1496    1507    1521    1554    1559    1569    1582    1628    1658    1664    1676    1706    1712
                    1724    1754    1759    1771    1797    1809    1821    1843    1902    1904    1908    1916    1918
                    1926    1937    1939    2014    2015    2036    2042    2068    2069    2082    2108    2109    2110
                    2128    2135    2141    2250    2251    2262    2263    2468*   2470    2471    2554    2557    2558
                    2563    4033    4080    4141    4165    4357    4520    5505#   5506
RDATA = 000004       219#    1522    1583    1629    1677    1725    1772    1810    1831    1851
RESTAR  016113      3256#
RESVEC= 000010       151#
REV   = 004000       205#    1786    2058
```

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RIND    012532  2475* 2477  2478  2481# 2490*
RNGEN   012322  2429# 2458
RNUM  = 000002   218# 1299  1317  1347  1375  1403  1431  1457  1483  1537  1598  1643  1691
                1739  1786  1822  1844  1889  1957  2004  2058  2098  2240
RP1     012370  2429  2433* 2440  2442#
RP2     012372  2432  2436  2439* 2443#
RSTMTK  012242   930  2408# 2641
RS04    012116  2373# 2512  2569  2589
RS05    012146  2384#
RS05S   012142  2382# 2398  2426  2453  2464
RTNNO   001262   459#  910*
RTSPC = 000207   189# 2354  2360
R0001   002716   941#
R0002   002766   955#
R0003   003036   969#
R0004   003106   983#
R0005   003172  1001#
R0006   003232  1018#
R0007   003274  1035#
R0010   003346  1053#
R0011   003430  1074#
R0012   003522  1097#
R0013   003626  1124#
R0014   003740  1149#
R0015   004014  1165#
R0016   004070  1184#
R0017   004204  1215#
R0020   004320  1245#
R0021   004410  1266#
R0022   004522  1295#
R0023   004600  1316#
R0024   004666  1346#
R0025   004774  1371#
R0026   005072  1399#
R0027   005166  1426#
R0030   005266  1454#
R0031   005354  1479#
R0032   005606  1533#
R0033   006060  1593#
R0034   006270  1639#
R0035   006474  1687#
R0036   006700  1735#
R0037   007102  1782#
R0040   007246  1819#
R0040A  007312  1829#  1850
R0041   007554  1885#
R0041A  007610  1894#  1941
R0041B  007622  1895   1898#
R0042   010050  1954#
R0043   010236  2002#
R0044   010464  2056#
R0045   010640  2096#
R0046   011110  2156#
R0047   011142  2169#
R0050   011172  2180#
R0051   011222  2191#
```

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R0052   011252            2202#
R0053   011302            2213#
R0054   011340            2227#
SAT   = 000000             217#
SBDAT   013306            2578*  2582   2603#
SBDAT1  001276             465#  1663   1711   1758   1915   2041   2134   2553
SBDAT2  001302             467#  1796
SBDAT3  001306             469#  2081
SPBOT = 001000             178#
SRSETT  012220             929   1138   1154   1170   1202   1233   1255   1303   1871   1974   2401#  2404*  2640
SST   = 000010             221#  2607
STACK = 001100              55#
STAL    012430            2457#
STALA   012456            2461*  2463#
STALB   012464            2460   2465#
START   002314             176    864#  2340
STARTX  002632             924#  2315
STKLMT= 177774              66#
STLMSK  012466            2459   2466#
STMES   015366             912   3192#
STTCV   012174            1035   1053   1074   1097   1266   1454   1480   1534   1595   1640   1688   1736   1783
                          1886   1940   1954   1984   2112   2394#
SV04    012030            2353#  2505   2561   2577
SV05    012054            2360#
SV05A   012062            2358   2361#
SV05B   012070            2355   2363#
SV05C   012106            2354*  2357*  2360*  2369#
SV05S   012044            2357#  2394   2422   2445   2457
SWR     001140             368#   873    897*   899    905*  2642   2656   2658   2664   2671   2731   2738   2743
