BELL TELEPHONE LABORATORIES, INCORPORATED

5. 102

COMMON SYSTEMS

FOR USE WITH NO. 3 ESS

ARRANGED WITH 2-WIRE FEATURES

OFF-LINE DIAGNOSTIC CODE

(CDGNOF)

PRINTED IN U.S.A.

SECTION DICTIONARY

NUMBER	NAME	MAXIMUM	ORIGIN	TYP	ADDRESS-MODIFICATION
01	OMINTERP	0000015		C	
02	OBUSPAR	0000011		C	
03	OTIMERS	0000100		C	
04	ODTMTCH	0000221		C	
05	OIO	0001011		C	
06	OSTATUS	0000014		C	
07	OSTATUS2	0000040		C	
08	ODGSSP	0000476		C	
09	CDGOFSUB	0000032		C	
0A	CPATCH	0000000		C	
0B	CPATCH1	0000060		C	
0C	CPATCH2	0000000		C	
0D	CPATCH3	0000331		C	
0E	CPATCH7	0000326		C	
0F	TFAPCH2	0000000		C	
10	TPATCH	0000000		C	

VERSION W77D OF SWAP; VERSION   OF EPL   23:12:05   2/05/81 ****

                                                                    CDGNOF   W77D

```
                            01        DBNAM   NO33E3I3.OFF.DATABASE
                            02        RELNAM  NO3ESS
                            03        GETLIB  LIBRARY,MEMBER=MOPTBL
                            04        GETLIB  LIBRARY,MEMBER=SYSMAC
                            05        GETLIB  LIBRARY,MEMBER=SYSSYM
                            06        GETLIB  LIBRARY,MEMBER=PATCH2
0013744                     07        FIRSTOPTSS
0013744                     08        VERSION 3ACC,FIELD,ESS2E
0013744                     09        PATCHINIT
                            10 NO33E3I3.OFF.OPMS(O) DECK
                            11        DSQUAL  NO33E3I3
                            12        LISTING N,CRUNCH=Y,SYSOUT=N
                            13 ################
                            14 ##
                            15 ## UNIX ID = NO3PAG
                            16 ##
                            17 ################
                            18 ###########################################
                            19 ###
                            20 #### pid  date    time   rel
                            21 ###
                            22 #### cdgnof 1/24/81 16:50:30 7.1.1.1
                            23 ###
                            24 ###########################################
                            25      VERSIONS (FACTORY,FIELD)
                            26 #   THIS DATA SET WAS EDITED FOR UNIX ON 5/24/78.
                            27        NAME    CDGNOF


                            31 ## The following is a list of the valid csects for program CDGNOF

0013744                     33 OMINTERP CSECT
0015020                     34 OBUSPAR CSECT
0016106                     35 OTIMERS CSECT
0016674                     36 ODTMTCH CSECT
0017162                     37 OIO     CSECT
0021226                     38 OSTATUS CSECT
0022136                     39 OSTATUS2 CSECT
0023000                     40 ODGSSP CSECT
0017115                     41 CDGOFSUB CSECT


                            44 ## The following csects are necessary for patching
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
0111432                          01 CPATCH  CSECT
0112562                          02 CPATCH1 CSECT
0114107                          03 CPATCH2 CSECT
0115073                          04 CPATCH3 CSECT
0121236                          05 CPATCH7 CSECT

0116774                          07 TFAPCH2 CSECT

0600000                          09 TPATCH  CSECT
```

```
                                                23:12:05   2/05/81  ****
                                                     CDGNOF      W77D

         01        GETLIB  MEMBER=GPMAC
         02        GETLIB  MEMBER=CCSYM
         03        GETLIB  MEMBER=DGNSYM
         04        GETLIB  MEMBER=DGNMAC
         05        GETLIB  MEMBER=BSAIMAC
         06        GETLIB  MEMBER=CTVTAB
```

```
01 #   PROLOGUE

03 #   THIS PROGRAM CONTAINS ALL OF THE OFF-LINE CODE WHICH IS RUN
04 #   AS A PART OF COMMON SYSTEMS DIAGNOSTICS.   THE DESCRIPTION
05 #   OF THE VARIOUS ROUTINES APPEARS AT THE BEGINNING OF THE
06 #   CODE FOR EACH DIAGNOSTIC TEST.
```

```
01 #   LINKAGES TO DIAGNOSTIC MONITOR SUBROUTINES



08 #   MISCELLANEOUS LINKAGES

10 CINIT   EXTERN   SANITYDG
11 CTSD    EXTERN   PAGSCR           #   MONITOR CONTROL WORDS
12 TDATA   EXTERN   EQIOCHAN         #   EQUIPPED I/O CHANNEL TABLE.

14 CSYSUB EXTERN   SIO              #   SUBROUTINE FOR I/O OPERATION



20 #   LINKAGES TO TLM IN VARIOUS ON-LINE DIAGNOSTIC PROGRAMS

22 CDGNTI EXTERN   FLMCHO
23 CDGNTI EXTERN   FLMISOO
24 CDGNTI EXTERN   FLMSKOO
25 CDGNTI EXTERN   FLDME
26 CDGNTI EXTERN   FLMLTIO
27 CDGNTI EXTERN   SKIOER
28 CDGNTI EXTERN   FLSUBCD
29 CDGNTI EXTERN   FLIDLCH
30 CDGNTI EXTERN   FLCHTN
31 CDGNTI EXTERN   FLCHTM
32 CDGNTI EXTERN   FLINBT
33 CDGNTI EXTERN   FLCNT
34 CDGNTI EXTERN   FLIODOO
35 CDGNTI EXTERN   FLIODPL
36 CDGNTI EXTERN   FLIODPH
37 CDGNTI EXTERN   MLTIODOO
38 CSTATS EXTERN   FL1SRSO
39 CSTATS EXTERN   FLOSRSO
40 CSTATS EXTERN   FLRDO
41 CSTATS EXTERN   FLMLTO
42 CSTATS EXTERN   FLPNLTMR
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
01 #    ENTRY POINTS TO OFF-LINE DIAGNOSTIC ROUTINES

03          PUBLIC   MITST1
04          PUBLIC   MITST1A
05          PUBLIC   MITST2
06          PUBLIC   SEGMNT1
07          PUBLIC   SEG1
08          PUBLIC   TIMPRE
09          PUBLIC   TIMRGT
10          PUBLIC   TI125
11          PUBLIC   TSTNOP
12          PUBLIC   DOTIO
13          PUBLIC   OFFSSP
14          PUBLIC   LDERBT
15          PUBLIC   RNSANITY
16          PUBLIC   BADBA
17          PUBLIC   GOODBA
18          PUBLIC   LDTI
19          PUBLIC   IOERROR

21 #    SUBROUTINES AVAILABLE TO OFF-LINE DIAGNOSTICS
22          PUBLIC   PASSOFF
23          PUBLIC   FAILOFF


26          PUBLIC   IOSELCT
```

```
01 #   MACRO FOR GENERATION OF CSECT NAME AND PRINTING OF TITLES

03  MACRO
04         DGN_TTL TSTNO,DGNAME
05 TTL TEST DEC(D(TSTNO))
06 STTL DGNAME DIAGNOSTIC TEST
07 PMC SAVE,ON
08 O:TSTNO CSECT
09 #  ***************************************************************************
10 #  ***************************************************************************
11 #  **                                                                      **
12 #  **            CU DIAGNOSTIC TEST NO. DEC(D(TSTNO)), DGNAME
13 #  **                                                                      **
14 #  ***************************************************************************
15 #  ***************************************************************************
16 PMC RESTORE
17 TESTNO SET TSTNO
18 TNAME TEXT 'TSTNO'
19 MEND


25  MACRO
26         TESTSEG NUMBER
27  EJECT
28 PMC SAVE,ON
29 #**********************************************************
30 #*                                                       *
31 #*          TEST DEC(D(TESTNO))    SEGMENT DEC(D(NUMBER))
32 #*                                                       *
33 #**********************************************************
34  PMC RESTORE
35  SPACE 5
36  MEND

38  MACRO
39         ENDSECT
40  SPACE 2
41 SECT MSET MTXT(TNAME)
42 X:SECT EQU *-O:SECT
43  PMC SAVE,ON
44 #   THIS CSECT IS DEC(D(*-O:SECT)) WORDS LONG.
45  PMC RESTORE
46  PUBLIC X:SECT
47  MEND
48 DGN_TTL OPRSW  1
49 TESTSEG OPRSW  1
```

Labels in left margin:
- DGN_TTL (lines 03–19)
- TESTSEG (lines 25–36)
- ENDSECT (lines 38–47)

MACRO DEFINITIONS

01 ENDSECT OPRSW 1

```
TEST 65                                                        23:12:05   2/05/81  ****

MICRO_INTERPRET DIAGNOSTIC TEST                                          CDGNOF      W77D

0013744                        -001- 01 OMINTERP CSECT
                               -001- 02 #  ***********************************************************************
                               -001- 03 #  ***********************************************************************
                               -001- 04 #  **                                                                  **
                               -001- 05 #  **            CU DIAGNOSTIC TEST NO. 65, MICRO_INTERPRET
                               -001- 06 #  **                                                                  **
                               -001- 07 #  ***********************************************************************
                               -001- 08 #  ***********************************************************************


                                     14 # THE FOLLOWING CODE IS PART OF SEGMENT 1 OF THE MICROINTERPRET
                                     15 # DIAGNOSTIC. THREE TESTS ARE PERFORMED.
                                     16 #    1. SYMBOL MITST1 - A SINGLE CYCLE MICROINTERPRET IS PERFORMED
                                     17 #                       WHICH GATES R6 TO THE AK.
                                     18 #    2. SYMBOL MITST1A - A SINGLE CYCLE MICROINTERPRET IS PEFORMED
                                     19 #                       WHICH GATES THE AK TO R6.  THIS HAS
                                     20 #                       THE "TO" AND "FROM" FIELDS THE
                                     21 #                       COMPLEMENT OF TEST 1 ABOVE.
                                     22 #    3. SYMBOL MITST2 - A MULTIPLE CYCLE MICROINTERPRET IS TRIED.



0013744                              29 MITST1
0013744                              30        MIMODE  L AK,R6
0013744 01 000000 113000 -------  -001- 31     MIS     0
0013745 01 000001 116143 -------  -002- 32             VFD     8,AK%T 8,R6%F
0013746 01 000002 056540 -------        33     HALT



0013747                              39 MITST1A
0013747                              40        MIMODE  L R6,AK
0013747 01 000003 113000 -------  -001- 41     MIS     0
0013750 01 000004 061634 -------  -002- 42             VFD     8,R6%T 8,AK%F
0013751 01 000005 056540 -------        43     HALT
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

  23:12:05   2/05/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE 04   PAGE   9

```
TEST 65                                                              23:12:05   2/05/81  ****

    MICRO_INTERPRET DIAGNOSTIC TEST                                    CDGNOF         W77D

0013752                                          01 MITST2
0013752 01 00Q006 110400 ------                  02      RRN      0,0
0013753                                          03      MIMODE
0013753 01 000007 013400 ------        -001- 04          MI       0
0013754                                          05      L        R1,R0
0013754 01 000010 052523 ------        -001- 06          VFD      8,R1%T 8,R0%F
0013755                                          07      L        R2,R1
0013755 01 000011 053125 ------        -001- 08          VFD      8,R2%T 8,R1%F
0013756                                          09      L        R0,IB
0013756 01 000012 051706 ------        -001- 10          VFD      8,R0%T 8,IB%F
0013757                                          11      ZMINT
0013757 01 000013 026750 ------        -001- 12          DATA     ZMINT%
0013760 01 000014 056540 ------              13      HALT


                                       -001- 16 #    THIS CSECT IS 13 WORDS LONG.
```

TEST 68   23:12:05   2/05/81   ****

GATING_BUS_PARITY_CHECKER DIAGNOSTIC TEST   CDGNOF   W77D

0015020   -001- 01 OBUSPAR CSECT
                                           -001- 02 # ***
                                           -001- 03 # ***
                                           -001- 04 # **   **
                                           -001- 05 # **   CU DIAGNOSTIC TEST NO. 68, GATING_BUS_PARITY_CHECKER
                                           -001- 06 # **   **
                                           -001- 07 # ***
                                           -001- 08 # ***

                                                 14 #   THE FOLLOWING CODE IS PART OF SEGMENTS 3 AND 4 OF THE
                                                 15 #   GATING BUS PARITY CHECKER DIAGNOSTIC. TWO TESTS ARE PERFORMED.
                                                 16 #   1 SYMBOL TSTNOP - A MICROINTERPRET OPERATION IS PERFORMED
                                                 17 #   WITH A NOP IN THE "FROM" FIELD. THIS
                                                 18 #   SHOULD BLOCK THE PARITY CHECK.
                                                 19 #   2. SYMBOL DOTIO - A TIO INSTRUCTION IS PERFORMED. THIS
                                                 20 #   INSTRUCTION USES A FEATURE WHICH
                                                 21 #   HAS THE CONTROL BITS OF A MICROINSTRUCTION
                                                 22 #   CA CB = B(11) AND A 2/4 CODE B(1001)
                                                 23 #   IN THE HIGH BITS OF THE NEXT ADDRESS
                                                 24 #   FIELD. THIS CAUSES A BUS PARITY
                                                 25 #   ERROR TO BE DIVERTED INTO THE IOPARER
                                                 26 #   BIT IN THE ERROR REGISTER. THIS FEATURE
                                                 27 #   IS TESTED HERE.
0015020   28 TSTNOP

0015020   30   # USE MICROINTERPRET MODE TO PROVE THAT A
                                                                                    NOP IN THE "FROM" FIELD BLOCKS THE PARITY
                                                                                    CHECK

0015020   33   MIMODE L RO,NOP
0015020 02 000000 113000 -------   -001- 34   MIS   0
0015021 02 000001 051760 -------   -002- 35   VFD   8,RO%T 8,NOP%F
0015022 02 000002 056540 -------   36   HALT

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

TEST 68   23:12:05   2/05/81 ****

GATING_BUS_PARITY_CHECKER DIAGNOSTIC TEST   CDGNOF   W77D

```
0015023                                  01 DOTIO
0015023                                  02
                                                                    #   SET UP MAINTENANCE STATE TO OVERRIDE LOCK
0015023 02 000003 103001 ------          04        LN      RO,M(OVLOF)       OFF-LINE, ZERO THE ER, DO A TIO, AND HALT.
0015024 02 000004 007740 ------          05        LSR     MS,RO
0015025                                  06        MIMODE  ZER         #   CLEAR ER
0015025 02 000005 013000 ------     -001- 07       MIS     0
0015026 02 000006 025750 ------     -002- 08              DATA    ZER%
0015027 02 000007 023500 ------          0?        TIO
0015030 02 000010 056540 ------          10        HALT


                                    -001- 13 #    THIS CSECT IS 9 WORDS LONG.
```

TEST 70   23:12:05   2/05/81   ****

PROGRAM_TIMER-TIMING_COUNTER DIAGNOSTIC TEST   CDGNOF   W77D

0016106   -001- 01 OTIMERS CSECT
                                           -001- 02 # ***
                                           -001- 03 # ***
                                           -001- 04 # **   **
                                           -001- 05 # **   CU DIAGNOSTIC TEST NO. 70, PROGRAM_TIMER-TIMING_COUNTER
                                           -001- 06 # **   **
                                           -001- 07 # ***
                                           -001- 08 # ***

                                      14 #   THE FOLLOWING CODE COMPRIZES SEGMENTS 1, 2, AND 3 OF
                                      15 #   THE PRORRAM TIMER - TIMING COUNTER DIAGNOSTIC. FOR THESE
                                      16 #   SEGMENTS, THE ON-LINE PROVIDES ONLY THE CONTROL AND CHECKING
                                      17 #   OF RESULTS.

                                      19 #   SEGMENT 1
                                      20 #   THE TI IS STOPPED WITH THE "SBTC" MISCELLANEOUS CROSSPOINT
                                      21 #   WHICH STOPS THE TIMER FOR 256 MICROSECONDS. THREE CONSTANTS
                                      22 #   ARE GATED INTO AND BACK OUT OF THE TI, ALL ZEROS, ALL ONES,
                                      23 #   AND ALL ZEROS. THIS SEGMENT IS RUN IN THE OFF-LINE
                                      24 #   PROCESSOR AND A FLAG IS LEFT IN THE MAINTENANCE CHANNEL
                                      25 #   BUFFER FOR THE ON-LINE TO INTERROGATE WHICH IS 0 FOR SUCCESS
                                      26 #   AND 1 FOR FAILURE

                                      28 #   SEGMENT 2
                                      29 #   THE FOUR BIT PRESCALER IS ZEROED BY THE "BRXTI" CROSSPOINT
                                      30 #   AND THEN INCREMENTED 16 TIMES. BIT 0 OF THE TI SHOULD BE
                                      31 #   SET ON THE SIXTEENTH COUNT. THIS SEGMENT IS RUN BY THE
                                      32 #   OFF-LINE PROCESSOR IN THE MANNER OF SEGMENT 1.

                                      34 #   SEGMENT 3
                                      35 #   THE COMBINATION OF THE TI=B(100) AND THE PRESCALER=B(0001)
                                      36 #   CREATES A 1.25 MS SIGNAL WHICH SHOULD CLEAR BITS (0-3) OF THE
                                      37 #   TI, SET BIT 4 AND CLEAR THE PRESCALER. THE TI IS SET TO
                                      38 #   B(100), THE PRESCALER IS ZEROED AND THEN INCREMENTED ONE
                                      39 #   TIME. THE TI IS EXAMINED AFTER THE PRESCALER IS
                                      40 #   INCREMENTED. TO PROVE THAT THE PRESCALER IS ZEROED, THE
                                      41 #   PRESCALER TEST OF SEGMENT 2 IS RUN AGAIN. THIS SEGMENT
                                      42 #   IS RUN IN THE OFF-LINE PROCESSOR.

TEST 70   23:12:05   2/05/81   ****

PROGRAM_TIMER-TIMING_COUNTER DIAGNOSTIC TEST   CDGNOF   W77D

```
                              -001- 01 #*****************************************************
                              -001- 02 #*                                                 *
                              -001- 03 #*          TEST 70     SEGMENT 1                   *
                              -001- 04 #*                                                 *
                              -001- 05 #*****************************************************
```

```
                    17 #    THE TI IS STOPPED WITH THE "SBTC" MISCELLANEOUS CROSSPOINT
                    18 #    WHICH STOPS THE TIMER FOR 256 MICROSECONDS. THREE CONSTANTS
                    19 #    ARE GATED INTO AND BACK OUT OF THE TI, ALL ZEROS, ALL ONES,
                    20 #    AND ALL ZEROS. THIS SEGMENT IS RUN IN THE OFF-LINE
                    21 #    PROCESSOR AND A FLAG IS LEFT IN THE MAINTENANCE CHANNEL
                    22 #    BUFFER FOR THE ON-LINE TO INTERROGATE WHICH IS 0 FOR SUCCESS
                    23 #    AND 1 FOR FAILURE
```

```
0016106                                 25 TIMRGT
0016106                                 26
0016106 03 000000 113000 ------         -001- 27      MIMODE  SBTC              #   BLOCK TIMING CHECK
0016107 03 000001 025471 ------         -002- 28      MIS     0
0016110                                 29              DATA    SBTC%           #   LOAD ALL 0S CONSTANT
0016110                                 30
0016110 03 000002 013400 ------         -001- 31      MIMODE
0016111                                 32      MI      0
0016111 03 000003 025712 ------         -001- 33      ZBR
0016112                                 34              DATA    ZBR%
0016112 03 000004 154066 ------         -001- 35      BRXTI
0016113                                 36              DATA    BRXTI%
0016113 03 000005 026750 ------         -001- 37      ZMINT
E0016114 03 000006 021020 ------              38              DATA    ZMINT%
0016115 03 000007 014021 ------               39      LRS     R1,TI
0016116 03 000010 055023 ------ 0016141       40      TZ      R1              #   CHECK RESULT
0016117                                 41      BNC     BADGT
0016117                                 42                              #   LOAD ALL 1S CONSTANT
0016117 03 000011 013400 ------         -001- 43      MIMODE
0016120                                 44      MI      0
0016120 03 000012 023712 ------         -001- 45      SBR
0016121                                 46              DATA    SBR%
0016121 03 000013 154066 ------         -001- 47      BRXTI
0016122                                 48              DATA    BRXTI%
0016122 03 000014 026750 ------         -001- 49      ZMINT
                                                       DATA    ZMINT%
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
TEST 70                                                              23:12:05   2/05/81   ****

    PROGRAM_TIMER-TIMING_COUNTER DIAGNOSTIC TEST                        CDGNOF        W77D

E0016123 03 000015 021020 ------              01        LRS     R1,TI
 0016124 03 000016 003401 177777              02        LI      R0,0(177777)
 0016126 03 000020 020020 ------              03        CR      R1,R0
 0016127 03 000021 055012 ------ 0016141      04        BNC     BADGT
 0016130                                      05                                  #  LOAD ALL 0S CONSTANT
 0016130                                      06        MIMODE
 0016130 03 000022 013400 ------     -001- 07           MI      0
 0016131                                      08        ZBR
 0016131 03 000023 025712 ------     -001- 09           DATA    ZBR%
 0016132                                      10        BRXTI
 0016132 03 000024 154066 ------     -001- 11           DATA    BRXTI%
 0016133                                      12        ZMINT
 0016133 03 000025 026750 ------     -001- 13           DATA    ZMINT%
E0016134 03 000026 021020 ------              14        LRS     R1,TI
 0016135 03 000027 014021 ------              15        TZ      R1             #   CHECK RESULT
 0016136 03 000030 055003 ------ 0016141      16        BNC     BADGT
 0016137                                      17 GOODGT
 0016137                                      18                  #   GATING TO TIMER WORKED CORRECTLY. LOAD
                                                                      MCHB WITH 0 INDICATING SUCCESS CONDITION TO
                                                                      ON-LINE PROCESSOR

 0016137 03 000031 103000 ------              21        ZR      RO
 0016140 03 000032 053003 ------ 0016143      22        B       LDMCHBF
 0016141                                      23 BADGT            #   GATING TO TIMER HAS FAILED. LOAD MCHR
                                                                      WITH B(1) INDICATING FAILURE TO ON-LINE
 0016141 03 000033 103401 000001              25        LI      RO,1
 0016143                                      26 LDMCHBF
 0016143 03 000035 107460 ------              27        LSR     MCHB,RO
 0016144 03 000036 056540 ------              28        HALT
```

PROGRAM_TIMER-TIMING_COUNTER DIAGNOSTIC TEST   CDGNOF   W77D

```
                                    -001- 01  #******************************************************
                                    -001- 02  #*                                                    *
                                    -001- 03  #*            TEST 70      SEGMENT 2                   *
                                    -001- 04  #*                                                    *
                                    -001- 05  #******************************************************




                                      16 #    THE FOUR BIT PRESCALER IS ZEROED BY THE "BRXTI" CROSSPOINT
                                      17 #    AND THEN INCREMENTED 16 TIMES. BIT 0 OF THE TI SHOULD BE
                                      18 #    SET ON THE SIXTEENTH COUNT. THIS SEGMENT IS RUN BY THE
                                      19 #    OFF-LINE PROCESSOR IN THE MANNER OF SEGMENT 1.