                          2746   2788   2806*
SWREG   000176             174#   905
SW0   = 000001             119#
SW00  = 000001             109#   119
SW01  = 000002             108#   118
SW02  = 000004             107#   117
SW03  = 000010             106#   116
SW04  = 000020             105#   115
SW05  = 000040             104#   114
SW06  = 000100             103#   113
SW07  = 000200             102#   112
SW08  = 000400             101#   111
SW09  = 001000             100#   110
SW1   = 000002             118#
SW10  = 002000              99#
SW11  = 004000              98#
SW12  = 010000              97#
SW13  = 020000              96#
SW14  = 040000              95#
SW15  = 100000              94#
SW2   = 000004             117#
SW3   = 000010             116#
SW4   = 000020             115#
SW5   = 000040             114#
SW6   = 000100             113#
SW7   = 000200             112#
SW8   = 000400             111#
```

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SW9    = 001000          110#
TBITVE= 000014           152#
TCBA    001244           452#  984   985*  1507  1509  1521* 1569  1582* 1628* 1658  1676* 1706  1724*
                         1754  1771* 1809* 1821* 1843* 1926  1939* 2014* 2036  2068* 2108* 2141  2250*
                         2727
TCCM    001240           450#  942   943*  1001  1018  1037* 1039* 1056* 1057* 1059* 1076* 1079* 1084*
                         1099* 1101* 1104* 1128* 1133* 1137* 1149* 1165* 1184* 1190  1194* 1199  1215*
                         1221  1225* 1230  1245* 1247  1251* 1268* 1270* 1277* 1282* 1295  1299* 1300
                         1316* 1317* 1322  1326  1346* 1347* 1375* 1384  1403* 1412  1430* 1431* 1440
                         1456* 1457* 1462  1482* 1483* 1488  1492  1514  1522* 1536* 1537* 1542  1550
                         1575  1583* 1597* 1598* 1608  1613* 1614  1621  1629* 1642* 1643* 1648  1669
                         1677* 1690* 1691* 1696  1717  1725* 1738* 1739* 1744  1764  1772* 1785* 1786*
                         1791  1802  1810* 1819* 1822* 1827  1831* 1841* 1844* 1849  1851* 1861  1866*
                         1867  1888* 1889* 1894  1930  1942* 1956* 1957* 1966  1970* 1978  1986* 1988*
                         2003* 2004* 2009  2016* 2022  2026  2057* 2058* 2063  2070* 2076  2097* 2098*
                         2103  2114* 2120  2239* 2240* 2245  2252* 2258  2518* 2608* 2609  2638* 2725
TCCMT   001316           473#
TCDT    001246           453#  1352  1354  1356  1898  2047  2087  2124* 2147  2272
TCLVL   001252           455#  1055  1077  2397
TCST    001236           449#  956   957*  1124  1129  1134  1150* 1151  1166* 1167  1186  1195  1217
                         1226  1252  1380  1408  1436  1544  1603  1836  1856  1962  1971  2520  2611
                         2726
TCSTT   001320           474#
TCVTR   001250           454#  1108* 1274* 2395
TCWC    001242           451#  970   971*  1501  1503  1520* 1563  1565  1581* 1605  1610  1616  1627*
                         1652  1654  1675* 1700  1702  1723* 1748  1750  1770* 1808* 1820* 1838  1842*
                         1858  1863  1869  1922  1938* 2013* 2030  2032  2067* 2107* 2137  2249* 4378
                         4543
TKVEC  = 000060          159#
TLAST  = 177777          187#
TMESAD  011730           2321* 2323* 2329#
TORDER  011766           939   953   967   981   999   1016  1033  1051  1072  1095  1122  1147  1163
                         1182  1213  1243  1264  1293  1314  1344  1369  1397  1424  1452  1477  1531
                         1591  1637  1685  1733  1780  1817  1883  1952  2000  2054  2094  2154  2167
                         2178  2189  2200  2211  2225  2236  2343#
TPB     001256           457#
TPS     001254           456#
TPVEC  = 000064          160#
TRAPVE= 000034           158#  881*  882*
TRAPX   011710           2322  2324#
TRAP10  011672           995   2321#
TRAP4   011702           994   2323#
TRC    = 000003          188#
TRPMES  015767           2333  3240#
TRPM10  016041           2321  3248#
TRPM4S  015717           2323  3233#
TRTVEC= 000014           153#
TRYAGN  011736           2332# 2350
TYPDS  = 104405          2303  3186#
TYPE   = 104401          911   912   2300  2304  2332  2333  2733  2741  2819  2864  2967  3038  3065
                         3083  3085  3088  3090  3094  3101  3166#
TYPOC  = 104402          2331  3074  3098  3171#
TYPON  = 104404          3181#
TYPOS  = 104403          3176#
TORDER  012026           2346  2351#
T0001   002666           931   935#
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T0002	002736	944	949#											
T0003	003006	958	963#											
T0004	003056	972	977#											
T0005	003126	986	993#											
T0006	003216	1009	1014#											
T0007	003260	1026	1031#											
T0010	003332	1044	1049#											
T0011	003414	1062	1070#											
T0012	003506	1087	1093#											
T0013	003612	1107	1120#											
T0014	003724	1141	1145#											
T0015	004000	1157	1161#											
T0016	004054	1173	1180#											
T0017	004170	1205	1211#											
T0020	004304	1236	1241#											
T0021	004374	1258	1262#											
T0022	004506	1285	1291#											
T0023	004564	1306	1312#											
T0024	004652	1335	1342#											
T0025	004760	1361	1367#											
T0026	005056	1389	1395#											
T0027	005152	1417	1422#											
T0030	005252	1445	1450#											
T0031	005340	1469	1475#											
T0032	005572	1513	1519	1529#										
T0033	006044	1574	1580	1589#										
T0034	006254	1620	1626	1635#										
T0035	006460	1668	1674	1683#										
T0036	006664	1716	1722	1731#										
T0037	007066	1763	1769	1778#										
T0040	007232	1801	1807	1815#										
T0041	007540	1874	1881#											
T0042	010034	1935	1950#											
T0043	010222	1977	1983	1998#										
T0044	010450	2046	2052#											
T0045	010624	2086	2092#											
T0046	011074	2146	2152#											
T0047	011126	2161	2164#											
T0050	011156	2176#												
T0051	011206	2187#												
T0052	011236	2198#												
T0053	011266	2209#												
T0054	011324	2223#												
T0055	011354	2234#												
T0056	011546	2271	2276#											
U0 =	000000	208#	1184	1215	1245	1277	1299	1317	1347	1375	1403	1431	1457	1483
		1537	1598	1643	1691	1739	1786	1822	1844	1889	1957	2004	2058	2098
		2240												
U1 =	000400	209#	2157											
U2 =	001000	210#	2170											
U3 =	001400	211#	2181											
U4 =	002000	212#	2192											
U5 =	002400	213#	2203											
U6 =	003000	214#	2214											
U7 =	003400	215#	2228											
V0 =	000000	195#	4680	4690	4693	4697	4701	4705	4716	4722	4728	4734	4740	4746

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                    4752  4758  4764  4770  4776  4782  4788  4794  4800  4806  4812  4818  4824
                    4830  4836  4842  4848  4854  4860  4866  4872  4878  4884  4890  4896  4902
                    4908  4914  4920  4926  4932  4938  4944  4950  4956  4962  4968  4974  4980
                    4986  4992  4998  5004  5010  5016  5022  5028  5034  5040  5046  5052  5058
                    5064  5070  5076  5082  5088  5094  5100  5106  5112  5118  5124  5130  5136
                    5142  5148  5154  5160  5166  5172  5178  5184  5190  5196  5202  5208  5214
                    5220  5226  5232  5238  5244  5250  5256  5262  5268  5274  5280  5286  5292
                    5298  5304  5310  5316  5322  5328  5334  5340  5346  5352  5358  5364  5370
                    5376  5382  5388  5394  5400  5406  5412  5418  5424  5430  5436  5442  5448