0016145                               21 TIMPRE
0016145                               22          MIMODE
0016145 03 000037 113400 ------  -001- 23          MI      0
0016146                               24          SBTC                            #   STOP TI AND CLEAR BACKUP TIMER
0016146 03 000040 025471 ------  -001- 25                  DATA    SBTC%
0016147                               26          ZBR
0016147 03 000041 025712 ------  -001- 27                  DATA    ZBR%
0016150                               28          BRXTI                           #   BRXTI ALSO CLEARS PRESCALER
0016150 03 000042 154066 ------  -001- 29                  DATA    BRXTI%
0016151                               30          ZMINT
0016151 03 000043 026750 ------  -001- 31                  DATA    ZMINT%
0016152                               32 INCRLPS
0016152 03 000044 103401 000016       33          LI      R0,14
0016154                               34                                          #   INCREMENT THE PRESCLAR 16 TIMES. THE
                                                                                      FIRST 15 SHOULD NOT SET TI BIT 0, THE 16TH
                                                                                      SHOULD

0016154                               37 INCRLP
0016154                               38          MIMODE  INCPR
0016154 03 000046 113000 ------  -001- 39          MIS     0
0016155 03 000047 134071 ------  -002- 40                  DATA    INCPR%
E0016156 03 000050 021020 ------       41          LRS     R1,TI
0016157 03 000051 024020 ------       42          TBN     R1,0
0016160 03 000052 054761 ------ 0016141 43          BC      BADGT
0016161 03 000053 036000 016154 0016154 44          BX      R0,INCRLP
0016163                               45          MIMODE  INCPR
0016163 03 000055 013000 ------  -001- 46          MIS     0
0016164 03 000056 134071 ------  -002- 47                  DATA    INCPR%
E0016165 03 000057 021020 ------       48          LRS     R1,TI
0016166 03 000060 024020 ------       49          TBN     R1,0
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

TEST 70   23:12:05   2/05/81   ****

PROGRAM_TIMER-TIMING_COUNTER DIAGNOSTIC TEST   CDGNOF   W77D

0016167 03 000061 055752 ------ 0016141   01   BNC   BADGT
0016170 03 000062 053747 ------ 0016137   02   B   GOODGT

TEST 70

PROGRAM_TIMER-TIMING_COUNTER DIAGNOSTIC TEST

```
                                -001- 01 #*************************************************
                                -001- 02 #*                                                 *
                                -001- 03 #*          TEST 70     SEGMENT 3                  *
                                -001- 04 #*                                                 *
                                -001- 05 #*************************************************
```

```
                        16 #   THE COMBINATION OF THE TI=B(100) AND THE PRESCALER=B(0001)
                        17 #   CREATES A 1.25 MS SIGNAL WHICH SHOULD CLEAR BITS (0-3) OF THE
                        18 #   TI, SET BIT 4 AND CLEAR THE PRESCALER. THE TI IS SET TO
                        19 #   B(100), THE PRESCALER IS ZEROED AND THEN INCREMENTED ONE
                        20 #   TIME. THE TI IS EXAMINED AFTER THE PRESCALER IS
                        21 #   INCREMENTED. TO PROVE THAT THE PRESCALER IS ZEROED, THE
                        22 #   PRESCALER TEST OF SEGMENT 2 IS RUN AGAIN. THIS SEGMENT
                        23 #   IS RUN IN THE OFF-LINE PROCESSOR.
```

```
0016171                                   25 TI125
0016171 03 000063 103024  ------          26      LN      R1,B(100)
0016172                                   27      MIMODE
0016172 03 000064 013400  ------   -001-  28      MI      0
0016173                                   29      SBTC                         #  STOP TIMER AND CLEAR BACKUP TIMER
0016173 03 000065 025471  ------ . -001-  30              DATA    SBTC%
0016174                                   31      L       BR,R1
0016174 03 000066 070525  ------   -001-  32              VFD     8,BR%T 8,R1%F
0016175                                   33      BRXTI
0016175 03 000067 154066  ------   -001-  34              DATA    BRXTI%
0016176                                   35      ZMINT
0016176 03 000070 026750  ------   -001-  36              DATA    ZMINT%
0016177                                   37
```

```
                                                                       #   INCREMENT PRESCALER 1 TIMES. THE TIMINING
                                                                           COUNTER PLUS PRESCALER SHOULD REACH 1.25 MS
                                                                           ON THE FIRST COUNT AND CAUSE A RESET OF TI
                                                                           BITS (0-3) AND SETTING OF BIT 4
```

```
0016177                                   41      MIMODE  INCPR
0016177 03 000071 013000  ------   -001-  42      MIS     0
0016200 03 000072 134071  ------   -002-  43              DATA    INCPR%
E0016201 03 000073 021020  ------         44      LRS     R1,TI
0016202 03 000074 017420 177410           45      CIRM    R1,B(1000),0,0(377)
0016204 03 000076 055735  ------ 0016141  46      BNC     BADGT
0016205                                   47
```

```
                                                                       #   THE PRESCALER AS WELL THE TC BITS(0-3)
                                                                           SHOULD HAVE BEEN CLEARED. THIS IS VERIFIED
                                                                           BY RERUNNING THE PRESCALER TEST AS IN
```

OFF-LINE DIAGNOSTIC CODE

TEST 70   23:12:05   2/05/81 ****

PROGRAM_TIMER-TIMING_COUNTER DIAGNOSTIC TEST   CDGNOF   W77D

                                                                              SEGMENT 2
0016205 03 000077 053745 ------ 0016152   02   B   INCRLPS

                              -001- 10 #   THIS CSECT IS 64 WORDS LONG.

TEST 73   23:12:05   2/05/81 ****

DATA_MATCHER DIAGNOSTIC TEST   CDGNOF   W77D

0016674
```
-001- 01 ODTMTCH CSECT
-001- 02 # *****************************************************************************
-001- 03 # *****************************************************************************
-001- 04 # **                                                                       **
-001- 05 # **                CU DIAGNOSTIC TEST NO. 73, DATA_MATCHER
-001- 06 # **                                                                       **
-001- 07 # *****************************************************************************
-001- 08 # *****************************************************************************


         14 # THE DATA MATCHER DIAGNOSTIC IS RUN ENTIRELY BY THE
         15 # OFF-LINE PROCESSOR.


         21 # SEGMENT 1
         22 # THE DATA MATCHER CIRCUIT WHICH MATCHES THE DI REGISTER
         23 # WITH THE DATA ON THE STORE BUS IS TESTED FOR MATCH
         24 # CONDITIONS WITH ALL ONES AND ALL ZEROS.  THE "ADMI" INTERRUPT
         25 # BIT SHOULD BE SET IN EACH CASE

         27 # SEGMENT 2
         28 # A MISMATCH ON A SINGLE BIT IS TRIED WITH A "0" ON THE STORE
         29 # BUS AND A "1" IN THE DI.  THIS IS REPEATED FOR EACH BIT.
         30 # A MISMATCH ON A SINGLE BIT IS TRIED WITH A "1" ON THE STORE
         31 # BUS AND A "0" IN THE DI.  THIS IS REPEATED FOR EACH BIT.

         33 # SEGMENT 3
         34 # THE ABILITY TO MASK A MATCH ON DATA WITH THE DK
         35 # REGISTER IS TESTED.  THE STORE BUS AND DK CONTAIN ALL ONES
         36 # AND THE DI CONTANS A SINGLE "0".  THE "1" IN THE DK SHOULD
         37 # MASK THE MISMATCH

         39 # SEGMENT 4
         40 # THE "DME" BIT IN THE SS IS TESTED.  WHEN IT IS CLEARED,
         41 # MATCHING SHOULD BE INHIBITED.
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

TEST 73   23:12:05   2/05/81   ****

DATA_MATCHER DIAGNOSTIC TEST   CDGNOF   W77D

```
                              01 #    REGISTER DEFINITION
          0000001             02 SEGMENT EQUR   R1              #    TEST SEGMENT NUMBER
          0000000             03 TLMNO   EQUR   R0
          0000013             04 INDEXR  EQUR   R11
          0000007             05 SCRATCH EQUR   R7
```

```
TEST 73                                                    23:12:05   2/05/81  ****

DATA_MATCHER DIAGNOSTIC TEST                                          CDGNOF      W77D

                                -001- 01 #****************************************************
                                -001- 02 #*                                              *
                                -001- 03 #*          TEST 73     SEGMENT 1
                                -001- 04 #*                                              *
                                -001- 05 #****************************************************


                                      11 #   THE DATA MATCHER CIRCUIT WHICH MATCHES THE DI REGISTER
                                      12 #   WITH THE DATA ON THE STORE BUS IS TESTED FOR MATCH
                                      13 #   CONDITIONS WITH ALL 1S AND ALL OS.  THE "ADMI" INTERRUPT
                                      14 #   BIT SHOULD BE SET IN EACH CASE

0016674                               16 SEG1                              #   OFF-LINE CODE FOR SEGMENT 1
0016674 04 000000 103621 000020       17          LI      R9,M(DME)
0016676 04 000002 003641 000010       18          LI      R10,M(ADMI)
0016700 04 000004 003160 ------       19          ZR      SCRATCH           #   CLEAR MASK
0016701 04 000005 007607 ------       20          LSR     DI,SCRATCH        #   ALL ZEROS CONSTANT IN MATCH REGISTER
0016702 04 000006 007567 ------       21          LSR     DK,SCRATCH        #   ALL ZEROS CONSTANT IN MASK REGISTER


0016703 04 000007 003021 ------       24          LN      SEGMENT,1         #   SEGMENT NUMBER


0016704                               27 MIMODE L SS_S,R9                   #   ENABLE MATCHER
0016704 04 000010 013000 ------ -001- 28          MIS     0
0016705 04 000011 105551 030560 -002- 29              VFD     8,SS_S%T 8,R9%F
0016706 04 000012 030560 017073 0017073. 30       LL      SCRATCH,ALZEROS   #   READ ALL ZEROS CONSTANT FROM STORE WHICH
                                                                                SHOULD MATCH
0016710                               32 MIMODE L SS_R,R9                   #   DISABLE MATCHER
0016710 04 000014 013000 ------ -001- 33          MIS     0
0016711 04 000015 107151 ------ -002- 34              VFD     8,SS_R%T 8,R9%F
E0016712 04 000016 021175 ------      35          LRS     SCRATCH,IS
0016713 04 000017 024163 ------       36          TBN     SCRATCH,S(ADMI)
0016714 04 000020 054006 ------ 0016722  37       BC      TRY1S


0016715                               40                                   #   FAILURE - MISMATCH INDICATED WHEN MATCH
                                                                                EXISTED
0016715 04 000021 003401 000001 CDGNTI  42 FLEXIT LI     TLMNO,FLMCHO
0016717                               43 FLEXIT
0016717                               44          CALL    FAILOFF
0016717 04 000023 137020 017115 0017115 -001- 45  BSA     FAILOFF
0016721 04 000025 156540 ------       46          HALT
0016722                               47 TRY1S
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
TEST 73                                                      23:12:05   2/05/81  ****

    DATA_MATCHER DIAGNOSTIC TEST                                    CDGNOF      W77D

0016722      ,                         02      MIMODE  L IS_R,R10        #   CLEAR INTERRUPT BIT
0016722 04 000026 113000 ------    -001- 03      MIS    0
0016723 04 000027 033152 003561    -002- 04             VFD    8,IS_R%T 8,R10%F
0016724 04 000030 003561 177777          05      LI     SCRATCH O(177777)
0016726 04 000032 007607 ------          06      LSR    DI,SCRATCH        #   ALL ONES CONSTANT IN MATCH REGISTER
0016727                                   07      MIMODE  L SS_S,R9        #   ENABLE MATCHER
0016727 04 000033 013000 ------    -001- 08      MIS    0
0016730 04 000034 105551 030560    -002- 09             VFD    8,SS_S%T 8,R9%F
0016731 04 000035 030560 017074 0017074   10      LL     SCRATCH,ALONES    #   READ ALL ONES  CONSTANT FROM STORE WHICH
                                                                                SHOULD MATCH
0016733                                   12      MIMODE  L SS_R,R9        #   DISABLE MATCHER
0016733 04 000037 013000 ------    -001- 13      MIS    0
0016734 04 000040 107151 ------    -002- 14             VFD    8,SS_R%T 8,R9%F
E0016735 04 000041 021175 ------          15      LRS    SCRATCH,IS
0016736 04 000042 024163 ------          16      TBN    SCRATCH,S(ADMI)
0016737 04 000043 054004 ------ 0016743   17      BC     SEG2
0016740                                   18                               #   FAILURE - MISMATCH INDICATED WHEN MATCH
                                                                                EXISTED

0016740 04 000044 003401 000001 CDGNTI    22      LI     TLMNO,FLMCHO
0016742 04 000046 053755 ------ 0016717   23      B      FLEXIT
```

```
TEST 73                                                         23:12:05   2/05/81  ****

DATA_MATCHER DIAGNOSTIC TEST                                          CDGNOF        W77D

                          -001- 01 #*****************************************************
                          -001- 02 #*                                              *
                          -001- 03 #*          TEST 73      SEGMENT 2
                          -001- 04 #*                                          *
                          -001- 05 #*****************************************************


0016743                               11 SEG2                            #   OFF-LINE CODE FOR SEGMENT 2
                                      12 #   A MISMATCH ON A SINGLE BIT IS TRIED WITH A "0" ON THE STORE
                                      13 #   BUS AND A "1" IN THE DI.  THIS IS REPEATED FOR EACH BIT.
                                      14 #   A MISMATCH ON A SINGLE BIT IS TRIED WITH A "1" ON THE STORE
                                      15 #   BUS AND A "0" IN THE DI.  THIS IS REPEATED FOR EACH BIT.

0016743                               17        MIMODE  L IS_R,R10         #   CLEAR INTERRUPT BIT
0016743 04 000047 113000 -------      18        MIS     0
0016744 04 000050 033152 -------  -001- 19            VFD      8,IS_R%T 8,R10%F
0016745 04 000051 004421 -------  -002- 20        AN      SEGMENT,1         #   INCREMENT SEGMENT

0016746                               23                                   #   MISMATCH WITH A "0" ON STORE BUS & A "1"
                                                                               IN DI
0016744 04 000052 003561 100000       25        LI      SCRATCH,0(100000)
0016750 04 000054 007607 -------      26        LSR     DI,SCRATCH
0016751 04 000055 003661 000017       27        LI      INDEXR,15
0016753                               28 W1SDILP
0016753                               29        MIMODE  L SS_S,R9          #   ENABLE MATCHER
0016753 04 000057 113000 -------  -001- 30        MIS     0
0016754 04 000060 105551 030560   -002- 31            VFD      8,SS_S%T 8,R9%F
0016755 04 000061 030560 017073 0017073 32       LL      SCRATCH,ALZEROS   #   READ ALL ZEROES CONSTANT FROM STORE
0016757                               33        MIMODE  L SS_R,R9          #   DISABLE MATCHER
0016757 04 000063 013000 -------  -001- 34        MIS     0
0016760 04 000064 107151 -------  -002- 35            VFD      8,SS_R%T 8,R9%F
E0016761 04 000065 021175 -------     36        LRS     SCRATCH,IS
0016762 04 000066 024163 -------      37        TBN     SCRATCH,S(ADMI)
0016763 04 000067 055005 ------- 0016770 38      BNC     ITSOK

0016764                               41                                   #   FAILURE - MISMATCH DETECTED AS MATCH
0016764 04 000070 003401 000002 CDGNTI 42       LI      TLMNO,FLMIS00
0016766 04 000072 001413 -------      43        AR      TLMNO,INDEXR
0016767 04 000073 053730 ------- 0016717 44      B       FLEXIT
0016770                               45 ITSOK
E0016770 04 000074 121170 -------     46        LRS     SCRATCH,DI
0016771 04 000075 010561 -------      47        RRN     SCRATCH,1
0016772 04 000076 007607 -------      48        LSR     DI,SCRATCH


  OFF-LINE DIAGNOSTIC CODE                                            PR-1C933-50

    23:12:05   2/05/81  TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE 04   PAGE 24
```

TEST 73   23:12:05   2/05/81 ****

DATA_MATCHER DIAGNOSTIC TEST   CDGNOF   W77D

0016773 04 000077 036260 016753 0016753   02   BX   INDEXR,W1SDILP

```
TEST 73                                                      23:12:05   2/05/81  ****

    DATA_MATCHER DIAGNOSTIC TEST                                         CDGNOF        W77D

0016775                                      01              #  MISMATCH WITH A "1" ON STORE BUS AND A
                                                                "0" IN DI


0016775 04 000101 003160 ------            05        ZR     SCRATCH
0016776 04 000102 007607 ------            06        LSR    DI,SCRATCH
0016777 04 000103 031160 017075 0017075    07        LAL    SCRATCH,W1TOS,RAO


0017001 04 000105 003277 ------            10        LN     INDEXR,15
0017002                                    11 W1SBUSLP
0017002                                    12        MIMODE L SS_S,R9          #  ENABLE MATCHER
0017002 04 000106 113000 ------    -001-   13        MIS    0
0017003 04 000107 105551 ------    -002-   14            VFD    8,SS_SXT 8,R9XF
0017004 04 000110 042173 ------            15        LX     SCRATCH,INDEXR(RAO) #  READ A DATA WORD CONTAINING A SINGLE "1"
0017005                                    16        MIMODE L SS_R,R9          #  DISABLE MATCHER
0017005 04 000111 013000 ------    -001-   17        MIS    0
0017006 04 000112 107151 ------    -002-   18            VFD    8,SS_RXT 8,R9XF
E0017007 04 000113 021175 ------           19        LRS    SCRATCH,IS
0017010 04 000114 024163 ------            20        TBN    SCRATCH,S(ADMI)
0017011 04 000115 055005 ------ 0017016    21        BNC    ITSAOK


0017012                                    24              #  FAILURE - MISMATCH DETECTED AS MATCH
0017012 04 000116 003401 000002 CDGNTI     25        LI     TLMNO FLMIS00
0017014 04 000120 001413 ------            26        AR     TLMNO,INDEXR
0017015 04 000121 053702 ------ 0016717    27        B      FLEXIT
0017016                                    28 ITSAOK


0017016 04 000122 136260 017002 0017002    31        BX     INDEXR,W1SBUSLP
```

```
TEST 73                                                              23:12:05   2/05/81   ****

    DATA_MATCHER DIAGNOSTIC TEST                                            CDGNOF      W77D


                                   -001- 01 #**********************************************
                                   -001- 02 #*                                            *
                                   -001- 03 #*              TEST 73     SEGMENT 3          *
                                   -001- 04 #*                                            *
                                   -001- 05 #**********************************************