                    5454  5460  5466  5472  5479  5482  5485  5488  5497  5501
V1      = 000004     196#
V2      = 000010     197#  4664  4690  4709  4719  4725  4731  4737  4743  4749  4755  4761  4767
                    4773  4779  4785  4791  4797  4803  4809  4815  4821  4827  4833  4839  4845
                    4851  4857  4863  4869  4875  4881  4887  4893  4899  4905  4911  4917  4923
                    4929  4935  4941  4947  4953  4959  4965  4971  4977  4983  4989  4995  5001
                    5007  5013  5019  5025  5031  5037  5043  5049  5055  5061  5067  5073  5079
                    5085  5091  5097  5103  5109  5115  5121  5127  5133  5139  5145  5151  5157
                    5163  5169  5175  5181  5187  5193  5199  5205  5211  5217  5223  5229  5235
                    5241  5247  5253  5259  5265  5271  5277  5283  5289  5295  5301  5307  5313
                    5319  5325  5331  5337  5343  5349  5355  5361  5367  5373  5379  5385  5391
                    5397  5403  5409  5415  5421  5427  5433  5439  5445  5451  5457  5463  5469
                    5475
V3      = 000014     198#
V4      = 000020     199#
V5      = 000024     200#  4690  4693  4705  4716  4722  4728  4734  4740  4746  4752  4758  4764
                    4770  4776  4782  4788  4794  4800  4806  4812  4818  4824  4830  4836  4842
                    4848  4854  4860  4866  4872  4878  4884  4890  4896  4902  4908  4914  4920
                    4926  4932  4938  4944  4950  4956  4962  4968  4974  4980  4986  4992  4998
                    5004  5010  5016  5022  5028  5034  5040  5046  5052  5058  5064  5070  5076
                    5082  5088  5094  5100  5106  5112  5118  5124  5130  5136  5142  5148  5154
                    5160  5166  5172  5178  5184  5190  5196  5202  5208  5214  5220  5226  5232
                    5238  5244  5250  5256  5262  5268  5274  5280  5286  5292  5298  5304  5310
                    5316  5322  5328  5334  5340  5346  5352  5358  5364  5370  5376  5382  5388
                    5394  5400  5406  5412  5418  5424  5430  5436  5442  5448  5454  5460  5466
                    5472
V6      = 000030     201#  4680  4697
V7      = 000034     202#  4664  4709  4719  4725  4731  4737  4743  4749  4755  4761  4767  4773
                    4779  4785  4791  4797  4803  4809  4815  4821  4827  4833  4839  4845  4851
                    4857  4863  4869  4875  4881  4887  4893  4899  4905  4911  4917  4923  4929
                    4935  4941  4947  4953  4959  4965  4971  4977  4983  4989  4995  5001  5007
                    5013  5019  5025  5031  5037  5043  5049  5055  5061  5067  5073  5079  5085
                    5091  5097  5103  5109  5115  5121  5127  5133  5139  5145  5151  5157  5163
                    5169  5175  5181  5187  5193  5199  5205  5211  5217  5223  5229  5235  5241
                    5247  5253  5259  5265  5271  5277  5283  5289  5295  5301  5307  5313  5319
                    5325  5331  5337  5343  5349  5355  5361  5367  5373  5379  5385  5391  5397
                    5403  5409  5415  5421  5427  5433  5439  5445  5451  5457  5463  5469  5475
                    5497
WALL    = 000016     224#  2114
WDATA   = 000014     223#  2016  2070  2252
WDCNT     013312    2265*  2581*  2594*  2605#
WRTM    = 000012     222#  1184  1215  1245  1277
X       = 177777     191#
$AUTOB   001134      365#
$BDADR   001122      360#
$BDDAT   001126      362#
$BELL    001226      439#  2733  2759
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$CHARC  014502          2866* 2876* 2883  2892* 2897#
$CKSWR= ****** U        3191
$CMTAG  001100           348#  870   871   879   885   886   887
$CM1  = 000010           381#  385   387#  388   390#  391   393#  394   396#  397   399#  400   402#
                         403   405#  406   408#
$CM2  = 000020           381#  385   387#  388   390#  391   393#  394   396#  397   399#  400   402#
                         403   405#  406   408#
$CM3  = 000010           378#  379   382
$CM4  = 000010           409#  413   415#  416   418#  419   421#  422   424#  425   427#  428   430#
                         431   433#  434   436#
$CRLF   001233           441#  911   2332  2741  2759  2865  2900  3065  3085  3090  3094
$DBLK   014722          2929  2967  2975#
$DOAGN  011646          2296  2306  2313#
$DTBL   014712          2932  2971#
$ENDAD  011636          2309# 2754
$ENDCT  011604           885  2298#
$ENDMG  011655          2300  2317#
$ENULL  011652          2304  2316#
$EOP    011550          2287#
$EOPCT  011576           885* 2295# 2299
$ERFLG  001103           351# 2623  2660  2662  2668* 2689  2728* 2759
$ERMAX  001115           357#  888* 2662  2684* 2689
$ERROR  013652           879  2715#
$ERRPC  001116           358# 2735* 2736* 2737  2759  3072  3290  3313  3334  3360  3379  3404  3426
                        3447  3469  3491  3513  3538  3559  3581  3604  3627  3651  3672  3691  3713
                        3736  3756  3776  3802  3829  3852  3873  3895  3918  3938  3953  3971  3991
                        4010  4033  4057  4080  4098  4120  4141  4165  4188  4212  4234  4257  4281
                        4306  4330  4357  4378  4401  4421  4446  4471  4494  4520  4543  4565  4586
                        4605  4623  4641  4659
$ERRTB  001324           491# 3080
$ERRTY  015160          2740  3064#
$ERTTL  001112           355# 2734* 2759
$ESCAP  001224           438#  887* 2683* 2749  2751  2759
$FILLC  001156           376# 2869  2900
$FILLS  001155           375# 2900
$GDADR  001120           359#
$GDDAT  001124           361#
$GET42  011626          2305#
$GTSWR= ****** U        3190
$HD   = 000000            27
$ICNT   001104           352# 2675* 2676  2678* 2688
$ILLUP  014250          2765  2797  2822#
$INTAG  001135           366#
$ITEMB  001114           356# 2737* 2759  3068
$LF     001234           442# 2759  2900
$LPADR  001106           353#  889* 2666* 2681* 2686  2688
$LPERR  001110           354#  890* 2666  2682* 2688  2748
$MAIL = ****** U          909  2681  2743  2853
$MXCNT  013650          2679  2688#
$NULL   001154           374# 2871  2900
$OCNT   015154          3010* 3039* 3052#
$OMODE  015156          3005* 3009* 3014  3017* 3028* 3054#
$OVER   013634          2643  2659  2667  2677  2685#
$PASS   001100           349# 2292* 2293* 2302  2316  2673  2689
$POWER  014256          2820  2825#
$PWRDN  014074           883  2765#  2817
```

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$PWRMG  014244          2820#
$PWRUP  014162          2790    2797#
$QUES   001232           440#   2759    2900
$RDCHR= ****** U        3191
$RDDEC= ****** U        3191
$RDLIN= ****** U        3191
$RDOCT= ****** U        3191
$REGAD  001160           379#
$REG0   001162           386#   1355*   1357*   1498*   1504*   1556*   1566*   1605*   1610*   1616*   1655*   1703*   1751*
                        1838*   1858*   1863*   1869*   2033*   2130*   2343*   2345    2347    2348*   3756    3829    4033
                        4057    4188    4212    4234    4257    4281    4306    4330    4357    4421    4520
$REG1   001164           389#   2347*   2726*   3290    3313    3334    3360    3379    3404    3426    3447    3469    3491
                        3513    3538    3559    3581    3604    3627    3651    3672    3691    3713    3736    3776    3802
                        3829    3852    3873    3895    3918    3938    3953    3971    3991    4010    4033    4057    4080