    0017020                             11 SEG3                         #   OFF-LINE CODE FOR SEGMENT 3
                                        12 #    THE ABILITY TO MASK A MATCH ON DATA WITH THE DK
                                        13 #    REGISTER IS TESTED.  THE STORE BUS AND DK CONTAIN ALL 1S
                                        14 #    AND THE DI CONTANS A SINGLE "0".  THE "1" IN THE DK SHOULD
                                        15 #    MASK THE MISMATCH

    0017020 04 000124 104421 ------     17           AN      SEGMENT,1         #   INCREMENT SEGMENT NUMBER


    0017021 04 000125 003561 177777     20           LI      SCRATCH,0(177777)
    0017023 04 000127 007567 ------     21           LSR     DK,SCRATCH        #   SET MASK REGISTER TO ALL ONES
    0017024 04 000130 003561 077777     22           LI      SCRATCH,0(77777)
    0017026 04 000132 007607 ------     23           LSR     DI,SCRATCH
    0017027 04 000133 003277 ------     24           LN      INDEXR,15
    0017030                             25 MSKLP
    0017030                             26           MIMODE  L SS_S,R9          #   ENABLE MATCHER
    0017030 04 000134 113000 ------  -001- 27        MIS     0
    0017031 04 000135 105551 030560  -002- 28            VFD     8,SS_SXT 8,R9%F
    0017032 04 000136 030560 017074 0017074  29        LL      SCRATCH,ALONES    #   READ ALL ONES CONSTANT FROM STORE
    0017034                             30           MIMODE  L SS_R,R9          #   DISABLE MATCHER
    0017034 04 000140 013000 ------  -001- 31        MIS     0
    0017035 04 000141 107151 ------  -002- 32            VFD     8,SS_RXT 8,R9%F
    E0017036 04 000142 021175 ------    33           LRS     SCRATCH,IS
    0017037 04 000143 024163 ------     34           TBN     SCRATCH,S(ADMI)
    0017040 04 000144 054005 ------ 0017045  35       BC      ITSGOOD
    0017041                             36                               #   FAILURE - DK HAS FAILED TO MASK A
                                                                             MISMATCH


    0017041 04 000145 003401 000022 CDGNTI  40        LI      TLMNO,FLMSK00
    0017043 04 000147 001413 ------     41           AR      TLMNO,INDEXR
    0017044 04 000150 053653 ------ 0016717  42       B       FLEXIT
    0017045                             43 ITSGOOD
    E0017045 04 000151 121170 ------    44           LRS     SCRATCH,DI
    0017046 04 000152 010501 ------     45           RRN     SCRATCH,1
    0017047 04 000153 007607 ------     46           LSR     DI,SCRATCH
    0017050                             47           MIMODE  L IS_R,R10         #   CLEAR INTERRUPTS
    0017050 04 000154 013000 ------  -001- 48        MIS     0
    0017051 04 000155 033152 036260  -002- 49            VFD     8,IS_RXT 8,R10%F
```

TEST 73   23:12:05   2/05/81   ****

DATA_MATCHER DIAGNOSTIC TEST   CDGNOF   W77D

0017052 04 000156 036260 017030 0017030   03   BX   INDEXR,MSKLP

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

TEST 73   23:12:05   2/05/81   ****

DATA_MATCHER DIAGNOSTIC TEST   CDGNOF   W77D

```
                                            -001- 01 #****************************************************
                                            -001- 02 #*                                              *
                                            -001- 03 #*            TEST 73      SEGMENT 4
                                            -001- 04 #*                                              *
                                            -001- 05 #****************************************************


0017054                                          11 SEG4                    #   OFF-LINE CODE FOR SEGMENT 4
                                                 12 #   THE "DME" BIT IN THE SS IS TESTED.  WHEN IT IS CLEARED,
                                                 13 #   MATCHING SHOULD BE INHIBITED.

0017054 04 000160 104421 ------                  15        AN    SEGMENT,1           #   INCREMENT SEGMENT NUMBER

0017055 04 000161 003160 ------                  18        ZR    SCRATCH
0017056 04 000162 007607 ------                  19        LSR   DI,SCRATCH
0017057 04 000163 007567 ------                  20        LSR   DK,SCRATCH
0017060 04 000164 030560 017073 0017073          21        LL    SCRATCH,ALZEROS     #   READ ALL ZEROS WORD FROM STORE
E0017062 04 000166 021175 ------                 22        LRS   SCRATCH,IS
0017063 04 000167 024163 ------                  23        TBN   SCRATCH,S(ADMI)
0017064 04 000170 055004 ------ 0017070          24        BNC   TSTATP

0017065                                          27                        #   THE MATCH SHOULD NOT BE INDICATED SINCE
                                                                               DME WAS NOT SET

0017065 04 000171 003401 000042 CDGNTI           29        LI    TLMNO,FLDME
0017067 04 000173 053630 ------ 0016717          30        B     FLEXIT
0017070                                          31 TSTATP
0017070                                          32        CALL  PASSOFF
0017070 04 000174 137020 017142 0017142 -001-    33        BSA   PASSOFF
0017072 04 000176 156540 ------                  34        HALT
```

TEST 73   23:12:05   2/05/81   ****

DATA_MATCHER DIAGNOSTIC TEST   CDGNOF   W77D

                              01 #   DATA CONSTANTS

0017073   04 ALZEROS
0017073 D4 000177 000000 ------   05   DATA   0
0017074   06 ALONES
0017074 04 000200 177777 ------   07   DATA   0(177777)
0017075   08 W1TOS
0017075 04 000201 000001 ------   09   DATA   0(1)
0017076 04 000202 000002 ------   10   DATA   0(2)
0017077 04 000203 000004 ------   11   DATA   0(4)
0017100 04 000204 000010 ------   12   DATA   0(10)
0017101 04 000205 000020 ------   13   DATA   0(20)
0017102 04 000206 000040 ------   14   DATA   0(40)
0017103 04 000207 000100 ------   15   DATA   0(100)
0017104 04 000210 000200 ------   16   DATA   0(200)
0017105 04 000211 000400 ------   17   DATA   0(400)
0017106 04 000212 001000 ------   18   DATA   0(1000)
0017107 04 000213 002000 ------   19   DATA   0(2000)
0017110 04 000214 004000 ------   20   DATA   0(4000)
0017111 04 000215 010000 ------   21   DATA   0(10000)
0017112 04 000216 020000 ------   22   DATA   0(20000)
0017113 04 000217 040000 ------   23   DATA   0(40000)
0017114 04 000220 100000 ------   24   DATA   0(100000)

                    -001- 27 #   THIS CSECT IS 145 WORDS LONG.

TEST 73   23:12:05   2/05/81   ****

DATA_MATCHER DIAGNOSTIC TEST   CDGNOF   W77D

```
TEST 74                                                      23:12:05   2/05/81  ****

I/O DIAGNOSTIC TEST                                               CDGNOF        W77D

0017162                        -001- 01 OIO   CSECT
                               -001- 02 #    ****************************************************************************
                               -001- 03 #    ****************************************************************************
                               -001- 04 #    **                                                                      **
                               -001- 05 #    **              CU DIAGNOSTIC TEST NO. 74, I/O
                               -001- 06 #    **                                                                      **
                               -001- 07 #    ****************************************************************************
                               -001- 08 #    ****************************************************************************


                                 14 #   THE I/O CHANNEL DIAGNOSTIC IS RUN ENTIRELY BY THE
                                 15 #   OFF-LINE PROCESSOR.




                                 21 #   SEGMENT 1
                                 22 #   TEST FOR MULTIPLE MAIN CHANNEL SELECTION.  SELECT EACH CHANNEL,ONE AT
                                 23 #   A TIME.  THIS SHOULD NOT SET ERROR BIT.  THEN TRY ALL ZEROS AND AN ILLEGAL
                                 24 #   CODE WHICH SELECTS MULTIPLE CHANNELS.  THESE CASES SHOULD SET ERROR BIT.

                                 26 #   SEGMENT 2
                                 27 #   A SERIES OF OPERATIONS ARE TRIED ON ALL EQUIPED I/O CHANNELS. THEY ARE:
                                 28 #        SELECT ALL SUB-CHANNELS AND TRY ILLEGAL SUB-CHANNEL SELECT CODES
                                 29 #        TRY 3/6 CODES IN THE IOS CONTROL FIELD
                                 30 #        LOAD IOD WITH TEST CONSTANTS
                                 31 #        RETURN IOD TO R11
                                 32 #        LOAD IOS VIA "MD2CHTM", "MD1CHTN", "MD3CHC"
                                 33 #        AND "MDOIDCH" CROSSPOINTS.
                                 34 #        RETURN IOS TO R11

                                 36 #   SEGMENT 3
                                 37 #   A SERIES OF TESTS ARE TRIED TO MAKE SURE THAT ONE I/O CHANNEL CAN
                                 38 #   NOT AFFECT ANOTHER.  THE FOLLOWING OPERATIONS ARE TESTED.
                                 39 #        LOAD IOD FROM R10
                                 40 #        UNLOAD IOD INTO R11
                                 41 #        LOAD IOS WITH VARIOUS CROSSPOINTS
                                 42 #        UNLOAD IOS INTO R11
```

TEST 74

I/O DIAGNOSTIC TEST

```
                        01 #   REGISTER DEFINITION
            0000000     02 TLMNO   EQUR   R0
            0000001     03 SEGMENT EQUR   R1
            0000002     04 SCRTCH  EQUR   R2
            0000003     05 IOCHAN  EQUR   R3
            0000007     06 CHNCOUNT EQUR  R7
```

OFF-LINE DIAGNOSTIC CODE

TEST 74   23:12:05   2/05/81   ****

I/O DIAGNOSTIC TEST   CDGNOF   W77D

```
                              -001- 01 #****************************************************
                              -001- 02 #*                                               *
                              -001- 03 #*          TEST 74     SEGMENT 1
                              -001- 04 #*                                          *
                              -001- 05 #****************************************************


0017162                            11 SEGMNT1                        #  OFF-LINE CODE FOR SEGMENT 1
                                   12 #   TEST FOR MULTIPLE MAIN CHANNEL SELECTION.  SELECT EACH CHANNEL,ONE AT
                                   13 #   A TIME.  THIS SHOULD NOT SET ERROR BIT.  THEN TRY ALL ZEROS AND AN ILLEGAL
                                   14 #   CODE WHICH SELECTS MULTIPLE CHANNELS.  THESE CASES SHOULD SET ERROR BIT.

0017162 05 000000 103041 ------    16      LN     SCRTCH,M(OVLOF)
0017163                            17                                 #  MAINTENCE STATE TO OVERRIDE LOCK OFF-LINE
0017163 05 000001 007742 ------    18      LSR    MS,SCRTCH

0017164 05 000002 003160 ------    20      ZR     CHNCOUNT

0017165 05 000003 003421 000001    23      LI     SEGMENT,1           #  SETUP SEGMENT NUMBER
0017167 05 000005 003040 ------    24      ZR     SCRTCH
0017170                            25                                 #  SELECT EACH STANDARD CHANNEL WHICH IS
                                                                         EQUIPPED AND ISSUE A START. USE ILLEGAL
                                                                         SUB-CHANNEL TO PREVENT TRANSMISSION. ALSO
                                                                         IDLE THE CHANNEL BEFORE ISSUING THE START T
                                                                         DOUBLY PROTECT AGAINST TRANSMISSION
0017170                            30 CHANLP

0017170                            32          CALL    CHNSELCT
0017170 05 000006 137020 020151 0020151 -001- 33   BSA     CHNSELCT
0017172 05 000010 155020 ------ 0017212  34      BNC     TRYNO
0017173                            35          MIMODE
0017173 05 000011 013400 ------    -001- 36    MI      0
0017174                            37          L       ER,NOP        #  CLEAR ER
0017174 05 000012 125360 ------    -001- 38        VFD     8,ERXT 8,NOPXF
0017175                            39          MDOIDCH                #  IDLE THE CHANNEL
0017175 05 000013 164066 ------    -001- 40        DATA    MDOIDCHX
0017176                            41          MD4STCH                #  THE START CROSSPOINT ACTIVATES MULTIPLE
                                                                         CHANNEL ERROR CHECK
0017176 05 000014 074066 ------    -001- 43        DATA    MD4STCHX
0017177                            44          ZMINT
0017177 05 000015 026750 ------    -001- 45        DATA    ZMINTX
0017200 05 000016 012412 ------    46      UNPK    ER
0017201 05 000017 024041 ------    47      TBN     R2,S(IOMLTER)-16
```

TEST 74   23:12:05   2/05/81   ****

I/O DIAGNOSTIC TEST   CDGNOF   W77D

```
0017202 05 000020 054002 ------ 0017204      02        BC      MULTER


0017203 05 000021 053765 ------ 0017170      05        B       CHANLP


0017204                                       08 MULTER                 #   MULTIPLE I/O CHANNELS HAVE BEEN SELECTED


0017204 05 000022 103401 000001 CDGNTI        11        LI      TLMNO,FLMLTIO
0017206                                        12 FAILEXIT
0017206 05 000024 103100 ------                13        ZR      R4          #   INDICATE NO DATA WORDS IN FAILURE MESSAGE
0017207                                        14        CALL    FAILOFF
0017207 05 000025 037020 017115 0017115 -001- 15        BSA     FAILOFF
0017211 05 000027 156540 ------                16        HALT                #   TRY BAD CODE WHICH SELECTS NO CHANNELS
0017212                                        17
0017212                                        18 TRYNO


0017212 05 000030 103220 ------                21        ZR      R9
0017213                                        22        MIMODE
0017213 05 000031 013400 ------          -001- 23        MI      0
0017214                                        24        L       ER,NOP
0017214 05 000032 125360 ------          -001- 25            VFD     8,ER%T 8,NOP%F
0017215                                        26        MDOIDCH
0017215 05 000033 164066 ------          -001- 27            DATA    MDOIDCH%
0017216                                        28        MD4STCH
0017216 05 000034 074066 ------          -001- 29            DATA    MD4STCH%
0017217                                        30        ZMINT
0017217 05 000035 026750 ------          -001- 31            DATA    ZMINT%
0017220 05 000036 012412 ------                32        UNPK    ER
0017221 05 000037 024041 ------                33        TBN     R2,S(IOMLTER)-16
0017222 05 000040 055762 ------ 0017204        34        BNC     MULTER
0017223                                        35 TRYMLT                     #   SELECT MULTIPLE CHANNELS
0017223 05 000041 130402 020000 TDATA          36        LL      RO,EQIOCHAN
0017225 05 000043 017405 017401                37        CIRM    RO,1,5,0(37)
0017227                                        38                             #   IS THERE ONLY ONE STANDARD CHANNEL?
0017227 05 000045 054013 ------ 0017242        39        BC      SEGMNT2


0017230 05 000046 003621 036000                42        LI      R9,0(36000)
0017232                                        43        MIMODE
0017232 05 000050 013400 ------          -001- 44        MI      0
0017233                                        45        L       ER,NOP
0017233 05 000051 125360 ------          -001- 46            VFD     8,ER%T 8,NOP%F
0017234                                        47        MDOIDCH
0017234 05 000052 164066 ------          -001- 48            DATA    MDOIDCH%
0017235                                        49        MD4STCH
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
TEST 74                                                        23:12:05   2/05/81  ****

  I/O DIAGNOSTIC TEST                                                CDGNOF        W77D

0017235 05 000053 074066 ------            -001- 01          DATA    MD4STCH%
0017236                                          02     ZMINT
0017236 05 000054 026750 ------            -001- 03          DATA    ZMINT%
0017237 05 000055 012412 ------                  04     UNPK    ER
0017240 05 000056 024041 ------                  05     TBN     R2,S(IOMLTER)-16
0017241 05 000057 055743 ------ 0017204          06     BNC     MULTER
```

```
TEST 74                                                              23:12:05    2/05/81  ****

  I/O DIAGNOSTIC TEST                                                          CDGNOF      W77D

                              -001- 01 #*************************************************
                              -001- 02 #*                                               *
                              -001- 03 #*            TEST 74      SEGMENT 2
                              -001- 04 #*                                               *
                              -001- 05 #*************************************************




                                11 #   A SERIES OF OPERATIONS ARE TRIED ON ALL EQUIPED I/O CHANNELS. THEY ARE:
                                12 #        LOAD IOS VIA "MD3CHC","MD1CHTN", AND "MD2CHTM" CROSSPOINTS
                                13 #        RETURN IOS TO R11 WITH "MD5EIOS" CROSSPOINT
                                14 #        SELECT ALL SUB-CHANNELS AND TRY ILLEGAL SUB-CHANNEL SELECT CODES
                                15 #        TRY 3/6 CODES IN THE IOS CONTROL FIELD
                                16 #        LOAD IOD WITH TEST CONSTANTS
                                17 #        RETURN IOD TO R11

0017242                         19 SEGMNT2
0017242 05 000060 104421 -------  20       AN       SEGMENT,1        #   INCREMENT SEGMENT NUMBER
0017243                         21                                   #   PUT ALL EQUIPPED CHANNELS IN IDLE STATE,
                                                                         SUB-CHANNEL 0 SELECTED


0017243 05 000061 003160 -------  25       ZR       CHNCOUNT
0017244                         26                                   #   IDLE ALL CHANNELS
0017244                         27 INITLP
0017244 05 000062 103220 -------  28       ZR       R9
0017245                         29          CALL     CHNSELCT
0017245 05 000063 037020 020151 0020151 -001- 30    BSA      CHNSELCT
0017247 05 000065 155007 ------- 0017256  31        BNC      DOTESTS
0017250 05 000066 003441 000160  32        LI       SCRTCH,0(160)
0017252 05 000070 001622 -------  33       AR       R9,SCRTCH        #   SELECT SUB-CHANNEL 0
0017253                         34          MIMODE   MD0IDCH
0017253 05 000071 013000 -------  -001- 35  MIS      0
0017254 05 000072 164066 -------  -002- 36           DATA     MD0IDCH%
0017255 05 000073 053767 ------- 0017244   37        B        INITLP
0017256                         38 DOTESTS
                                39 OIO       OW       0(74)            # 790009
                              -001- 40       NOTE     ************* THE FIRST ADDRESS OVERWRITTEN IS 000074 **********


                                43 DDELETE NOTE     1
                                44 CPATCH3 BGNP     0(305)           # 790009
0017256 05 000074 037000 115400 0000305 -001- 45    BL       XXX144
                              -001- 46       NOTE     CPATCH3 'CSECT'
                              -001- 47       NOTE     ***************** PATCH AREA BEGINS AT 000305 *****************




   OFF-LINE DIAGNOSTIC CODE                                                    PR-1C933-50

     23:12:05   2/05/81  TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF    ISSUE 04     PAGE   37
```

```
 TEST 74                                                                        23:12:05    2/05/81  ****

  I/O DIAGNOSTIC TEST                                                                     CDGNOF       W77D

0115400                                     -001- 01 XXX144 PATCHAREA
                                                  02 #  IF A PARRALLEL CHANNEL EXISTS, INITIALIZE IT TO CLEAR ANY ERRORS.
0115400 15 000305 131162 020000 TDATA             03       LAL     CHNCOUNT,EQIOCHAN,RA0
0115402 15 000307 003562 000037                   04       NI      CHNCOUNT,0(37)
0115404                                           05 PCHINITLP
0115404 15 000311 142047 ------                   06       LX      SCRTCH,CHNCOUNT(RA0)
0115405 15 000312 024050 ------                   07       TBN     SCRTCH,8          #   IS THIS CHANNEL A PCH?
0115406 15 000313 055010 ------ 0115416           08       BNC     NOPCH
0115407 15 000314 016622 176000                   09       LRM     R9,SCRTCH,0(176000) #  GET 3-OUT-OF-6 CODE FOR PCH.
0115411 15 000316 003441 000160                   10       LI      SCRTCH,(3X6_0)*E(4) #  A VALID 3-OUT-OF-6 CODE MUST BE USED FOR
                                                                                            SUBCHANNEL
0115413 15 000320 016222 001777                   12       IRM     R9,SCRTCH,0(1777)
0115415 15 000322 023560 ------                   13       ZIO                       #   INITIALIZE PCH
0115416                                           14 NOPCH
0115416 15 000323 136160 115404 0115404           15       BX      CHNCOUNT,PCHINITLP
0115420                                           16       MIMODE  L ER,NOP
0115420 15 000325 013000 ------           -001- 17       MIS     0
0115421 15 000326 125360 037000           -002- 18           VFD     8,ERXT 8,NOPXF
0115422                                           19       ENDP                      # 790009
0115422 15 000327 037000 017260 0000076   -001- 20       BL      XXX148
                                          -001- 21       NOTE    ************ LAST PATCH ADDRESS USED IS 000330 ****************
                                          -001- 22       NOTE    ***** NUMBER OF PATCH WORDS USED IS 20 (DECIMAL) ********


0017260                                   -001- 25 XXX148 OWCONTINUE
0017260 05 000076 157412 ------                   26       TSRPL   ER
0017261                                           27 ·     EOW                       # 790009
                                          -001- 28       NOTE  . ***************** THE LAST ADDRESS OVERWRITTEN IS 000076 **********


F0017261 05 000077 050000 017572 0017572          31       BCL     STKIOER
0017263 05 000101 003160 ------                   32       ZR      CHNCOUNT
0017264                                           33                                 #   THE FOLLOWING TESTS WILL BE RUN ON ALL
                                                                                          EQUIPPED CHANNELS

0017264                                           35 NEWCHAN


0017264 05 000102 103220 ------                   38       ZR      R9
0017265                                           39       CALL    CHNSELCT
0017265 05 000103 037020 020151 0020151   -001- 40       BSA     CHNSELCT


0017267 05 000105 150400 017676 0017676           43       BNCL    SEGMNT3
0017271                                           44       MIMODE  MDOIDCH
0017271 05 000107 013000 ------           -001- 45       MIS     0
0017272 05 000110 164066 ------           -002- 46           DATA    MDOIDCHX
0017273 05 000111 006043 ------                   47       LR      R2,IOCHAN         #   DATA WORD FOR FAILURE MESSAGE
```

```
    TEST 74                                                          23:12:05   2/05/81  ****

    I/O DIAGNOSTIC TEST                                                       CDGNOF      W77D

0017274                                      01                        #   LOAD THE IOS WITH ALL ONES AND ALL ZEROS

0017274 05 000112 003240 ------            03        ZR      R10
0017275 05 000113 003040 ------            04        ZR      SCRTCH
0017276 05 000114 016222 001777            05        IRM     R9,SCRTCH,0(1777)
0017300                                    06        MIMODE
0017300 05 000116 013400 ------     -001-  07        MI      0
0017301                                    08        MD6RAIO                   #   INITIALIZE IOD TO 0
0017301 05 000117 074072 ------     -001-  09            DATA    MD6RAIOX
0017302                                    10        MD3CHC                    #   INITIALIZE IOS WITH TO 0
0017302 05 000120 164074 ------     -001-  11            DATA    MD3CHCX
0017303                                    12        ZMINT
0017303 05 000121 026750 031040     -001-  13            DATA    ZMINTX
0017304 05 000122 031040 017360 0017360    14        LAL     SCRTCH,IOSTAB-1,RAO


0017306 05 000124 003101 ------            17        LN      R4,1                #   INDEXR
0017307                                    18 IOSLP
0017307 05 000125 141041 ------            19        LA      SCRTCH,1(RAO)
0017310 05 000126 016222 001777            20        IRM     R9,SCRTCH,0(1777)
0017312                                    21        MIMODE
0017312 05 000130 013400 ------     -001-  22        MI      0
0017313                                    23        MD3CHC                    #   LOAD IOS
0017313 05 000131 164074 ------     -001-  24            DATA    MD3CHCX
0017314                                    25        MD5EIOS                   #   RETURN IOS TO R11
0017314 05 000132 074071 ------     -001-  26            DATA    MD5EIOSX
0017315                                    27        IODXR11
0017315 05 000133 025466 ------     -001-  28            DATA    IODXR11X
0017316                                    29        ZMINT
0017316 05 000134 026750 ------     -001-  30            DATA    ZMINTX
0017317 05 000135 041241 ------            31        LA      R10,1(RAO)
0017320 05 000136 020253 ------            32        CR      R10,R11
F0017321 05 000137 050400 017644 0017644   33        BNCL    IODER


0017323 05 000141 036100 017307 0017307    36        BX      R4,IOSLP
0017325                                    37                            #   TRY "MD1CHTN" , "MD2CHTM", AND "MDOIDCH"
                                                                             CROSSPOINTS


0017325                                    41        MIMODE
0017325 05 000143 013400 ------     -001-  42        MI      0
0017326                                    43        MDOIDCH
0017326 05 000144 164066 ------     -001-  44            DATA    MDOIDCHX
0017327                                    45        MD5EIOS                   #   RETURN IOS TO R11
0017327 05 000145 074071 ------     -001-  46            DATA    MD5EIOSX
0017330                                    47        IODXR11
0017330 05 000146 025466 ------     -001-  48            DATA    IODXR11X
0017331                                    49        ZMINT
```

```
TEST 74                                                        23:12:05    2/05/81  ****

    I/O DIAGNOSTIC TEST                                          CDGNOF           W77D

    0017331 05 000147 026750 017660          -001- 01          DATA    ZMINTX
    0017332 05 000150 017660 037407                02    CIRM    R11,0(7),0,0(77)
   F0017334 05 000152 050400 017606 0017606        03    BNCL    IDLFL


    0017336                                         06          MIMODE
    0017336 05 000154 U13400 ------          -001- 07          MI      0
    0017337                                         08          MD1CHTN
    0017337 05 000155 164071 ------          -001- 09          DATA    MD1CHTNX
    0017340                                         10          MD5EIOS
    0017340 05 000156 074071 ------          -001- 11          DATA    MD5EIOSX
    0017341                                         12          IODXR11
    0017341 05 000157 025466 ------          -001- 13          DATA    IODXR11X
    0017342                                         14          ZMINT
    0017342 05 000160 026750 017660          -001- 15          DATA    ZMINTX
    0017343 05 000161 017660 037434                16    CIRM    R11,0(34),0,0(77)
   F0017345 05 000163 050400 017614 0017614        17    BNCL    CHCNFL


    0017347                                         20          MIMODE
    0017347 05 000165 013400 ------          -001- 21          MI      0
    0017350                                         22          MD2CHTM
    0017350 05 000166 164072 ------          -001- 23          DATA    MD2CHTMX
    0017351                                         24          MD5EIOS
    0017351 05 000167 074071 ------          -001- 25          DATA    MD5EIOSX
    0017352                                         26          IODXR11
    0017352 05 000170 025466 ------          -001- 27          DATA    IODXR11X
    0017353                                         28          ZMINT
    0017353 05 000171 026750 017660          -001- 29          DATA    ZMINTX
    0017354 05 000172 017660 037431                30    CIRM    R11,0(31),0,0(77)
   F0017356 05 000174 050400 017622 0017622        31    BNCL    CHCMFL
    0017360 05 000176 053005 ------ 0017365         32    B       306CDS



    0017361                                         38 IOSTAB
    0017361 05 000177 000000 ------                 39    DATA    0            #  ALL ZEROS INPUT TO IOS
    0017362 05 000200 000020 ------                 40    DATA    0(20)        #  IOS CONTENT FOR ALL ZEROS INPUT
    0017363 05 000201 001777 ------                 41    DATA    0(1777)      #  ALL ONES INPUT TO IOS
    0017364 05 000202 007737 131040                 42    DATA    0(7737)      #  IOS CONTENT FOR ALL ONES INPUT
```

```
TEST 74                                                          23:12:05   2/05/81  ****

   I/O DIAGNOSTIC TEST                                               CDGNOF        W77D

                                        01 #   TRY ALL GOOD 3/6 SUB-CHANNEL SELECT CODES WHICH SHOULD NOT SET ERROR
                                        02 #   BIT AND TRY ALL 4/6 CODES WHICH SHOULD SET ERROR BIT


0017365 .                               05 3O6CDS

0017365 05 000203 131040 020106 0020106 07         LAL     SCRTCH,IOCHANTB,RAO


0017367 05 000205 003501 000023         10         LI      R4,19               #  INDEXR
0017371                                 11 SUBCHLP
0017371 05 000207 142044 ------         12         LX      SCRTCH,R4(RAO)
0017372 05 000210 010454 ------         13         RLN     SCRTCH,4
0017373 05 000211 016222 001777         14         IRM     R9,SCRTCH,O(1777)   #  INSERT SUB-CHANNEL SELECT CODE INTO R9
0017375                                 15         MIMODE
0017375 05 000213 013400 ------   -001- 16         MI      0
0017376                                 17         MDOIDCH
0017376 05 000214 164066 ------   -001- 18             DATA    MDOIDCH%
0017377                                 19         L       ER,NOP
0017377 05 000215 125360 ------   -001- 20             VFD     8,ER%T 8,NOP%F
0017400                                 21         ZMINT
0017400 05 000216 026750 ------   -001- 22             DATA    ZMINT%
0017401 05 000217 057412 ------         23         TSRPL   ER                  #  ERROR?
F0017402 05 000220 050000 017600 0017600 24         BCL     SUBCHNER


0017404 05 000222 036100 017371 0017371 27         BX      R4,SUBCHLP


0017406                                 30                                     #  TRY ALL 4/6 CODES WHICH ARE INVALID
                                                                                  SUB-CHANNEL SELECT CODES
0017406 05 000224 031040 020132 0020132 32         LAL     SCRTCH,BADSUBTB,RAO


0017410 05 000226 003116 ------         35         LN      R4,14               #  INDEXR
0017411                                 36 BDSUBLP
0017411 05 000227 142044 ------         37         LX      SCRTCH,R4(RAO)
0017412 05 000230 010454 ------         38         RLN     SCRTCH,4
0017413 05 000231 016222 001777         39         IRM     R9,SCRTCH,O(1777)   #  INSERT BAD SUB-CHANNEL CODE INTO R9
0017415                                 40         MIMODE
0017415 05 000233 013400 ------   -001- 41         MI      0
0017416                                 42         MDOIDCH
0017416 05 000234 164066 ------   -001- 43             DATA    MDOIDCH%
0017417                                 44         L       ER,NOP
0017417 05 000235 125360 ------   -001- 45             VFD     8,ER%T 8,NOP%F
0017420                                 46         ZMINT
0017420 05 000236 026750 ------   -001- 47             DATA    ZMINT%
0017421 05 000237 057412 ------         48         TSRPL   ER
0017422 05 000240 055156 ------ 0017600 49         BNC     SUBCHNER
```

TEST 74   23:12:05   2/05/81 ****

I/O DIAGNOSTIC TEST   CDGNOF   W77D


```
0017423 05 000241 036100 017411 0017411        03        BX      R4,BDSUBLP
                                               04 #  SELECT ALL POSSIBLE CONTROL CODES WHICH SHOULD NOT SET ERROR
                                               05 #  BIT. SINCE B(01) IS ALWAYS JAMMED INTO THE HIGH BITS OF THE
                                               06 #  IOS, ONYL 6 OF THE 20 3/6 CODES CAN BE LOADED. ALL OTHERS
                                               07 #  MUST BE COVERED BY A FUNCTIONAL CHECK IN PU DIAGNOSTICS.
                                               08 #  FINALLY, SELECT BAD CODES WHICH SHOULD SET THE ERROR BIT


0017425 05 000243 003441 000160                12        LI      SCRTCH,0(160)
0017427 05 000245 016222 001760                13        IRM     R9,SCRTCH,0(1760)   #  INSERT A VALID SUB-CHANNEL IN R9
0017431 05 000247 031040 020112 0020112        14        LAL     SCRTCH,IOCHAiITB+4,RAO


0017433 05 000251 003501 000004                17        LI      R4,4              #  INDEXR
0017435                                        18 CNTLP
0017435 05 000253 142044 ------                19        LX      SCRTCH,R4(RAO)
0017436 05 000254 016222 000017                20        IRM     R9,SCRTCH,0(17)   #  INSERT CONTROL CODE INTO R9
0017440                                        21        MIMODE
0017440 05 000256 013400 ------        -001-   22        MI      0
0017441                                        23        MDOIDCH
0017441 05 000257 164066 ------        -001-   24            DATA    MDOIDCH%
0017442                                        25        L       ER,NOP            #  ZERO THE ER
0017442 05 000260 125360 ------        -001-   26            VFD     8,ER%T 8,NOP%F
0017443                                        27        MD3CHC                    #  GATE CODE TO IOS
0017443 05 000261 164074 ------        -001-   28            DATA    MD3CHC%
0017444                                        29        ZMINT
0017444 05 000262 026750 ------        -001-   30            DATA    ZMINT%
0017445 05 000263 057412 ------                31        TSRPL   ER                #  ERROR?
0017446 05 000264 054170 ------ 0017636        32        BC      CNTER


0017447 05 000265 036100 017435 0017435        35        BX      R4,CNTLP


0017451                                        38                                 #  TRY B(0111111) IN CONTROL FIELD OF IOS
0017451 05 000267 003441 177777                39        LI      SCRTCH,0(177777)
0017453 05 000271 016222 000017                40        IRM     R9,SCRTCH,0(17)
0017455                                        41        MIMODE
0017455 05 000273 013400 ------        -001-   42        MI      0
0017456                                        43        MDOIDCH
0017456 05 000274 164066 ------        -001-   44            DATA    MDOIDCH%
0017457                                        45        MD3CHC
0017457 05 000275 164074 ------        -001-   46            DATA    MD3CHC%
0017460                                        47        L       ER,NOP
0017460 05 000276 125360 ------        -001-   48            VFD     8,ER%T 8,NOP%F
0017461                                        49        ZMINT
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
TEST 74                                                                    23:12:05   2/05/81  ****
  I/O DIAGNOSTIC TEST                                                            CDGNOF         W77D

0017461 05 000277 026750 -------            -001- 01            DATA    ZMINT%
0017462 05 000300 057412 -------                  02      TSRPL  ER
0017463 05 000301 055153 ------- 0017636          03      BNC    CNTER


0017464                                           06                          #   TRY B(010000) IN CONTROL FIELD OF IOS
0017464 05 000302 003040 -------                  07      ZR     SCRTCH
0017465 05 000303 016222 000017                   08      IRM    R9,SCRTCH,0(17)
0017467                                           09      MIMODE
0017467 05 000305 013400 -------            -001- 10      MI     0
0017470                                           11      MDOIDCH
0017470 05 000306 164066 -------            -001- 12            DATA    MDOIDCH%
0017471                                           13      MD3CHC
0017471 05 000307 164074 -------            -001- 14            DATA    MD3CHC%
0017472                                           15      L      ER,NOP
0017472 05 000310 125360 -------            -001- 16            VFD     8,ER%T 8,NOP%F
0017473                                           17      ZMINT
0017473 05 000311 026750 -------            -001- 18            DATA    ZMINT%
0017474 05 000312 057412 -------                  19      TSRPL  ER
0017475 05 000313 055141 ------- 0017636          20      BNC    CNTER
```

```
TEST 74                                                              23:12:05   2/05/81  ****

I/O DIAGNOSTIC TEST                                                           CDGNOF      W77D

0017476                                    01 TSTIOD
                                           02 #   TRY LOADING AND UNLOADING IOD USING ALL OS, ALL 1S AND
                                           03 #     O(401). THE THIRD OPERAND IS REQUIRED FOR PL=PH=0


0017476                                    07        MIMODE  MD1CHTN
0017476 05 000314 113000 ------    -001- 08         MIS     0
0017477 05 000315 164071 031040    -002- 09                 DATA    MD1CHTNX
0017500 05 000316 031040 017673 0017673  10         LAL     SCRTCH,IODTAB,RAO


0017502 05 000320 003102 ------          13         LN      R4,2          #   INDEXR
0017503                                    14 IODLP
0017503 05 000321 142244 ------          15         LX      R10,R4(RAO)
0017504                                    16        MIMODE
0017504 05 000322 013400 ------    -001- 17         MI      0
0017505                                    18        MD6RAIO
0017505 05 000323 074072 ------    -001- 19                 DATA    MD6RAIOX
0017506                                    20        IODXR11
0017506 05 000324 025466 ------    -001- 21                 DATA    IODXR11X
0017507                                    22        ZMINT
0017507 05 000325 026750 ------    -001- 23                 DATA    ZMINTX
0017510 05 000326 057012 ------          24         TRPL    R10
0017511 05 000327 054004 ------ 0017515  25         BC      PARL1
0017512                                    26                              #   PL SHOULD BE 0
0017512 05 000330 057013 ------          27         TRPL    R11
0017513 05 000331 054144 ------ 0017657  28         BC      IODPLER


0017514 05 000332 053003 ------ 0017517  31         B       TSTPH
0017515                                    32 PARL1                        #   PL SHOULD BE 1
0017515 05 000333 157013 ------          33         TRPL    R11
0017516 05 000334 055141 ------ 0017657  34         BNC     IODPLER


0017517                                    37 TSTPH
0017517 05 000335 157032 ------          38         TRPH    R10
0017520 05 000336 054004 ------ 0017524  39         BC      PARH1
0017521                                    40                              #   PH SHOULD BE 0
0017521 05 000337 057033 ------          41         TRPH    R11
0017522 05 000340 054143 ------ 0017665  42         BC      IODPHER


0017523 05 000341 053003 ------ 0017526  45         B       TSTBITS
0017524                                    46 PARH1                        #   PH SHOULD BE 1
0017524 05 000342 157033 ------          47         TRPH    R11
0017525 05 000343 055140 ------ 0017665  48         BNC     IODPHER
```

```
TEST 74                                                          23:12:05   2/05/81  ****

  I/O DIAGNOSTIC TEST                                              CDGNOF         W77D


0017526                                       02 TSTBITS
0017526 05 000344 120253 ------             03         CR     R10,R11
0017527 05 000345 055115 ------ 0017644     04         BNC    IODER


0017530 05 000346 036100 017503 0017503     07         BX     R4,IODLP
```

TEST 74   23:12:05   2/05/81   ****

I/O DIAGNOSTIC TEST   CDGNOF   W77D

```
                                              01 #  THE "MD1CHTN", "MD2CHTM", AND "MD3CHC" CROSSPOINTS SHOULD NOT
                                              02 #  AFFECT I/O CHANNEL UNLESS THE CHANNEL HAS PREVIOUSLY BEEN IDLED


0017532 05 000350 003040 ------            06        ZR      SCRTCH
0017533 05 000351 003240 ------            07        ZR      R10
0017534 05 000352 003260 ------            08        ZR      R11
0017535 05 000353 016222 001777            09        IRM     R9,SCRTCH,0(1777)
0017537                                    10        MIMODE
0017537 05 000355 013400 ------    -001-   11        MI      0
0017540                                    12        MD0IDCH
0017540 05 000356 164066 ------    -001-   13                DATA    MD0IDCH%
0017541                                    14        MD6RAIO
0017541 05 000357 074072 ------    -001-   15                DATA    MD6RAIO%
0017542                                    16        MD3CHC
0017542 05 000360 164074 ------    -001-   17                DATA    MD3CHC%
0017543                                    18        MD4STCH
0017543 05 000361 074066 ------    -001-   19                DATA    MD4STCH%
0017544                                    20        ZMINT
0017544 05 000362 026750 ------    -001-   21                DATA    ZMINT%
0017545                                    22
                                                              #    THE CHANNEL NOW CONTAINS 0 IN CONTROL
                                                                   FIELD AND THE IDLE FLIP-FLOP IS NOT SET
0017545 05 000363 003057 ------            24        LN      SCRTCH,0(17)
0017546 05 000364 016222 000017            25        IRM     R9,SCRTCH,0(17)
0017550                                    26        MIMODE
0017550 05 000366 013400 ------    -001-   27        MI      0
0017551                                    28        MD1CHTN
0017551 05 000367 164071 ------    -001-   29                DATA    MD1CHTN%
0017552                                    30        MD2CHTM
0017552 05 000370 164072 ------    -001-   31                DATA    MD2CHTM%
0017553                                    32        MD3CHC
0017553 05 000371 164074 ------    -001-   33                DATA    MD3CHC%
0017554                                    34        MD5EIOS
0017554 05 000372 074071 ------    -001-   35                DATA    MD5EIOS%
0017555                                    36        IODXR11
0017555 05 000373 025466 ------    -001-   37                DATA    IODXR11%
0017556                                    38        ZMINT
0017556 05 000374 026750 ------    -001-   39                DATA    ZMINT%
0017557 05 000375 003665 000020            40        CI      R11,0(20)
0017561 05 000377 055047 ------ 0017630    41        BNC     INHBTER
0017562 05 000400 003441 000160            42        LI      SCRTCH,0(160)       #   LEAVE CHANNEL IN IDLE STATE SUB-CHANNEL 0
                                                                                     SELECTED
0017564 05 000402 016222 001777            44        IRM     R9,SCRTCH,0(1777)
0017566                                    45        MIMODE  MD0IDCH
0017566 05 000404 013000 ------    -001-   46        MIS     0
0017567 05 000405 164066 037000    -002-   47                DATA    MD0IDCH%
F0017570 05 000406 037000 017264 0017264   48        BL      NEWCHAN
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
TEST 74                                                          23:12:05    2/05/81  ****

I/O DIAGNOSTIC TEST                                                         CDGNOF      W77D

0017572                                       01 STKIOER


0017572 05 000410 103100 ------            04        ZR      R4              #  NO DATA WORDS IN FAILURE MESSAGE
0017573 05 000411 003401 000002 CDGNTI     05        LI      TLMNO,SKIOER
0017575                                     06        CALL    FAILOFF
0017575 05 000413 037020 017115 0017115 -001- 07     BSA     FAILOFF
0017577 05 000415 156540 ------            08        HALT
0017600                                    09 SUBCHNER