                        4098    4120    4141    4165    4188    4212    4234    4257    4281    4306    4330    4357    4378
                        4401    4421    4446    4471    4494    4520    4543    4565    4586
$REG2   001166           392#   2725*   3290    3313    3334    3360    3379    3404    3426    3447    3469    3491    3513
                        3538    3559    3581    3604    3627    3651    3672    3691    3713    3736    3776    3802    3829
                        3852    3873    3895    3918    3938    3953    3971    3991    4010    4033    4057    4080    4098
                        4120    4141    4165    4188    4212    4234    4257    4281    4306    4330    4357    4378    4401
                        4421    4446    4471    4494    4520    4543    4565    4586
$REG3   001170           395#   2727*   4165    4401    4565
$REG4   001172           398#   1354*   1356*   1503*   1509*   1565*   1654*   1702*   1750*   2032*   3829    4057    4080
$REG5   001174           401#   2723*   2724*   3290    3313    3334    3360    3379    3404    3426    3447    3469    3491
                        3513    3538    3559    3581    3604    3627    3651    3672    3691    3713    3736    3756    3776
                        3802    3829    3852    3873    3895    3918    3938    3953    3971    3991    4010    4033    4057
                        4080    4098    4120    4141    4165    4188    4212    4234    4257    4281    4306    4330    4357
                        4378    4401    4421    4446    4471    4494    4520    4543    4565    4586    4605    4623    4641
                        4659
$REG6   001176           404#   2720*   2721*   3290    3313    3334    3360    3379    3404    3426    3447    3469    3491
                        3513    3538    3559    3581    3604    3627    3651    3672    3691    3713    3736    3756    3776
                        3802    3829    3852    3873    3895    3918    3938    3953    3971    3991    4010    4033    4057
                        4080    4098    4120    4141    4165    4188    4212    4234    4257    4281    4306    4330    4357
                        4378    4401    4421    4446    4471    4494    4520    4543    4565    4586    4605    4623    4641
                        4659
$REG7   001200           407#   2722*   3290    3313    3334    3360    3379    3404    3426    3447    3469    3491    3513
                        3538    3559    3581    3604    3627    3651    3672    3691    3713    3736    3756    3776    3802
                        3829    3852    3873    3895    3918    3938    3953    3971    3991    4010    4033    4057    4080
                        4098    4120    4141    4165    4188    4212    4234    4257    4281    4306    4330    4357    4378
                        4401    4421    4446    4471    4494    4520    4543    4565    4586    4605    4623    4641    4659
$RTNAD  011650          2315#
$R2A  = ****** U        3191
$SAVRE= ****** U        3191
$SAVR6  014254          2789*   2798    2799*   2800*   2824#
$SCOPE  013362           877    2633#
$SETUP= 000037            15#    863#    876     877     879     881     883     885     886     887     889     2289    2290
                        2634    2716    2746    2753    2754
$STUP = 177777            15#    863#
$SVLAD  013606          2651    2680#
$SWR  = 167400             6#     27      32      33      34      35      36      37      38     437     438     439     886
                         887     889     890    2284    2291    2308    2314    2316    2624    2625    2626    2627    2629
                        2642    2654    2656    2657    2660    2661    2662    2669    2670    2671    2682    2685    2688