0017600 05 000416 103101 ------            12        LN      R4,1            #  ONE DATA WORD IN FAILURE MESSAGE
0017601 05 000417 003401 000026 CDGNTI     13        LI      TLMNO,FLSUBCD
0017603                                    14        CALL    FAILOFF
0017603 05 000421 037020 017115 0017115 -001- 15     BSA     FAILOFF
0017605 05 000423 156540 ------            16        HALT
0017606                                    17 IDLFL


0017606 05 000424 103101 ------            20        LN      R4,1            #  ONE DATA WORD IN FAILURE MESSAGE
0017607 05 000425 003401 000031 CDGNTI     21        LI      TLMNO,FLIDLCH
0017611                                    22        CALL    FAILOFF
0017611 05 000427 037020 017115 0017115 -001- 23     BSA     FAILOFF
0017613 05 000431 156540 ------            24        HALT
0017614                                    25 CHCNFL


0017614 05 000432 103101 ------            28        LN      R4,1            #  ONE DATA WORD IN FAILURE MESSAGE
0017615 05 000433 003401 000027 CDGNTI     29        LI      TLMNO,FLCHTN
0017617                                    30        CALL    FAILOFF
0017617 05 000435 037020 017115 0017115 -001- 31     BSA     FAILOFF
0017621 05 000437 156540 ------            32        HALT
0017622                                    33 CHCMFL


0017622 05 000440 103101 ------            36        LN      R4,1            #  ONE DATA WORD IN FAILURE MESSAGE
0017623 05 000441 003401 000030 CDGNTI     37        LI      TLMNO,FLCHTM
0017625                                    38        CALL    FAILOFF
0017625 05 000443 037020 017115 0017115 -001- 39     BSA     FAILOFF
0017627 05 000445 156540 ------            40        HALT
0017630                                    41 INHBTER


0017630 05 000446 103101 ------            44        LN      R4,1            # ONE DATA WORD IN FAILURE MESSAGE
0017631 05 000447 003401 000032 CDGNTI     45        LI      TLMNO,FLINBT
0017633                                    46        CALL    FAILOFF
0017633 05 000451 037020 017115 0017115 -001- 47     BSA     FAILOFF
0017635 05 000453 156540 ------            48        HALT
0017636                                    49 CNTER                         #  ERROR BRANCH FOR PROBLEM IN IOS CONTROL


OFF-LINE DIAGNOSTIC CODE                                                    PR-1C933-50
```

FIELD

```
0017636 05 000454 103101 ------           04        LN      R4,1              #   ONE DATA WORD IN FAILURE MESSAGE
0017637 05 000455 003401 000003 CDGNTI    05        LI      TLMNO,FLCNT
0017641                                    06        CALL    FAILOFF
0017641 05 000457 037020 017115 0017115 -001- 07    BSA     FAILOFF
0017643 05 000461 156540 ------           08        HALT
0017644                                    09 IODER


0017644                                    12                               #   THERE IS AN ERROR IN AT LEAST 1 BIT OF
                                                                                R11, FIND THE LOWEST BAD BIT
0017644 05 000462 115253 ------           14        XR      R10,R11
0017645 05 000463 015652 ------           15        COM     R10
0017646 05 000464 020642 ------           16        FLZ     R10,SCRTCH        #   FIND LOWEST FAILING BIT
0017647 05 000465 003401 000004 CDGNTI    17        LI      TLMNO,FLIODOO     #   GENERATE TROUBLE NUMBER
0017651 05 000467 001402 ------           18        AR      TLMNO,SCRTCH
0017652 05 000470 003501 000001           19        LI      R4,1              #   ONE DATA WORD IN FAILURE MESSAGE
0017654                                    20        CALL    FAILOFF
0017654 05 000472 037020 017115 0017115 -001- 21    BSA     FAILOFF
0017656 05 000474 156540 ------           22        HALT
0017657                                    23 IODPLER


0017657 05 000475 103101 ------           26        LN      R4,1
0017660 05 000476 003401 000024 CDGNTI    27        LI      TLMNO,FLIODPL
0017662                                    28        CALL    FAILOFF
0017662 05 000500 037020 017115 0017115 -001- 29    BSA     FAILOFF
0017664 05 000502 156540 ------           30        HALT
0017665                                    31 IODPHER


0017665 05 000503 103101 ------           34        LN      R4,1
0017666 05 000504 003401 000025 CDGNTI    35        LI      TLMNO,FLIODPH
0017670                                    36        CALL    FAILOFF
0017670 05 000506 037020 017115 0017115 -001- 37    BSA     FAILOFF
0017672 05 000510 156540 ------           38        HALT
0017673                                    39 IODTAB
0017673 05 000511 000000 ------           40        DATA    0
0017674 05 000512 177777 ------           41        DATA    0(177777)
0017675 05 000513 000401 ------           42        DATA    0(401)
```

```
TEST 74                                                      23:12:05   2/05/81  ****

I/O DIAGNOSTIC TEST                                          CDGNOF        W77D

                    -001- 01 #***********************************************
                    -001- 02 #*                                            *
                    -001- 03 #*        TEST 74      SEGMENT 3              *
                    -001- 04 #*                                            *
                    -001- 05 #***********************************************


                          11 #   A SERIES OF TESTS ARE TRIED TO MAKE SURE THAT ONE I/O CHANNEL CAN
                          12 #   NOT AFFECT ANOTHER.  THE FOLLOWING OPERATIONS ARE TESTED.
                          13 #       LOAD IOD FROM R10
                          14 #       UNLOAD IOD INTO R11
                          15 #       LOAD IOS WITH VARIOUS CROSSPOINTS
                          16 #       UNLOAD IOS INTO R11

0017676                   18 SEGMNT3
0017676 05 000514 104421 ------   19      AN      SEGMENT,1        #   INCREMENT SEGMENT NUMBER
0017677                   20                                       #   SKIP THIS TEST IF ONLY ONE CHANNEL IS
                                                                       EQUIPPED

0017677 05 000515 030442 020000 TDATA   24      LL      SCRTCH,EQIOCHAN
0017701 05 000517 017445 017401         25      CIRM    SCRTCH,1,5,0(37)
0017703 05 000521 054200 ------ 0020103 26      BC      PASSIO


                          32 #   LOAD THE IOD OF ALL EQUIPPED CHANNELS WITH 0(177777). THEN LOAD IOD OF
                          33 #   CHANNEL 0 WITH 0. ALL OTHER CHANNELS SHOULD BE UNAFFECTED.
                          34 #   NEXT LOAD IOD OF CHANNEL 0 WITH 0(177777). THEN LOAD IOD OF NEXT HIGHEST
                          35 #   EQUIPPED CHANNEL WITH 0.  CHANNEL 0 SHOULD BE UNAFFECTED.
0017704 05 000522 003160 ------    36      ZR      CHNCOUNT
0017705                   37 LD1SLP                              #  LOAD ALL 1S INTO IOD OF EQUIPPED CHANNELS
                          38 OIO     OW      0(523)              # 3E800104
                    -001- 39         NOTE    ************* THE FIRST ADDRESS OVERWRITTEN IS 000523 **********

                          42 CPATCH7 BGNP    0(320)              # 3E800104
0017705 05 000523 137000 121556 0000320 -001- 43      BL      XXX267
                    -001- 44         NOTE    CPATCH7 'CSECT'
                    -001- 45         NOTE    ***************** PATCH AREA BEGINS AT 000320 *****************
```

```
TEST 74                                                                 23:12:05    2/05/81  ****

I/O DIAGNOSTIC TEST                                                                 CDGNOF        W77D

0121556                                    -001- 01 %%%267 PATCHAREA
0121556                                          02
                                                 03 # THIS PATCH CORRECTS A DIAGNOSTIC FAILURE WHEN
                                                 04 # AN OFFICE IS EQUIPPED WITH A SECOND MAIN CHANNEL
0121556                                          05
5121556                                          06          CALL     CHNSELCT
0121556 16 000320 137020 020151 0000767    -001- 07          BSA      CHNSELCT
0121560 16 000322 103641 177777                  08          LI       R10,0(177777)
0121562                                          09          ENDP                    # 3E800104
0121562 16 000324 037000 017707 0000525    -001- 10          BL       %%%270
                                           -001- 11          NOTE     ************ LAST PATCH ADDRESS USED IS 000325 ****************
                                           -001- 12          NOTE     ***** NUMBER OF PATCH WORDS USED IS 6 (DECIMAL) ********


0017707                                    -001- 15 %%%270 OWCONTINUE
0017707 05 000525 155010 ------ 0017717          16          BNC      LDCHNO
0017710                                          17          MIMODE
0017710 05 000526 013400 ------            -001- 18          MI       0
0017711                                          19          MDOIDCH
0017711 05 000527 164066 ------            -001- 20               DATA     MDOIDCH%
0017712                                          21          MD1CHTN
0017712 05 000530 164071 ------            -001- 22               DATA     MD1CHTN%
0017713                                          23          MD6RAIO
0017713 05 000531 074072 ------            -001- 24               DATA     MD6RAIO%
0017714                                          25          ZMINT
0017714 05 000532 026750 ------            -001- 26               DATA     ZMINT%
0017715                                          27          TAKEOUT 1
0017715 05 000533 006000 ------            -001- 28          LR       0,0
0017716                                          29          EOW                     # 3E800104
                                           -001- 30          NOTE     **************** THE LAST ADDRESS OVERWRITTEN IS 000533 **********


0017716 05 000534 053767 ------ 0017705          33          B        LD1SLP
0017717                                          34 LDCHNO                           #    LOAD IOD OF CHANNEL 0 WITH 0S
0017717 05 000535 103621 016000                  35          LI       R9 0(16000)    #    SELECT CHANNEL 0
0017721 05 000537 003240 ------                  36          ZR       R10
0017722                                          37          MIMODE   MD6RAIO
0017722 05 000540 013000 ------            -001- 38          MIS      0
0017723 05 000541 074072 ------            -002- 39               DATA     MD6RAIO%
0017724                                          40                                  #    CHECK THE IOD OF OTHER EQUIPPED CHANNELS
                                                                                          WHICH SHOULD CONTAIN ALL 1S
0017724 05 000542 003161 ------                  42          LN       CHNCOUNT,1
0017725                                          43 CHKIOD
0017725                                          44          CALL     CHNSELCT
0017725 05 000543 137020 020151 0020151    -001- 45          BSA      CHNSELCT
0017727 05 000545 155007 ------ 0017736          46          BNC      CHKCHNO
0017730                                          47          MIMODE   IODXR11
0017730 05 000546 013000 ------            -001- 48          MIS      0
0017731 05 000547 025466 017660           -002- 49               DATA     IODXR11%
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
TEST 74                                                                    23:12:05    2/05/81   ****

I/O DIAGNOSTIC TEST                                                                     CDGNOF      W77D

0017732 05 000550 017660 177777              01        CIRM    R11,0(177777),0,0(177777)
0017734 05 000552 055025 ------ 0017761      02        BNC     MLTIOD


0017735 05 000553 053770 ------ 0017725      05        B       CHKIOD
0017736                                      06 CHKCHNO


0017736 05 000554 103621 016000              09        LI      R9 0(16000)           #    SELECT CHANNEL 0
0017740 05 000556 003641 177777              10        LI      R10,0(177777)
0017742                                      11        MIMODE  MD6RAIO
0017742 05 000560 013000 ------         -001-12        MIS     0
0017743 05 000561 074072 ------         -002-13                DATA    MD6RAIO%
0017744 05 000562 003240 ------              14        ZR      R10
0017745 05 000563 003161 ------              15        LN      CHNCOUNT,1
0017746                                      16        CALL    CHNSELCT              #    SELECT THE LOWEST NUMBERED EQUIPPED
                                                                                         CHANNEL OTHER THAN 0.
0017746 05 000564 037020 020151 0020151 -001-18        BSA     CHNSELCT
0017750                                      19        MIMODE  MD6RAIO
0017750 05 000566 113000 ------         -001-20        MIS     0
0017751 05 000567 074072 003621         -002-21                DATA    MD6RAIO%
0017752 05 000570 003621 016000              22        LI      R9 0(16000)          #    CHECK IOD OF CHANNEL 0
0017754                                      23        MIMODE  IODXR11
0017754 05 000572 013000 ------         -001-24        MIS     0
0017755 05 000573 025466 017660         -002-25                DATA    IODXR11%
0017756 05 000574 017660 177777              26        CIRM    R11,0(177777),0,0(177777)
0017760 05 000576 054007 ------ 0017767      27        BC      TSTIOS
0017761                                      28 MLTIOD


0017761 05 000577 103401 000033 CDGNTI       31        LI      TLMNO,MLTIOD00
0017763 05 000601 001403 ------              32        AR      TLMNO,IOCHAN
0017764                                      33        CALL    FAILOFF
0017764 05 000602 037020 017115 0017115 -001-34        BSA     FAILOFF
0017766 05 000604 156540 ------              35        HALT
```

```
TEST 74                                                                    23:12:05   2/05/81  ****

I/O DIAGNOSTIC TEST                                                              CDGNOF        W77D

0017767                      .               01 TSTIOS
                                             02 #    SET IOS OF ALL EQUIPPED CHANNELS TO ONES.
                                             03 #    FIRE "MD1CHTN","MD2CHTM","MD3CHC"
                                             04 #    AND "MD0IDCH" ON CHANNEL 0.  OTHER CHANNELS SHOULD NOT BE AFFECTED.
                                             05 #    THEN SET IOS OF CHANNEL 0 TO ALL 1S. FIRE CROSSPOINTS ON NEXT HIGHEST
                                             06 #    EQUIPPED CHANNEL.   CHANNEL 0 SHOULD NOT BE AFFECTED.


0017767 05 000605 103160 ------             10         ZR      CHNCOUNT
0017770                                      11                                         #   SET IOD=0 FOR ALL EQUIPPED CHANNELS
0017770 05 000606 003240 ------             12         ZR      R10
0017771                                      13 ZEROIOD
0017771                                      14         CALL    CHNSELCT
0017771 05 000607 137020 020151 0020151 -001- 15       BSA     CHNSELCT
0017773 05 000611 155006 ------ 0020001     16         BNC     SETIOS
0017774                                      17         MIMODE
0017774 05 000612 013400 ------       -001- 18         MI      0
0017775                                      19         MD0IDCH
0017775 05 000613 164066 ------       -001- 20                 DATA    MD0IDCH%
0017776                                      21         MD6RAIO
0017776 05 000614 074072 ------       -001- 22                 DATA    MD6RAIO%
0017777                                      23         ZMINT
0017777 05 000615 026750 ------       -001- 24                 DATA    ZMINT%
0020000 05 000616 053771 ------ 0017771     25         B       ZEROIOD
0020001                                      26 SETIOS                                  #   SET CONTROL AND SUB-CHANNEL FIELD OF IOS
                                                                                            TO ALL 1'S FOR ALL EQUIPPED CHANNELS
0020001 05 000617 103160 ------             28         ZR      CHNCOUNT
0020002                                      29 SETIOSLP
0020002                                      30         CALL    CHNSELCT
0020002 05 000620 137020 020151 0020151 -001- 31       BSA     CHNSELCT
0020004 05 000622 103441 001777            32         LI      SCRTCH,0(1777)
0020006 05 000624 016222 001777            33         IRM     R9,SCRTCH,0(1777)       #   PUT ALL 1S IN SUB-CHANNEL AND CONTROL
                                                                                            FIELDS
0020010                                      35         MIMODE
0020010 05 000626 013400 ------       -001- 36         MI      0
0020011                                      37         MD0IDCH
0020011 05 000627 164066 ------       -001- 38                 DATA    MD0IDCH%
0020012                                      39         MD3CHC
0020012 05 000630 164074 ------       -001- 40                 DATA    MD3CHC%
0020013                                      41         ZMINT
0020013 05 000631 026750 ------       -001- 42                 DATA    ZMINT%
0020014 05 000632 055002 ------ 0020016     43         BNC     LDIOS0
0020015 05 000633 053765 ------ 0020002     44         B       SETIOSLP
0020016                                      45 LDIOS0                                  #   LOAD IOS OF CHANNEL 0 USING "MD0IDCH"
                                                                                            "MD1CHTN", "MD2CHTM", AND "MD3CHC" CROSSPOI
                                                                                            TS. THE SUB-CHANNEL FIELD IS 0 IN EACH CASE.
0020016 05 000634 103240 ------             48         ZR      R10
0020017 05 000635 003621 016000            49         LI      R9 0(16000)             #   SELECT CHANNEL 0
```

I/O DIAGNOSTIC TEST   CDGNOF   W77D

```
0020021                                  01          MIMODE
0020021 05 000637 013400 -------    -001- 02          MI      0
0020022                                  03          MDOIDCH
0020022 05 000640 164066 -------    -001- 04              DATA    MDOIDCH%
0020023                                  05          MD6RAIO
0020023 05 000641 074072 -------    -001- 06              DATA    MD6RAIO%
0020024                                  07          MD1CHTN
0020024 05 000642 164071 -------    -001- 08              DATA    MD1CHTN%
0020025                                  09          MD2CHTM
0020025 05 000643 164072 -------    -001- 10              DATA    MD2CHTM%
0020026                                  11          MD3CHC
0020026 05 0C0644 164074 -------    -001- 12              DATA    MD3CHC%
0020027                                  13          ZMINT
0020027 05 000645 026750 -------    -001- 14              DATA    ZMINT%
0020030                                  15

0020030 05 000646 003161 -------          17          LN      CHNCOUNT,1
0020031                                  18 CHKIOS
0020031                                  19          CALL    CHNSELCT
0020031 05 000647 137020 020151 0020151 -001- 20          BSA     CHNSELCT
0020033 05 000651 155011 ------- 0020044       21          BNC     CHKIOS0
0020034                                  22          MIMODE
0020034 05 000652 013400 -------    -001- 23          MI      0
0020035                                  24          MD5EIOS
0020035 05 000653 074071 -------    -001- 25              DATA    MD5EIOS%
0020036                                  26          IODXR11
0020036 05 000654 025466 -------    -001- 27              DATA    IODXR11%
0020037                                  28          ZMINT
0020037 05 000655 026750 -------    -001- 29              DATA    ZMINT%
0020040 05 000656 003665 007737          30          CI      R11,0(7737)
0020042 05 000660 055033 ------- 0020075       31          BNC     FLIOS


0020043 05 000661 053766 ------- 0020031       34          B       CHKIOS
0020044                                  35 CHKIOS0