                        2707    2708    2709    2710    2711    2731    2738    2743    2746    2759    2821
$SWRMK= 000000            38      39      40    2628    2629    2630    2658
$TIMES  001222           437#    886*   2291*   2669*   2676    2679*   2688
$TKB    001146          371#
```

```
$TKS     001144              370#
$TMP0    001202              414#
$TMP1    001204              417#
$TMP2    001206              420#
$TMP3    001210              423#
$TMP4    001212              426#
$TMP5    001214              429#
$TMP6    001216              432#
$TMP7    001220              435#
$TN    = 000000                7#    27
$TPB     001152              373#  2889*  2900
$TPFLG   001157              377#  2847   2900
$TPS     001150              372#  2887   2900
$TRAP    015314              881   3115#
$TRAP2   015336             3126#  3165
$TRP   = 000006             3155#  3157   3158   3168#  3170   3171   3173#  3175   3176   3178#  3180   3181   3183#
                            3185   3186   3188#
$TRPAD   015350             3120   3165#
$TSTNM   001102              350#  2290*  2345   2623   2658   2680*  2685   2689   2724   2730   2759
$TYPBN=  ****** U           3189
$TYPDS   014506             2914#  3184   3187
$TYPE    014266             2328   2847#  3156   3167
$TYPEC   014436             2868   2875   2882   2887#  2888
$TYPEX   014504             2893   2895   2898#
$TYPOC   014756             3008#  3169   3172
$TYPON   014772             3007   3010#  3182
$TYPOS   014732             3003#  3177
$XTSTR   013412             2645#
$$GET4=  000000             2307#  2308
$OFILL   015155             3004*  3008*  3018   3053#
$40CAT=  ****** U           2642   2740
.      = 040430              167#   171    172#   322#   347#   443    874    889    890   2316   2320   2491   2499
                            2610   2612   2688   2689   2759   2792   2823   2900   2975#  3104#  3289#  3333#  3359#
                            3378#  3403#  3537#  3650#  3712#  3755#  3894#  3917#  3937#  4056#  4079#  4097#  4187#
                            4211#  4256#  4305#  4356#  4445#  4470#  4493#  4519#  4585#  5503#  5505   5506#
```

```
ADITAG    227#   448
CEND      292#  5493
COMMEN      1#   162#
C10       274#  4663  4679  4696  4700  4704  4708
C22       289#  4671
C25       265#  4683  4686  5490
C26       268#  4689
C32       271#  4692
C45       286#  5487
C51       283#  5484
C55       262#  4675
C70       277#  4715  4718  4721  4724  4727  4730  4733  4736  4739  4742  4745  4748  4751  4754
         4757  4760  4763  4766  4769  4772  4775  4778  4781  4784  4787  4790  4793  4796  4799
         4802  4805  4808  4811  4814  4817  4820  4823  4826  4829  4832  4835  4838  4841  4844
         4847  4850  4853  4856  4859  4862  4865  4868  4871  4874  4877  4880  4883  4886  4889
         4892  4895  4898  4901  4904  4907  4910  4913  4916  4919  4922  4925  4928  4931  4934
         4937  4940  4943  4946  4949  4952  4955  4958  4961  4964  4967  4970  4973  4976  4979
         4982  4985  4988  4991  4994  4997  5000  5003  5006  5009  5012  5015  5018  5021  5024
         5027  5030  5033  5036  5039  5042  5045  5048  5051  5054  5057  5060  5063  5066  5069
         5072  5075  5078  5081  5084  5087  5090  5093  5096  5099  5102  5105  5108  5111  5114
         5117  5120  5123  5126  5129  5132  5135  5138  5141  5144  5147  5150  5153  5156  5159
         5162  5165  5168  5171  5174  5177  5180  5183  5186  5189  5192  5195  5198  5201  5204
         5207  5210  5213  5216  5219  5222  5225  5228  5231  5234  5237  5240  5243  5246  5249
         5252  5255  5258  5261  5264  5267  5270  5273  5276  5279  5282  5285  5288  5291  5294
         5297  5300  5303  5306  5309  5312  5315  5318  5321  5324  5327  5330  5333  5336  5339