0020044 05 000662 103621 017777          38          LI      R9,0(17777)
0020046                                  39          MIMODE
0020046 05 000664 013400 -------    -001- 40          MI      0
0020047                                  41          MDOIDCH
0020047 05 000665 164066 -------    -001- 42              DATA    MDOIDCH%
0020050                                  43          MD3CHC
0020050 05 000660 164074 -------    -001- 44              DATA    MD3CHC%
C020051                                  45          ZMINT
0020051 05 000667 026750 -------    -001- 46              DATA    ZMINT%
0020052 05 000670 003220 -------          47          ZR      R9
0020053 05 000671 003161 -------          48          LN      CHNCOUNT,1
0020054                                  49          CALL    CHNSELCT
```

CHECK IOS OF OTHER CHANNELS WHICH SHOULD
    BE 0(7737)

SELECT CHANNEL 0

SELECT THE LOWEST NUMBERED EQUIPPED

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
TEST 74                                                                    23:12:05   2/05/81  ****

I/O DIAGNOSTIC TEST                                                            CDGNOF      W77D

                                                                   CHANNEL OTHER THAN 0.
0020054 05 000672 037020 020151 0020151  -001- 02        BSA     CHNSELCT
0020056                                        03        MIMODE
0020056 05 000674 113400 -------          -001- 04        MI      0
0020057                                        05        MD0IDCH
0020057 05 000675 164066 -------          -001- 06          DATA    MD0IDCH%
0020060                                        07        MD1CHTN
0020060 05 000676 164071 -------          -001- 08          DATA    MD1CHTN%
0020061                                        09        MD2CHTM
0020061 05 000677 164072 -------          -001- 10          DATA    MD2CHTM%
0020062                                        11        MU3CHC
0020062 05 000700 164074 -------          -001- 12          DATA    MD3CHC%
0020063                                        13        ZMINT
0020063 05 000701 026750 003621           -001- 14          DATA    ZMINT%
0020064 05 000702 003621 016000                15        LI      R9 0(16000)       #   CHECK IOS OF CHANNEL 0
0020066                                        16        MIMODE
0020066 05 000704 013400 -------          -001- 17        MI      0
0020067                                        18        MD5EIOS
0020067 05 000705 074071 -------          -001- 19          DATA    MD5EIOS%
0020070                                        20        IODXR11
0020070 05 000706 025466 -------          -001- 21          DATA    IODXR11%
0020071                                        22        ZMINT
0020071 05 000707 026750 -------          -001- 23          DATA    ZMINT%
0020072 05 000710 003665 007737                24        CI      R11,0(7737)
0020074 05 000712 054007 ------- 0020103       25        BC      PASSIO
0020075                                        26 FLIOS


0020075 05 000713 103401 000033 CDGNTI         29        LI      TLMNO,MLTIOD00
0020077 05 000715 001403 -------               30        AR      TLMNO,IOCHAN
0020100                                        31        CALL    FAILOFF
0020100 05 000716 037020 017115 0017115  -001- 32        BSA     FAILOFF
0020102 05 000720 156540 -------               33        HALT




0020103                                        39 PASSIO
0020103                                        40        CALL    PASSOFF
0020103 05 000721 137020 017142 0017142  -001- 41        BSA     PASSOFF
0020105 05 000723 156540 -------               42        HALT
```

```
TEST 74                                                    23:12:05   2/05/81  ****

I/O DIAGNOSTIC TEST                                        CDGNOF       W77D

0020106                                    01 IOCHANTB
                                           02 #   3/6 CODES USED FOR  SUB-CHANNEL SELECTION
0020106 05 000724 000007 -------          03      VFD    10,0 6,B(000111)
0020107 05 000725 000013 -------          04      VFD    10,0 6,B(001011)
0020110 05 000726 000015 -------          05      VFD    10,0 6,B(001101)
0020111 05 000727 000016 -------          06      VFD    10,0 6,B(001110)
0020112 05 000730 000023 -------          07      VFD    10,0 6,B(010011)
0020113 05 000731 000025 -------          08      VFD    10,0 6,B(010101)
0020114 05 000732 000026 -------          09      VFD    10,0 6,B(010110)
0020115 05 000733 000031 -------          10      VFD    10,0 6,B(011001)
0020116 05 000734 000034 -------          11      VFD    10,0 6,B(011100)
0020117 05 000735 000032 -------          12      VFD    10,0 6,B(011010)
0020120 05 000736 000043 -------          13      VFD    10,0 6,B(100011)
0020121 05 000737 000045 -------          14      VFD    10,0 6,B(100101)
0020122 05 000740 000046 -------          15      VFD    10,0 6,B(100110)
0020123 05 000741 000051 -------          16      VFD    10,0 6,B(101001)
0020124 05 000742 000052 -------          17      VFD    10,0 6,B(101010)
0020125 05 000743 000054 -------          18      VFD    10,0 6,B(101100)
0020126 05 000744 000061 -------          19      VFD    10,0 6,B(110001)
0020127 05 000745 000062 -------          20      VFD    10,0 6,B(110010)
0020130 05 000746 000064 -------          21      VFD    10,0 6,B(110100)
0020131 05 000747 000070 -------          22      VFD    10,0 6,B(111000)


0020132                                    28 BADSUBTB
                                           29 #    TABLE OF 4/6 CODES WHICH ARE USED AS INVALID SUB-CHANNEL SELECT CODES
0020132 05 000750 000017 -------          30      VFD    10,0 6,B(001111)
0020133 05 000751 000027 -------          31      VFD    10,0 6,B(010111)
0020134 05 000752 000033 -------          32      VFD    10,0 6,B(011011)
0020135 05 000753 000035 -------          33      VFD    10,0 6,B(011101)
0020136 05 000754 000036 -------          34      VFD    10,0 6,B(011110)
0020137 05 000755 000047 -------          35      VFD    10,0 6,B(100111)
0020140 05 000756 000053 -------          36      VFD    10,0 6,B(101011)
0020141 05 000757 000055 -------          37      VFD    10,0 6,B(101101)
0020142 05 000760 000056 -------          38      VFD    10,0 6,B(101110)
0020143 05 000761 000063 -------          39      VFD    10,0 6,B(110011)
0020144 05 000762 000065 -------          40      VFD    10,0 6,B(110101)
0020145 05 000763 000066 -------          41      VFD    10,0 6,B(110110)
0020146 05 000764 000071 -------          42      VFD    10,0 6,B(111001)
0020147 05 000765 000072 -------          43      VFD    10,0 6,B(111010)
0020150 05 000766 000074 131042          44      VFD    10,0 6,B(111100)
```

```
TEST 74                                                    23:12:05   2/05/81  ****

I/O DIAGNOSTIC TEST                                                   CDGNOF      W77D

0020151                             01 CHNSELCT
                                    02 #    SUBROUTINE TO FIND AN I/O CHANNEL AND PUT THE 3/6 CODE
                                    03 #    REPRESENTING THAT CHANNEL IN THE HIGH 6 BITS OF R9 AND
                                    04 #    THE BINARY CHANNEL NUMBER IN THE LOW 5 BITS OF REGISTER
                                    05 #    IOCHAN.  WHEN THIS ROUTINE IS FIRST CALLED, REGISTER
                                    06 #    CHNCOUNT=0.  THIS REGISTER SERVES AS AN INDEXR INTO A
                                    07 #    TABLE OF EQUIPPED CHANNELS AT EQIOCHAN.  TABLE ENTRIES
                                    08 #    ARE EXAMINED UNTIL A STANDARD 3ACC SERIAL CHANNEL IS
                                    09 #    FOUND.  IF A CHANNEL IS FOUND, ITS 3/6 CODE AND BINARY
                                    10 #    NUMBER ARE PUT IN THE APPROPRIATE REGISTERS, CHNCOUNT IS
                                    11 #    INCREMENTED AND RETURN IS MADE WITH RETURN CODE 0 IN R0.
                                    12 #    IF CHNCOUNT IS NOT ALTERED BY THE CALLING PROGRAM, SUCCESSIVE
                                    13 #    CALLS TO THIS SUBROUTINE RESULT IN CODES FOR SUCCESSIVE EQUIPPED
                                    14 #    STANDARD CHANNELS.  IF NO MORE STANDARD CHANNELS EXIST, R9
                                    15 #    AND IOCHAN ARE NOT AFFECTED AND RETURN CODE 1 IS USED
                                    16 #    IN R0.  SINCE THIS SUBROUTINE IS USED SPECIFICALLY FOR
                                    17 #    THE I/O DIAGNOSTIC, STANDARD RETURN CONVENTIONS ARE NOT
                                    18 #    USED.

0020151                             20        BEGIN    ()
0020151                             21 TRYAGAIN
0020151 05 000767 131042 020000 TDATA  22     LAL      SCRTCH,EQIOCHAN,RA0 #    SETUP RA0
0020153 05 000771 017047 000037    23        CRM      SCRTCH,CHNCOUNT,0(37)
0020155 05 000773 054015 ------ 0020172  24   BC       NOCHAN
0020156 05 000774 041041 ------    25        LA       SCRTCH,1(RA0)
0020157 05 000775 042047 ------    26        LX       SCRTCH,CHNCOUNT(RA0)
0020160 05 000776 024051 ------    27        TBN      SCRTCH,9          #    IS THIS A SPECIAL CHANNEL? IF SO, IGNORE
                                                                            IT
0020161 05 000777 054007 ------ 0020170  29   BC       SPCHAN
0020162                             30                                  #    THIS IS A STANDARD CHANNEL
0020162 05 001000 016622 176000    31        LRM      R9,SCRTCH,0(176000) #  LEAVE 3/6 CODE IN HIGH BITS OF R9
0020164 05 001002 016462 000037    32        LRM      IOCHAN,SCRTCH,0(37) #  LEAVE BINARY CHANNEL NUMBER IN REGISTER
                                                                            IOCHAN.
0020166 05 001004 004561 ------    34        AN       CHNCOUNT,1
0020167                             35        RETURN   0                #    CF=1 MEANS A CHANNEL HAS BEEN FOUND
0020167 05 001005 056460 ------ -001- 36     BTSAN    0
0020170                             37 SPCHAN
0020170 05 001006 104561 ------    38        AN       CHNCOUNT,1
0020171 05 001007 053760 ------ 0020151  39   B        TRYAGAIN
0020172                             40 NOCHAN
0020172                             41        RETURN   1                #    CF=0 MEANS NO CHANNEL HAS BEEN FOUND
0020172 05 001010 156461 ------ -001- 42     BTSAN    1


                                 -001- 45 #    THIS CSECT IS 521 WORDS LONG.
```

TEST 74   23:12:05   2/05/81 ****

I/O DIAGNOSTIC TEST   CDGNOF   W77D

TEST 75   23:12:05   2/05/81 ****

SYSTEM_STATES_PT_1 DIAGNOSTIC TEST   CDGNOF   W77D

0021226
```
                                   -001- 01 OSTATUS CSECT
                                   -001- 02 #  ****************************************************************************
                                   -001- 03 #  ****************************************************************************
                                   -001- 04 #  **                                                                      **
                                   -001- 05 #  **            CU DIAGNOSTIC TEST NO. 75, SYSTEM_STATES_PT_1
                                   -001- 06 #  **                                                                      **
                                   -001- 07 #  ****************************************************************************
                                   -001- 08 #  ****************************************************************************


                                         14 #   THE FOLLOWING ROUTINE IS USED BY SEGMENT 5 OF THE
                                         15 #   SYSTEM STATS PT 1 DIAGNOSTIC. THE ROUTINE IDLES THE
                                         16 #   MAINTENANCE CHANNEL SWITCH SEQUENCER, CLEARS "BLOCK HARDWARE
                                         17 #   CHECKS" (ENABLES HARDWARE CHECKS), AND GATES R0 INTO THE
                                         18 #   ERROR REGISTER. R0 HAS BEEN PREVIOUSLY SET UP BY THE ON-LINE
                                         19 #   CODE. ERROR BITS (0-9) SHOULD CAUSE A STOP AND SWITCH.
                                         20 #   ERROR BITS (10-13) SHOULD CAUSE AN INITIALIZATION.

0021226                                  22 LDERBT
0021226 06 000000 103025 ------          23       LN       R1,5
0021227                                  24 STALL
0021227 06 000001 136020 021227 0021227  25       BX       R1,STALL        #   INSURE LAST MCH TRANSMISSION IS COMPLETE
0021231 06 000003 003441 000002          26       LI       R2,M(BHC)
0021233                                  27       MIMODE
0021233 06 000005 013400 ------    -001- 28       MI       0
0021234                                  29       ZER
0021234 06 000006 025750 ------    -001- 30          DATA    ZER%
0021235                                  31       IDSWQ
0021235 06 000007 026712 ------    -001- 32          DATA    IDSWQ%
0021236                                  33       L        SS_R,R2
0021236 06 000010 107126 ------    -001- 34          VFD     8,SS_R%T 8,R2%F
0021237                                  35       L        ER,R0           #   THIS SHOULD STOP OFF-LINE AND SEND SWITCH
0021237 06 000011 125123 ------    -001- 36          VFD     8,ER%T 8,R0%F
0021240                                  37       ZMINT
0021240 06 000012 026750 ------    -001- 38          DATA    ZMINT%
0021241 06 000013 056540 ------          39       HALT                     #   HALT IN CASE STOP AND SWITCH DID NOT WORK


                                   -001- 42 #   THIS CSECT IS 12 WORDS LONG.
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

TEST 76   23:12:05   2/05/81 ****

SYSTEM_STATES_PT_2 DIAGNOSTIC TEST   CDGNOF   W77D

0022136   -001- 01 OSTATUS2 CSECT
                                 -001- 02 # ***
                                 -001- 03 # ***
                                 -001- 04 # **   **
                                 -001- 05 # **   CU DIAGNOSTIC TEST NO. 76, SYSTEM_STATES_PT_2
                                 -001- 06 # **   **
                                 -001- 07 # ***
                                 -001- 08 # ***

                                 14 #   SEGMENT 1
                                 15 #   THE FOLLOWING ROUTINE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC
                                 16 #   SEGMENT 1. THE MAINTENANCE CHANNEL SWITCH SEQUENCER IS
                                 17 #   IDLED AND THE BR IS GATED TO THE TI. THE BR HAS BEEN
                                 18 #   PREVIOUSLY SET UP BY THE ON-LINE CODE. TIMEOUTS ARE TESTED
                                 19 #   IN THIS MANNER.

                                 24 #   SEGMENT 3
                                 25 #   THE FOLLOWING CODE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC SEGMENT 3
                                 26 #   TO TEST THE BRANCH ALLOWED CHECK CIRCUIT. TWO ROUTINES ARE
                                 27 #   USED, ONE WITH A BA BIT PRESENT AND THE OTHER WITH
                                 28 #   THE BA BIT MISSING.

                                 33 #   SEGMENT 4
                                 34 #   THE FOLLOWING CODE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC.
                                 35 #   SEGMENT 4. IT RUNS THE OFF-LINE SANITY TEST AS A FINAL CHECK
                                 36 #   ON THE HEALTH OF THE PROCESSOR.

                                 40 #   SEGMENT 5
                                 41 #   THE FOLLOWING CODE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC
                                 42 #   SEGMENT 5 TO TEST TWO AUXILIARY CONTROL 2/4 DECODER FUNCTIONS.
                                 43 #   THE TWO FUNCTIONS TESTED HERE ARE "TURN OFF BUS PARITY CHECK"
                                 44 #   AND "I/O DML MATCH DIVERT". BOTH OF THESE AUXILIARY CONTROL
                                 45 #   FUNCTIONS ARE TESTED FUNCTIONALLY BY ISSUING A "SIO" COMMAND.
                                 46 #   THE ERROR REGISTER IS SAVED IN THE AK REGISTER FOR LATER EXAMINATION.

TEST 76   23:12:05   2/05/81 ****

SYSTEM_STATES_PT_2 DIAGNOSTIC TEST   CDGNOF   W77D

```
                          -001- 01  #*****************************************************
                          -001- 02  #*                                                  *
                          -001- 03  #*          TEST 76      SEGMENT 1                   *
                          -001- 04  #*                                                  *
                          -001- 05  #*****************************************************


                                11 #   THE FOLLOWING ROUTINE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC
                                12 #   SEGMENT 1. THE MAINTENANCE CHANNEL SWITCH SEQUENCER IS
                                13 #   IDLED AND THE BR IS GATED TO THE TI. THE BR HAS BEEN
                                14 #   PREVIOUSLY SET UP BY THE ON-LINE CODE. TIMEOUTS ARE TESTED
                                15 #   IN THIS MANNER.


                                21 #   GATE THE BR TO THE TI AFTER STALLING TO INSURE THAT MAINTENANCE
                                22 #   CHANNEL IS IDLE AND IDLING THE MAINTENANCE CHANNEL SWITCH SEQUENCER.
                                23 #   FINALLY, ZERO THE TI.
0022136                         25 LDTI
0022136 07 000000 103025 ------ 26         LN      R1,5
0022137                         27 STAL
0022137 07 000001 136020 022137 0022137  28      BX      R1,STAL              #    STALL UNTIL MAINTENANCE CHANNEL COMPLETES
                                                                                   LAST TRANSMISSION.
0022141                         30         MIMODE
0022141 07 000003 013400 ------ -001- 31   MI      0
0022142                         32         IDSWQ
0022142 07 000004 026712 ------ -001- 33       DATA    IDSWQ%
0022143                         34         BRXTI
0022143 07 000005 154066 ------ -001- 35       DATA    BRXTI%
0022144                         36         ZPT
0022144 07 000006 134350 ------ -001- 37       DATA    ZPT%
0022145                         38         ZMINT
0022145 07 000007 026750 ------ -001- 39       DATA    ZMINT%
0022146 07 000010 056540 ------ 40         HALT
```

```
TEST 76                                                              23:12:05   2/05/81  ****

SYSTEM_STATES_PT_2 DIAGNOSTIC TEST                                        CDGNOF        W77D
                                -001- 01 #***********************************************
                                -001- 02 #*                                           *
                                -001- 03 #*          TEST 76     SEGMENT 3
                                -001- 04 #*                                           *
                                -001- 05 #***********************************************


                                 11 #    THE FOLLOWING CODE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC SEGMENT 3
                                 12 #    TO TEST THE BRANCH ALLOWED CHECK CIRCUIT. TWO ROUTINES ARE
                                 13 #    USED, ONE WITH A BA BIT PRESENT AND THE OTHER WITH
                                 14 #    THE BA BIT MISSING.


                                 20 #    CODE TO TEST BRANCH ALLOWED CHECKER. BRANCH ALLOWED BIT IS PRESENT.
0022147                          21 GOODBA
0022147 07 000011 153002 ------- 0022151    22        B        GOODHLT
0022150 07 000012 006000 -------            23        NOP
0022151                          24 GOODHLT
0022151 07 000013 156540 -------            25        HALT


                                 31 #    CODE TO TEST BRANCH ALLOWED CHECKER. BRANCH ALLOWED BIT IS ABSENT.
0022152                          32 BADBA
0022152 07 000014 153002 ------- 0022154    33        B        *+2
0022153 07 000015 006000 -------            34        NOP
0022154 07 000016 056540 -------            35        HALT


OFF-LINE DIAGNOSTIC CODE                                              PR-1C933-50

  23:12:05   2/05/81  TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF    ISSUE  04    PAGE   61
```

TEST 76   23:12:05   2/05/81 ****

SYSTEM_STATES_PT_2 DIAGNOSTIC TEST   CDGNOF   W77D

```
                                        -001- 01 #*************************************************
                                        -001- 02 #*                                              *
                                        -001- 03 #*          TEST 76     SEGMENT 4               *
                                        -001- 04 #*                                              *
                                        -001- 05 #*************************************************


                                           11 #   THE FOLLOWING CODE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC.
                                           12 #   SEGMENT 4.  IT RUNS THE OFF-LINE SANITY TEST AS A FINAL CHECK
                                           13 #   ON THE HEALTH OF THE PROCESSOR.


0022155                                    17 RNSANITY
0022155                                    18        MIMODE  ZER
0022155 07 000017 113000 ------     -001-  19        MIS     0
0022156 07 000020 025750 ------     -002-  20                DATA    ZER%
0022157                                    21        CALL    SANITYDG
0022157 07 000021 037020 006764 CINIT -001- 22       BSA     SANITYDG
0022161 07 000023 156540 ------            23        HALT
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

TEST 76   23:12:05   2/05/81 ****

SYSTEM_STATES_PT_2 DIAGNOSTIC TEST   CDGNOF   W77D

```
                              -001- 01 #*****************************************************
                              -001- 02 #*                                                   *
                              -001- 03 #*              TEST 76      SEGMENT 5
                              -001- 04 #*                                                   *
                              -001- 05 #*****************************************************


                                    11 #    THE FOLLOWING CODE IS USED BY THE SYSTEM STATES PT 2 DIAGNOSTIC
                                    12 #    SEGMENT 5 TO TEST TWO AUXILIARY CONTROL 2/4 DECODER FUNCTIONS.
                                    13 #    THE TWO FUNCTIONS TESTED HERE ARE "TURN OFF BUS PARITY CHECK"
                                    14 #    AND "I/O DML MATCH DIVERT".  BOTH OF THESE AUXILIARY CONTROL
                                    15 #    FUNCTIONS ARE TESTED FUNCTIONALLY BY ISSUING A "SIO" COMMAND.
                                    16 #    THE ERROR REGISTER IS SAVED IN THE AK REGISTER FOR LATER EXAMINATION.


0022162                               22 IOERROR
0022162 07 000024 103641 177777       23          LI      R10,0(177777)    #   TEST CONSTANT OF ALL ONES
0022164 07 000026 003220 ------       24          ZR      R9               #   LOAD R9 WITH BAD I/O 3/6 CODES
0022165                               25          MIMODE  ZER
0022165 07 000027 013000 ------ -001- 26          MIS     0
0022166 07 000030 025750 ------ -002- 27                  DATA    ZER%
0022167 07 000031 003044 ------       28          LN      R2,M(BPC)/E(16)
0022170 07 000032 003060 ------       29          ZR      R3
0022171 07 000033 012360 ------       30          PACK    SS_R             #   CLEAR "BPC" BIT IN SS, THIS WILL INSURE
                                                                               THAT THE GATING BUS PARITY IS INHIBITED ONL
                                                                               BY THE AUXILIARY CONTROL 2/4 CODE.
0022172 07 000034 023400 ------       33          SIO                      #   WITH INVALID 3/6  CODES IN R9 THIS
                                                                               COMMAND WILL INSURE THAT BAD PARITY IS IN
                                                                               R11 FROM IOD.  IT WILL ALSO GIVE A MISMATCH
                                                                               OF R10  AND R11 FOR CHECKING IN THE DML
                                                                               MATCHER.
0022173                               38          MIMODE  L AK,ER          #   SAVE ER FOR INSPECTION
0022173 07 000035 013000 ------ -001- 39          MIS     0
0022174 07 000036 116252 ------ -002- 40                  VFD     8,AK%T 8,ER%F
0022175 07 000037 056540 ------       41          HALT


                              -001- 44 #   THIS CSECT IS 32 WORDS LONG.
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

   23:12:05   2/05/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE 04   PAGE   63

```
TEST 77                                                      23:12:05   2/05/81  ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                  CDGNOF      W77D

0023000                       -001- 01 ODGSSP CSECT
                              -001- 02 #  *************************************************************************
                              -001- 03 #  *************************************************************************
                              -001- 04 #  **                                                                   **
                              -001- 05 #  **              CU DIAGNOSTIC TEST NO. 77, SYSTEM_STATUS_PANEL
                              -001- 06 #  **                                                                   **
                              -001- 07 #  *************************************************************************
                              -001- 08 #  *************************************************************************


                                 14 #   SEGMENTS 2, 4, 5, AND 6 OF THE SYSTEM STATUS PANEL
                                 15 #   DIAGNOSTIC ARE RUN BY THE OFF-LINE PROCESSOR.



                                 21 #   SEGMENT 2
                                 22 #   THE STATUS PANEL IS INITIALIZED TO ALL OS IN ALL 12
                                 23 #   ADDRESSABLE REGISTERS. AN ATTEMPT IS MADE TO SET EACH REGISTER IN
                                 24 #   THE SSP TO ALL ONES AND THEN TO ALL ZEROS.  SINCE SOME BITS IN SOME
                                 25 #   REGISTERS HAVE LIMITED OR NO PROGRAM ACCESS, A MASK IS
                                 26 #   USED FOR EXAMINING EACH REGISTER SUCH THAT THESE BITS ARE
                                 27 #   IGNORED

                                 29 #   SEGMENT 4
                                 30 #   INSURE THAT READ-ONLY OPERATION DOES NOT CAUSE A WRITE
                                 31 #   TO ANY REGISTER. SEND ALL 1S DATA TO EACH ADDRESS
                                 32 #   WITH READ-ONLY OP-CODE. REGISTERS SHOULD REMAIN ZEROED.

                                 34 #   SEGMENT 5
                                 35 #   TEST FOR MULTIPLE ADDRESS SELECTION. SEND ALL 15
                                 36 #   POSSIBLE 2/4 ADDRESS CODES. THESE ARE INVALID SINCE
                                 37 #   ADDRESS CODES ARE 3/6 CODES. THE BAD CODES ARE SENT WITH
                                 38 #   ALL 1S DATA. IF THERE ARE NO FAULTS, NO REGISTERS
                                 39 #   WILL BE WRITTEN.
                                 40 #   ON-LINE PROCESSOR ACCESS TO THE SYSTEM STATUS PANEL IS TESTED
                                 41 #   WITH A SINGLE I/O ORDER. THE I/O RESPONSE SHOULD BE A NORMAL
                                 42 #   START CODE

                                 44 #   SEGMENT 6
                                 45 #   THE PANEL TIMER WILL BE TESTED BY CLEARING THE TIMER AND THE TIMER BIT.
                                 46 #   THE TIMER BIT IS A RECORD THAT A TIMEOUT HAS TAKEN PLACE.
                                 47 #   THIS IS THE ONLY BIT ASSOCIATED WITH THE TIMER WHICH CAN BE
                                 48 #   EXAMINED.  THE STATE OF THE TIMER BIT WILL THEN BE CHECKED.
                                 49 #   IT SHOULD BE ZERO.  THE TIMER BIT IS THEN MONITORED
```

TEST 77   23:12:05   2/05/81 ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST   CDGNOF   W77D

```
                                    01 #    FOR 2 SECONDS DURING WHICH A TIMEOUT SHOULD NOT TAKE PLACE.  THE TIMER BIT
                                    02 #    WILL THEN BE MONITORED FOR ANOTHER 3 SECONDS DURING WHICH A TIMEOUT SHOULD
                                    03 #    TAKE PLACE.


                    0016000         09 CHAN   EQU   O(16000)
                    0000160         10 SUBCHN EQU   O(160)
                    0016160         11 IOSELCT EQU  CHAN!SUBCHN
                    0000001         12 SEGMENT EQUR R1          #    TEST SEGMENT NUMBER
                    0000002         13 DATA1  EQUR  R2          #    FIRST DATA WORD FOR TTY FAILURE MESSAGE
                    0000003         14 DATA2  EQUR  R3          #    SECOND DATA WORD FOR TTY FAILURE MESSAGE
                    0000004         15 TLMNU  EQUR  R4          #    SEQUENTIAL PART OF TROUBLE NUMBER
                    0000004         16 NUMDATA EQUR R4          #    NUMBER OF DATA WORDS IN FAILURE MESSAGE.
                    0000007         17 INDXR  EQUR  R7
                    0000010         18 INDEXR2 EQUR R8
                                    19         PUBLIC  SSPINIT
                                    20         PUBLIC  KEEPCLR



0023000                             26 OFFSSP
0023000                             27                          #    INITIALIZE ALL STATUS BITS TO "0" BUT
                                                                     DON'T CHECK RESULTS.

0023000 10 000000 103021 ------     29         LN    R1,M(OVLOF)
0023001 10 000001 007741 ------     30         LSR   MS,R1      #    MAINTENANCE STATE TO OVERRIDE I/O DISABLE
                                                                     OR LOCK OFF-LINE.
0023002 10 000002 003621 016160     32         LI    R9,IOSELCT
0023004                             33         CALL  SSPINIT
0023004 10 000004 037020 023400 0023400  -001- 34    BSA   SSPINIT
```

TEST 77   23:12:05   2/05/81   ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST   CDGNOF   W77D

```
-001- 01 #*****************************************************
-001- 02 #*                                                 *
-001- 03 #*          TEST 77     SEGMENT 2
-001- 04 #*                                                 *
-001- 05 #*****************************************************
```

```
11 #    SEND ALL ONES TO ONE STATUS PANEL ADDRESS USING THE WRITE-READ
12 #    FUNCTION AND CHECK THE RESULTS.  THEN SEND ALL ZEROS
13 #    TO THE SAME ADDRESS AND CHECK RESULTS.  THIS IS DONE
14 #    FOR EACH OF 12 ADDRESSES.  THE "ALL ONES" CONSTANT FOR
15 #    EACH ADDRESS ISN'T REALLY ALL ONES SINCE THERE ARE A FEW
16 #    BITS WHICH ARE NOT DESIRABLE TO TEST.  THE "EXECUTE"
17 #    BUTTON IS IN THIS CATEGORY.
```

```
0023006 10 000006 103501 000003 CSTATS      22        LI     TLMNU,FL1SRS0    #   SET TROUBLE NUMBER
0023010 10 000010 003173 ------             23        LN     INDXR,11
0023011 10 000011 003203 ------             24        LN     INDEXR2,3
0023012                                     25 ONESLP
0023012 10 000012 131400 023427 0023427     26        LAL    R0,ADRTBL,RA1
0023014 10 000014 042647 ------             27        LX     R10,INDXR(RA1)
0023015 10 000015 006052 ------             28        LR     DATA1,R10
0023016 10 000016 010656 ------             29        RLN    R10,2
0023017 10 000017 031400 023443 0023443     30        LAL    R0,MASKTBL,RA1
0023021 10 000021 042407 ------             31        LX     R0,INDXR(RA1)
0023022 10 000022 016240 177400             32        IRM    R10,R0,0(177400)
0023024 10 000024 026240 ------             33        SBN    R10,0            #   WRITE-READ FUNCTION
0023025 10 000025 036200 023031 0023031     34        BX     INDEXR2,SNDIO
0023027 10 000027 004501 ------             35        AN     TLMNU,1          #   GROUPS OF 3 ADDRESSES ARE ON A EACH
                                                                                  CIRCUIT PACK
0023030 10 000030 003202 ------             37        LN     INDEXR2,2
0023031                                     38 SNDIO
0023031                                     39        CALL   SIO
0023031 10 000031 137020 111025 CSYSUB -001- 40       BSA    SIO
0023033 10 000033 114000 ------             41        TZ     R0
0023034 10 000034 055007 ------ 0023043     42        BNC    FAILRSP          #   -TRBL=7703,7704,7705,OR 7706


0023035 10 000035 006073 ------             45        LR     DATA2,R11        #   FOR FAILURE MESSAGE
0023036 10 000036 042407 ------             46        LX     R0,INDXR(RA1)
0023037 10 000037 014260 ------             47        NR     R11,R0
0023040 10 000040 020253 ------             48        CR     R10,R11
0023041 10 000041 055016 ------ 0023057     49        BNC    FAILDTA          #   TRBL=7707,7708,7709,OR 7710
```

```
TEST 77                                                          23:12:05    2/05/81   ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                       CDGNOF        W77D


0023042 10 000042 053032 ------ 0023074       03       B      DOZEROS
```

```
TEST 77                                                              23:12:05   2/05/81  ****

  SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                         CDGNOF        W77D

 0023043                                        01 FAILRSP              #   THE I/O RESPONSE WAS INCORRECT, EITHER NO
                                                                           RESPONSE OR A MAINTENANCE START CODE.

 0023043                                        04                      #   CLEAN UP THE SSP TO INSURE THAT CRITICAL
                                                                           INDICATORS ARE CLEAR.
 0023043                                        06         CALL  SSPINIT
 0023043 10 000043 137020 023400 0023400  -001- 07         BSA   SSPINIT


 0023045                                        11                      #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                           TEST INTERVAL.
 0023045 10 000045 103421 120000                13         LI    R1,0(120000)
 0023047                                        14         CALL  KEEPCLR
 0023047 10 000047 037020 023413 0023413  -001- 15         BSA   KEEPCLR
 0023051 10 000051 106004 ------                16         LR    R0,TLMNU
 0023052 10 000052 003101 ------                17         LN    NUMDATA,1     #   ONE DATA WORD IN FAILURE MESSAGE
 0023053 10 000053 003022 ------                18         LN    SEGMENT,2
                                                19 ODGSSP  OW    0(54)         # 12760
                                          -001- 20         NOTE  ************** THE FIRST ADDRESS OVERWRITTEN IS 000054 **********


 0023054                                        23         CALL  FAILOFF_TC
 0023054 10 000054 037020 112610 0000026  -001- 24         BSA   FAILOFF_TC
 0023056 10 000056 156540 ------                25         HALT
 0023057                                        26         EOW                 # 12760
                                          -001- 27         NOTE  ************** THE LAST ADDRESS OVERWRITTEN IS 000056 **********


 0023057                                        35 FAILDTA              #   THE I/O CHANNEL HAD A CORRECT RESPONSE
                                                                           BUT THE DATA WAS BAD

 0023057                                        38                      #   CLEAN UP THE SSP TO INSURE THAT CRITICAL
                                                                           INDICATORS ARE CLEAR.
 0023057                                        40         CALL  SSPINIT
 0023057 10 000057 137020 023400 0023400  -001- 41         BSA   SSPINIT


 0023061                                        45                      #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                           TEST INTERVAL.
 0023061 10 000061 103421 120000                47         LI    R1,0(120000)
 0023063                                        48         CALL  KEEPCLR
 0023063 10 000063 037020 023413 0023413  -001- 49         BSA   KEEPCLR

   OFF-LINE DIAGNOSTIC CODE                                             PR-1C933-50
```

```
TEST 77                                                           23:12:05   2/05/81  ****

   SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                       CDGNOF       W77D

0023065 10 000065 106004 ------          01          LR     R0,TLMNU
0023066 10 000066 003102 ------          02          LN     NUMDATA,2       #  TWO DATA WORDS IN FAILURE MESSAGE
0023067 10 000067 004404 ------          03          AN     R0,4
0023070 10 000070 003022 ------          04          LN     SEGMENT,2
                                         05 ODGSSP    OW     0(71)           # 12760
                                 -001- 06             NOTE   ************** THE FIRST ADDRESS OVERWRITTEN IS 000071 **********


0023071                                  09          CALL   FAILOFF_TC
0023071 10 000071 037020 112610 0000026 -001- 10     BSA    FAILOFF_TC
0023073 10 000073 156540 ------          11          HALT
0023074                                  12          EOW                    # 12760
                                 -001- 13             NOTE   *************** THE LAST ADDRESS OVERWRITTEN IS 000073 **********
```

```
TEST 77                                                              23:12:05   2/05/81  ****

   SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                           CDGNOF      W77D

                                      01 #   SEND ALL OS TO EACH STATUS PANEL ADDRESS AND VERIFY


   0023074 .                                 05 DOZEROS
   0023074 10 000074 103000 ------           06          ZR      R0
   0023075 10 000075 016240 177400           07          IRM     R10,R0,0(177400)
   0023077                                   08 SNDI00
   0023077                                   09          CALL    SIO
   0023077 10 000077 137020 111025 CSYSUB  -001- 10      BSA     SIO
   0023101 10 000101 114000 ------           11          TZ      R0
   0023102 10 000102 055014 ------ 0023116   12          BNC     FAILRSP0          #   TRBL=7711,7712,7713,OR 7714


   0023103 10 000103 006073 ------           15          LR      DATA2,R11
   0023104 10 000104 031400 023443 0023443   16          LAL     R0,MASKTBL,RA1
   0023106 10 000106 042407 ------           17          LX      R0,INDXR(RA1)
   0023107 10 000107 014240 ------           18          NR      R10,R0
   0023110 10 000110 014260 ------           19          NR      R11,R0
   0023111 10 000111 020253 ------           20          CR      R10,R11
   0023112 10 000112 055017 ------ 0023131   21          BNC     FAILDTA0          #   TRBL=7715,7716,7717,OR 7718


   0023113 10 000113 036160 023012 0023012   24          BX      INDXR,ONESLP
   0023115 10 000115 053027 ------ 0023144   25          B       DOSEG4
```

```
TEST 77                                                              23:12:05   2/05/81  ****

    SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                      CDGNOF      W77D

0023116                                      01 FAILRSP0            #   THE I/O RESPONSE WAS INCORRECT, EITHER NO
                                                                       RESPONSE OR A MAINTENANCE START CODE


0023116 10 000116 104510 ------             05        AN    TLMNU,8
0023117                                     06                         #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                           TEST INTERVAL.
0023117 10 000117 003421 120000             08        LI    R1,0(120000)
0023121                                     09        CALL  KEEPCLR
0023121 10 000121 037020 023413 0023413 -001- 10      BSA   KEEPCLR
0023123 10 000123 106004 ------             11        LR    R0,TLMNU
0023124 10 000124 003101 ------             12        LN    NUMDATA,1        #   ONE DATA WORD IN FAILURE MESSAGE
0023125 10 000125 003022 ------             13        LN    SEGMENT,2
                                            14 ODGSSP OW    0(126)           # 12760
                                      -001- 15        NOTE  ************** THE FIRST ADDRESS OVERWRITTEN IS 000126 **********


0023126                                     18        CALL  FAILOFF_TC
0023126 10 000126 037020 112610 0000026 -001- 19      BSA   FAILOFF_TC
0023130 10 000130 156540 ------             20        HALT
0023131                                     21        EOW                    # 12760
                                      -001- 22        NOTE  *************** THE LAST ADDRESS OVERWRITTEN IS 000130 **********




0023131                                      30 FAILDTA0           #   THE I/O CHANNEL RECEIVED A RESPONSE BUT
                                                                       THE DATA WAS BAD

0023131 10 000131 104514 ------             33        AN    TLMNU,12
0023132                                     34                         #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                           TEST INTERVAL.
0023132 10 000132 003421 120000             36        LI    R1,0(120000)
0023134                                     37        CALL  KEEPCLR
0023134 10 000134 037020 023413 0023413 -001- 38      BSA   KEEPCLR

0023136 10 000136 106004 ------             40        LR    R0,TLMNU
0023137 10 000137 003102 ------             41        LN    NUMDATA,2        #   TWO DATA WORDS IN FAILURE MESSAGE
0023140 10 000140 003022 ------             42        LN    SEGMENT,2
                                            43 ODGSSP OW    0(141)           # 12760
                                      -001- 44        NOTE  *************** THE FIRST ADDRESS OVERWRITTEN IS 000141 **********
```

TEST 77   23:12:05   2/05/81   ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST   CDGNOF   W77D

```
0023141                                               01       CALL    FAILOFF_TC
0023141 10 000141 037020 112610 0000026   -001- 02       BSA     FAILOFF_TC
0023143 10 000143 156540 ------                       03       HALT
0023144                                               04       EOW                      # 12760
                                            -001- 05       NOTE    **************** THE LAST ADDRESS OVERWRITTEN IS 000143 **********
```

```
TEST 77                                                                 23:12:05   2/05/81  ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                             CDGNOF        W77D

                              -001- 01 #**************************************************
                              -001- 02 #*                                              *
                              -001- 03 #*          TEST 77     SEGMENT 4                *
                              -001- 04 #*                                              *
                              -001- 05 #**************************************************




                                       11 #   INSURE THAT READ ONLY OPERATION DOES NOT CAUSE A WRITE BY
                                       12 #   SENDING ALL ONES DATA WITH THE READ ONLY OP. THE STATUS
                                       13 #   PANEL REGISTERS WERE ZEROED BY THE PREVIOUS SEGMENT.

0023144                                15 DOSEG4
0023144 10 000144 103501 000023 CSTATS 16        LI       TLMNU,FLRDO
0023146 10 000146 003701 177400        17        LI       R12,0(177400)
0023150 10 000150 003173 ------        18        LN       INDXR,11
0023151 10 000151 003203 ------        19        LN       INDEXR2,3
0023152                                20 RDONLY
0023152 10 000152 131400 023427 0023427 21       LAL      R0,ADRTBL,RA1
0023154 10 000154 042647 ------        22        LX       R10,INDXR(RA1)
0023155 10 000155 006052 ------        23        LR       DATA1,R10        #   FOR FAILURE MESSAGE
0023156 10 000156 010656 ------        24        RLN      R10,2
0023157 10 000157 016254 177400        25        IRM      R10,R12,0(177400) #   ALL ONES CONSTANT
0023161 10 000161 026241 ------        26        SBN      R10,1            #   READ ONLY OPERATION
0023162 10 000162 036200 023166 0023166 27       BX       INDEXR2,SNDRD
0023164 10 000164 004501 ------        28        AN       TLMNU,1
0023165 10 000165 003202 ------        29        LN       INDEXR2,2
0023166                                30 SNDRD
0023166                                31        CALL     SIO
0023166 10 000166 137020 111025 CSYSUB -001- 32   BSA      SIO
0023170 10 000170 106073 ------        33        LR       DATA2,R11
0023171 10 000171 031400 023443 0023443 34       LAL      R0,MASKTBL,RA1
0023173 10 000173 042407 ------        35        LX       R0,INDXR(RA1)
0023174 10 000174 014260 ------        36        NR       R11,R0
0023175 10 000175 003000 ------        37        ZR       R0
0023176 10 000176 016240 177400        38        IRM      R10,R0,0(177400)
0023200 10 000200 020253 ------        39        CR       R10,R11
0023201 10 000201 055004 ------ 0023205 40       BNC      FAILRD           #   TRBL=7719,7720,7721,OR 7722


0023202 10 000202 036160 023152 0023152 43       BX       INDXR,RDONLY
0023204 10 000204 053015 ------ 0023221 44       B        DOSEG5
```

```
TEST 77                                                              23:12:05   2/05/81  ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                     CDGNOF        W77D

0023205                                    01 FAILRD              #   THE READ ONLY OPERATION CAUSED A WRITE

0023205                                    03                     #   INSURE THAT CRITICAL INDICATORS ARE
                                                                      CLEARED
0023205                                    05       CALL   SSPINIT
0023205 10 000205 137020 023400 0023400 -001- 06    BSA    SSPINIT


0023207                                    09                     #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                      TEST INTERVAL.
0023207 10 000207 103421 120000            11       LI     R1,0(120000)
0023211                                    12       CALL   KEEPCLR
0023211 10 000211 037020 023413 0023413 -001- 13    BSA    KEEPCLR
0023213 10 000213 106004 ------           14       LR     R0,TLMNU
0023214 10 000214 003102 ------           15       LN     NUMDATA,2    #   TWO DATA WORDS IN FAILURE MESSAGE
0023215 10 000215 003024 ------           16       LN     SEGMENT,4
                                           17 ODGSSP OW    0(216)       # 12760
                                    -001- 18       NOTE   ************** THE FIRST ADDRESS OVERWRITTEN IS 000216 **********


0023216                                    21       CALL   FAILOFF_TC
0023216 10 000216 037020 112610 0000026 -001- 22    BSA    FAILOFF_TC
0023220 10 000220 156540 ------           23       HALT
0023221                                    24       EOW                 # 12760
                                    -001- 25       NOTE   *************** THE LAST ADDRESS OVERWRITTEN IS 000220 **********
```

```
TEST 77                                                      23:12:05   2/05/81  ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                    CDGNOF      W77D

                              -001- 01  #***************************************************
                              -001- 02  #*                                                *
                              -001- 03  #*           TEST 77      SEGMENT 5
                              -001- 04  #*                                                *
                              -001- 05  #***************************************************


                               11 #     CHECK FOR POSSIBLE MULTIPLE ADDRESS SELECTION BY TRYING
                               12 #     INVALID ADDRESSES CONSISTING OF ALL POSSIBLE 2/6
                               13 #     CODES. ALL REGISTERS HAVE BEEN ZEROED BY A PREVIOUS SEGMENT.
                               14 #     ALL 1S DATA WILL BE SENT WITH THE INVALID ADDRESSES AND
                               15 #     NO REGISTER SHOULD BE AFFECTED.