         5342  5345  5348  5351  5354  5357  5360  5363  5366  5369  5372  5375  5378  5381  5384
         5387  5390  5393  5396  5399  5402  5405  5408  5411  5414  5417  5420  5423  5426  5429
         5432  5435  5438  5441  5444  5447  5450  5453  5456  5459  5462  5465  5468
C73       280#  5471  5474  5478  5481  5496  5500
EMTDEF    309#
EMTE      295#  4667
ENDCOM      1#   162#
ERROR      56#   945   959   973   987  1006  1023  1041  1063  1081  1103  1114  1126  1131  1136
          1153  1169  1188  1192  1197  1201  1219  1223  1228  1232  1249  1254  1272  1279  1297
          1302  1324  1328  1358  1382  1386  1410  1414  1438  1442  1464  1466  1490  1494  1499
          1505  1510  1516  1546  1548  1552  1557  1561  1567  1571  1577  1606  1611  1617  1623
          1650  1656  1660  1671  1698  1704  1708  1719  1746  1752  1756  1766  1793  1804  1829
          1839  1859  1864  1870  1896  1906  1910  1912  1920  1924  1928  1932  1964  1968  1973
          1980  2011  2024  2028  2034  2038  2065  2078  2105  2122  2131  2139  2143  2158  2171
          2182  2193  2204  2215  2229  2247  2260  2349  2600
ESCAPE      1#   162#
GETPRI      1#   162#
GETSWR      1#   162#
MTCOD     298#  1318  1348  1376  1404  1432  1458  1484  1538  1599  1644  1692  1740  1787  1823
          1832  1845  1852  1890  1958  2005  2059  2099  2241
MTCOE     303#  2017  2071  2115  2253
MULT        1#   162#
NEWTST      1#   162#
POP         1#   162#  2802  2807  2958
PUSH        1#   162#  2767  2777  2784  2914
REPORT      1#   162#
SAVE      2689#  2719
SCOMAC     316#  2637
SCOPE      57#   935   949   963   977   993  1014  1031  1049  1070  1093  1120  1145  1161  1180
          1211  1241  1262  1291  1312  1342  1367  1395  1422  1450  1475  1529  1589  1635  1683
          1731  1778  1815  1881  1950  1998  2052  2092  2152  2164  2176  2187  2198  2209  2223
```

```
        2234    2276    2288
SETPRI     1#    162#
SETRAP   258#
SETTRA  3130#   3156    3169    3174    3179    3184
SETUP      1#    162#    868
SKIP       1#    162#
SLASH      1#    162#
SPACE    162#
STARS      1#     12#    162#    342     443    2280    2619    2702    2762    2794    2831    2903    2979    3058    3108
SWRSU      1#    162#    891#    892
TRMTRP  3152#
TYPBIN     1#    162#
TYPDEC     1#    162#   2301
TYPNAM     1#    162#
TYPNUM     1#    162#
TYPOCS     1#    162#
TYPOCT     1#    162#   3071    3096
TYPTXT     1#    162#
$$CMRE   326#    385     388     391     394     397     400     403     406
$$CMTM   333#    413     416     419     422     425     428     431     434
$$ESCA     1#    162#
$$NEWT     1#    162#
$$SET   3136#   3157    3170    3175    3180    3185
$$SKIP     1#    162#
.EQUAT     1#     9#      51
.HEADE     1#     9#      16
.KT11      1#
.SETUP     1#    10#      14     862
.SWRHI     1#    10#      27
.SWRLO    10#    40#
.$ACT1     1#
.$APTB     1#
.$APTH     1#
.$APTY     1#
.$ASTA     1#
.$CATC     1#     9#     164
.$CMTA     1#    13#     325
.$DB2D     1#
.$DB2O     1#
.$DIV      1#
.$EOP      1#     9#    2277
.$ERRO     1#    12#    2699
.$ERRT     1#    12#    3055
.$MULT     1#
.$POWE     1#    11#    2759
.$RAND     1#
.$RDDE     1#
.$RDOC     1#
.$READ     1#
.$R2AZ     1#
.$SAVE     1#
.$SB2D     1#
.$SB2O     1#
.$SCOP     1#    10#    2616
.$SIZE     1#
.$SUPR     1#
```

```
.$TRAP      1#      11#   3105
.$TYPB      1#
.$TYPD      1#      11#   2900
.$TYPE      1#      12#   2828
.$TYPO      1#      11#   2976
.$40CA      1#
.1170       1#


. ABS.  040430      000


 ERRORS DETECTED:  0

 CZTCBE.BIN,CZTCBE.LST/CRF/SOL/NL:TOC=CZTCBE.SML,CZTCBE.P11
 RUN-TIME: 42 60 6 SECONDS
 RUN-TIME RATIO: 234/109=2.1
 CORE USED:  34K  (67 PAGES)
```