0023221                                 19 DOSEG5
0023221 10 000221 103501 000027 CSTATS  20        LI      TLMNU,FLMLT0        #   SET TROUBLE NUMBER
0023223 10 000223 003701 177400         21        LI      R12,0(177400)
0023225 10 000225 003176 ------         22        LN      INDXR,14
0023226 10 000226 031400 023457 0023457 23        LAL     R0,BDADTBL,RA1
0023230                                 24 MULTLP
0023230 10 000230 142647 ------         25        LX      R10,INDXR(RA1)
0023231 10 000231 010656 ------         26        RLN     R10,2
0023232 10 000232 016254 177400         27        IRM     R10,R12,0(177400)   #   ALL 1S DATA
0023234 10 000234 026240 ------         28        SBN     R10,0               #   READ-WRITE FUNCTION
0023235 10 000235 023400 ------         29        SIO
0023236 10 000236 036160 023230 0023230.30        BX      INDXR,MULTLP
0023240                                 31                                    #   CHECK RESULTS
0023240 10 000240 003173 ------         32        LN      INDXR,11
0023241 10 000241 003203 ------         33        LN      INDEXR2,3
0023242                                 34 CHKLP
0023242 10 000242 131400 023427 0023427 35        LAL     R0,ADRTBL,RA1
0023244 10 000244 042647 ------         36        LX      R10,INDXR(RA1)
0023245 10 000245 006052 ------         37        LR      DATA1,R10           #   FOR FAILURE MESSAGE
0023246 10 000246 010656 ------         38        RLN     R10,2
0023247 10 000247 026241 ------         39        SBN     R10,1               #   READ OPERATION
0023250 10 000250 036200 023254 0023254 40        BX      INDEXR2,DOTST
0023252 10 000252 004501 ------         41        AN      TLMNU,1             #   GROUPS OF 3 ADDRESSES ARE ON EACH CIRCUIT
                                                                                  PACK
0023253 10 000253 003202 ------         43        LN      INDEXR2,2
0023254                                 44 DOTST
0023254                                 45        CALL    SIO
0023254 10 000254 137020 111025 CSYSUB  -001- 46  BSA     SIO
0023256 10 000256 106073 ------         47        LR      DATA2,R11           #   FOR FAILURE MESSAGE
0023257 10 000257 031400 023443 0023443 48        LAL     R0,MASKTBL,RA1
0023261 10 000261 042407 ------         49        LX      R0,INDXR(RA1)


  OFF-LINE DIAGNOSTIC CODE                                          PR-1C933-50

   23:12:05   2/05/81   TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF     ISSUE  04      PAGE   75
```

TEST 77   23:12:05   2/05/81 ****

    SYSTEM_STATUS_PANEL DIAGNOSTIC TEST   CDGNOF   W77D

0023262 10 000262 014240 ------   01   NR   R10,R0
0023263 10 000263 014260 ------   02   NR   R11,R0
0023264 10 000264 020253 ------   03   CR   R10,R11
0023265 10 000265 055077 ------ 0023364   04   BNC   FAILMLT   #   TRBL=7723,7724,7725,OR 7726

0023266 10 000266 036160 023242 0023242   07   BX   INDXR,CHKLP

TEST 77   23:12:05   2/05/81 ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST   CDGNOF   W77D

```
-001- 01 #*********************************************************
-001- 02 #*                                                       *
-001- 03 #*          TEST 77      SEGMENT 6                        *
-001- 04 #*                                                       *
-001- 05 #*********************************************************
```

```
11 #   THE PANEL TIMER WILL BE TESTED BY CLEARING THE TIMER AND THE TIMER BIT.
12 #   THE TIMER BIT IS A RECORD THAT A TIMEOUT HAS TAKEN PLACE.
13 #   THIS IS THE ONLY BIT ASSOCIATED WITH THE TIMER WHICH CAN BE
14 #   EXAMINED.  THE STATE OF THE TIMER BIT WILL THEN BE CHECKED.
15 #   IT SHOULD BE ZERO.  THE TIMER BIT IS THEN MONITORED
16 #   FOR 2 SECONDS DURING WHICH A TIMEOUT SHOULD NOT TAKE PLACE.  THE TIMER BIT
17 #   WILL THEN BE MONITORED FOR ANOTHER 3 SECONDS DURING WHICH A TIMEOUT SHOULD
18 #   TAKE PLACE.
```

```
0000312        24 CLRTIMER EQU  B(11001010)     #  ADDRESS FOR CLEARING OF TIMER WITH A
                                                   LEGITIMATE OP CODE IN LOW TWO BITS.
0000132        26 CHKTIMER EQU  B(01011010)     #  ADDRESS FOR TIMER BIT WITH READ OP CODE
                                                   IN LOW TWO BITS
0000131        28 CLRTIMBT EQU  B(01011001)     #  ADDRESS FOR TIMER BIT WITH WRITE - READ
                                                   OP CODE IN LOW TWO BITS
```

```
0023270 10 000270 003641 000312           35          LI    R10,CLRTIMER   #  CLEAR THE PANEL TIMER
0023272                                    36          CALL  SIO
0023272 10 000272 037020 111025 CSYSUB  -001- 37       BSA   SIO
0023274 10 000274 103641 000131           38          LI    R10,CLRTIMBT   #  CLEAR THE TIMER BIT.
0023276                                    39          CALL  SIO
0023276 10 000276 037020 111025 CSYSUB  -001- 40       BSA   SIO
0023300 10 000300 103641 000132           41          LI    R10,CHKTIMER   #  CHECK FOR CLEAR CONDITION
0023302                                    42          CALL  SIO
0023302 10 000302 037020 111025 CSYSUB  -001- 43       BSA   SIO
0023304 10 000304 124271 ------           44          TBN   R11,9
0023305 10 000305 054045 ------ 0023352    45          BC    FLTIMER1
0023306                                    46                                #  THERE SHOULD BE NO TIMEOUT FOR THE FIRST
                                                                                2 SECONDS.
0023306 10 000306 003421 040000           48          LI    R1,0(40000)
0023310                                    49 TIMLP1
```

```
TEST 77                                                               23:12:05   2/05/81  ****

  SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                         CDGNOF        W77D

0023310                             01        CALL    SIO
0023310 10 '000310 137020 111025 CSYSUB  -001- 02        BSA     SIO
0023312 10 000312 124271 ------          03        TBN     R11,9
0023313 10 000313 054044 ------ 0023357  04        BC      FLTIMER2
0023314 10 000314 071420 ------          05        HA                      #   KILL TIME
0023315 10 000315 071420 ------          06        HA
0023316 10 000316 036020 023310 0023310  07        BX      R1,TIMLP1
0023320                             08                                     #   THERE SHOULD BE A TIMEOUT WITHIN THE NEXT
                                                                               3 SECONDS.

0023320 10 000320 003421 060000         10        LI      R1,0(60000)
0023322                             11 TIMLP2
0023322                             12        CALL    SIO
0023322 10 000322 137020 111025 CSYSUB  -001- 13        BSA     SIO
0023324 10 000324 124271 ------          14        TBN     R11,9
0023325 10 000325 054006 ------ 0023333  15        BC      ITWORKED
0023326 10 000326 071420 ------          16        HA                      #   KILL TIME
0023327 10 000327 071420 ------          17        HA
0023330 10 000330 036020 023322 0023322  18        BX      R1,TIMLP2
0023332 10 000332 053006 ------ 0023340  19        B       FLTIMER
0023333                             20 ITWORKED


0023333                             23                                     #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                               TEST INTERVAL.
0023333                             25        CALL    KEEPCLR
0023333 10 000333 137020 023413 0023413  -001- 26        BSA     KEEPCLR
                                    27 ODGSSP OW      0(335)              # 12760
                                    -001- 28        NOTE    ************** THE FIRST ADDRESS OVERWRITTEN IS 000335 **********


                                    31 DDELETE NOTE   1
                                    32        CALL    PASSOFF_TC
0023335                             33        BSA     PASSOFF_TC
0023335 10 000335 037020 112635 0000053  -001- 33        BSA     PASSOFF_TC
0023337 10 000337 156540 ------          34        HALT
0023340                             35        EOW                         # 12760
                                    -001- 36        NOTE    **************** THE LAST ADDRESS OVERWRITTEN IS 000337 **********
```

```
TEST 77                                                                          23:12:05   2/05/81  ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                                      CDGNOF       W77D

0023340                                       01 FLTIMER                      #    THE TIMER FAILED TO TIME OUT
0023340 10 000340 103641 000312               02       LI      R10,CLRTIMER
0023342                                       03       CALL    SIO
0023342 10 000342 037020 111025 CSYSUB -001- 04       BSA     SIO
0023344                                       05 BADTMR
0023344 10 000344 103401 000033 CSTATS        06       LI      R0,FLPNLTMR     #   TRBL=7727
0023346 10 000346 003026 ------              07       LN      SEGMENT,6
                                              08 ODGSSP OW     0(347)          # 12760
                                       -001- 09       NOTE     ************** THE FIRST ADDRESS OVERWRITTEN IS 000347 **********


0023347                                       12       CALL    FAILOFF_TC
0023347 10 000347 037020 112610 0000026 -001- 13      BSA     FAILOFF_TC
0023351 10 000351 156540 ------              14       HALT
0023352                                       15       EOW                     # 12760
                                       -001- 16       NOTE     *************** THE LAST ADDRESS OVERWRITTEN IS 000351 **********


0023352                                       19 FLTIMER1                     # #   THE PANEL TIMER OR THE PNEL TIMER BIT
                                                                                   CAN NOT BE CLEARED.
0023352 10 000352 103421 120000               21       LI      R1,0(120000)   #   ATTEMPT TO CLEAR PANEL TIMER FOR DURATION
                                                                                   OF THE TEST INTERVAL.  THIS PROBABLY WONT
                                                                                   WORK SINCE SINCE IT APPEARS THAT THE PANEL
                                                                                   TIMER CANNOT BE CLEARED BUT WE TRY ANYWAY I
                                                                                   ORDER TO AVOID NEEDLESS CRITICAL ALARMS.
0023354                                       26 FAILLP1
0023354                                       27                              #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                                   TEST INTERVAL.
0023354                                       29       CALL    KEEPCLR
0023354 10 000354 137020 023413 0023413 -001- 30      BSA     KEEPCLR
0023356 10 000356 153766 ------ 0023344       31       B       BADTMR
0023357                                       32 FLTIMER2                     #   THE PANEL TIMER HAS TIMED OUT TO SOON.
0023357                                       33                              #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                                   2 SECOND TEST INTERVAL.
0023357                                       35       CALL    KEEPCLR
0023357 10 000357 137020 023413 0023413 -001- 36      BSA     KEEPCLR
0023361                                       37                              #   KEEP TIMER CLEARED FOR AN ADDITIONAL 3
                                                                                   SECOND INTERVAL.
0023361 10 000361 103421 060000               39       LI      R1,0(60000)
0023363 10 000363 053771 ------ 0023354       40       B       FAILLP1
```

```
TEST 77                                                                    23:12:05    2/05/81  ****

   SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                           CDGNOF       W77D

0023364                                            01 FAILMLT            #   AN ADDRESS HAS BEEN SELECTED EVEN THOUGH
                                                                             THE ADDRESS SPECIFIED IN THE I/O MESSAGE WA
                                                                             AN INVALID 2/6 CODE

0023364                                            06                   #   INSURE THAT CRITICAL INDICATORS ARE
                                                                             CLEARED
0023364                                            08      CALL   SSPINIT
0023364 10 000364 137020 023400 0023400  -001- 09         BSA    SSPINIT

0023366                                            11                   #   KEEP PANEL TIMER CLEARED FOR DURATION OF
                                                                             TEST INTERVAL.
0023366 10 000366 103421 120000                    13      LI     R1,0(120000)
0023370                                            14      CALL   KEEPCLR
0023370 10 000370 037020 023413 0023413  -001- 15         BSA    KEEPCLR
0023372 10 000372 103025 ------               16      LN     SEGMENT,5
0023373 10 000373 006004 ------               17      LR     R0,TLMNU
0023374 10 000374 003102 ------               18      LN     NUMDATA,2       #   TWO DATA WORDS IN FAILURE MESSAGE
                                                   19 ODGSSP OW    0(375)          # 12760
                                         -001- 20         NOTE   ************** THE FIRST ADDRESS OVERWRITTEN IS 000375 **********

0023375                                            23      CALL   FAILOFF_TC
0023375 10 000375 037020 112610 0000026  -001- 24         BSA    FAILOFF_TC
0023377 10 000377 156540 ------               25      HALT
0023400                                            26      EOW                    # 12760
                                         -001- 27         NOTE   *************** THE LAST ADDRESS OVERWRITTEN IS 000377 **********
```

```
TEST 77                                                          23:12:05    2/05/81   ****

SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                          CDGNOF     W77D

0023400                                        01 SSPINIT
          '                                    02 #   SUBROUTINE TO SEND ALL ZEROS TO 12 SSP ADDRESSES WHICH CORRESPOND
                                               03 #   TO DATA LAMPS, KEYS, AND RELAY DRIVERS.
0023400                                        04       BEGIN
0023400 10 000400 171420 ------       -002- 05         HA
0023401 10 000401 031400 023427 0023427     06         LAL    R0,ADRTBL,RA1    #   GET ADDRESS
0023403 10 000403 003173 ------             07         LN     INDXR,11
0023404                                     08 LPINIT
0023404 10 000404 142647 ------             09         LX     R10,INDXR(RA1)
0023405 10 000405 010656 ------             10         RLN    R10,2
0023406 10 000406 026240 ------             11         SBN    R10,0            #   WRITE-READ OPERATION
0023407 10 000407 023400 ------             12         SIO
0023410 10 000410 036160 023404 0023404     13         BX     INDXR,LPINIT
0023412                                     14         RETURN
0023412 10 000412 056420 ------       -001- 15         BTSAG
```

```
TEST 77                                                                    23:12:05   2/05/81  ****

  SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                                CDGNOF        W77D

                                           01 #   SUBROUTINE TO KEEP CLEARING PANEL TIMER AND TIMER BIT FOR A
                                           02 #   PERIOD OF TIME SPECIFIED BY TIMING CONSTANT IN R1.
                                           03 #   TIME CONSTANTS ARE APPROXIMATE.  R1= 0(20000) GIVES APPROXIMATELY 1 SECOND.
0023413                                    04
0023413                                    05 KEEPCLR
0023413                                    06       BEGIN   ()
0023413                                    07 LPTIM
0023413 10 000413 103641 000312            08       LI      R10,CLRTIMER
0023415                                    09       CALL    SIO
0023415 10 000415 037020 111025 CSYSUB  -001- 10    BSA     SIO
0023417 10 000417 103641 000131            11       LI      R10,CLRTIMBT
0023421                                    12       CALL    SIO
0023421 10 000421 037020 111025 CSYSUB  -001- 13    BSA     SIO
0023423 10 000423 171420 ------            14       HA                         #   KILL TIME
0023424 10 000424 036020 023413 0023413    15       BX      R1,LPTIM
0023426                                    16       RETURN
0023426 10 000426 056400 ------       -001- 17    BTSA
```

```
TEST 77                                                               23:12:05   2/05/81   ****

    SYSTEM_STATUS_PANEL DIAGNOSTIC TEST                                             CDGNOF      W77D

0023427                                   01 ADRTBL              #   TABLE OF 3/6 CODES WHICH CORRESPOND TO
                                                                    EQUIPPED ADDRESSES IN THE STATUS PANEL
0023427 10 000427 000007 -------          03       DATA   B(000111)
0023430 10 000430 000013 -------          04       DATA   B(001011)
0023431 10 000431 000015 -------          05       DATA   B(001101)
0023432 10 000432 000016 -------          06       DATA   B(001110)
0023433 10 000433 000023 -------          07       DATA   B(010011)
0023434 10 000434 000025 -------          08       DATA   B(010101)
0023435 10 000435 000026 -------          09       DATA   B(010110)
0023436 10 000436 000031 -------          10       DATA   B(011001)
0023437 10 000437 000032 -------          11       DATA   B(011010)
0023440 10 000440 000034 -------          12       DATA   B(011100)
0023441 10 000441 000043 -------          13       DATA   B(100011)
0023442 10 000442 000045 -------          14       DATA   B(100101)


0023443                                   20 MASKTBL             #   TABLE OF MASKS FOR STATUS PANEL ADDRESSES
                                                                    USED WHEN CHECKING RESULTS SINCE SOME BITS
                                                                    ARE NOT PROGRAM ADDRESSABLE
0023443 10 000443 170377 -------          23       DATA   O(170377)
0023444 10 000444 177777 -------          24       DATA   O(177777)
0023445 10 000445 177777 -------          25       DATA   O(177777)
0023446 10 000446 046377 -------          26       DATA   O(046377)
0023447 10 000447 177777 -------          27       DATA   O(177777)
0023450 10 000450 177777 -------          28       DATA   O(177777)
0023451 10 000451 177777 -------          29       DATA   O(177777)
0023452 10 000452 177777 -------          30       DATA   O(177777)
0023453 10 000453 177777 -------          31       DATA   O(177777)
0023454 10 000454 176377 -------          32       DATA   O(176377)
0023455 10 000455 177777 -------          33       DATA   O(177777)
0023456 10 000456 177777 -------          34       DATA   O(177777)


0023457                                   40 BDADTBL             #   TABLE OF INVALID ADDRESSES (2/6 CODES)
0023457 10 000457 000003 -------          41       DATA   B(000011)
0023460 10 000460 000005 -------          42       DATA   B(000101)
0023461 10 000461 000006 -------          43       DATA   B(000110)
0023462 10 000462 000011 -------          44       DATA   B(001001)
0023463 10 000463 000012 -------          45       DATA   B(001010)
0023464 10 000464 000014 -------          46       DATA   B(001100)
0023465 10 000465 000021 -------          47       DATA   B(010001)
0023466 10 000466 000022 -------          48       DATA   B(010010)
0023467 10 000467 000024 -------          49       DATA   B(010100)


    OFF-LINE DIAGNOSTIC CODE                                                      PR-1C933-50

     23:12:05   2/05/81   TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE 04   PAGE 83
```

TEST 77   23:12:05   2/05/81   ****

   SYSTEM_STATUS_PANEL DIAGNOSTIC TEST   CDGNOF   W77D

0023470 10 000470 000030 ------   01   DATA   B(011000)
0023471 10 000471 000041 ------   02   DATA   B(100001)
0023472 10 000472 000042 ------   03   DATA   B(100010)
0023473 10 000473 000044 ------   04   DATA   B(100100)
0023474 10 000474 000050 ------   05   DATA   B(101000)
0023475 10 000475 000060 ------   06   DATA   B(110000)

               -001- 09 #   THIS CSECT IS 318 WORDS LONG.

```
0017115                                    01 CDGOFSUB CSECT
0017115                                    02 ODGOFSUB
                                           03 #   THE FOLLOWING ROUTINES ARE USED BY VARIOUS OFF-LINE DIAGNOSTICS.
                                           04 #   IF THIS CSECT IS NON-RESIDENT IT MUST BE PART OF THE PAGING SEGMENT
                                           05 #   OF ALL TYPE 3 DIAGNOSTICS.



0017115                                    11 FAILOFF
                                           12 #   SUBROUTINE CALLED BY FLOFFTST MACRO USED BY
                                           13 #   TYPE 3 DIAGNOSTIC TO STORE FAILURE INFORMATION IN
                                           14 #   CDGNM CONTROL WORDS

                                           16 #   ENTRY CONDITIONS:
                                           17 #   R0=SEQUENTIAL PART OF TROUBLE NUMBER
                                           18 #   R1=SEGMENT NUMBER
                                           19 #   R2=FIRST DATA WORD (OPTIONAL)
                                           20 #   R3=SECOND DATA WORD (OPTIONAL)
                                           21 #   R4=BINARY NUMBER OF DATA WORDS

                                           23 #   EXIT CONDITIONS:
                                           24 #   NO DATA IS RETURNED IN THE REGISTERS

                                           26 #   ENTRY POINT:
                                           27 #   FAILOFF

0017115                                    29      BEGIN   ()
0017115                                    30                                        # INSURE GOOD PARITY IN R2 AND R3.
0017115 11 000000 104440 -------           31      AN      R2,0
0017116 11 000001 004460 -------           32      AN      R3,0
0017117 11 000002 035440 043104 CTSD       33      STAL    R2,PAGSCR+2,RA1   #   STORE FIRST DATA WORD
0017121 11 000004 044461 -------           34      ST      R3,1(RA1)         #   STORE SECOND DATA WORD
0017122 11 000005 044403 -------           35      ST      R0,3(RA1)         #   STORE TROUBLE NUMBER
0017123 11 000006 002424 000037            36      STM     R1,4(RA1),B(11111) #  STORE SEGMENT
0017125 11 000010 010512 -------           37      RLN     R4,6
0017126 11 000011 002504 000300            38      STM     R4,4(RA1),0(300)  #   STORE NUMBER OF DATA WORDS
0017130 11 000013 003000 -------           39      ZR      R0
0017131 11 000014 044402 -------           40      ST      R0,2(RA1)         #   ZERO THE DISPLACEMENT PART OF FAILING
                                                                                    ADDRESS

0017132 11 000015 030400 043103 CTSD       42      LL      R0,PAGSCR+1
0017134 11 000017 010410 -------           43      RLN     R0,8
0017135 11 000020 002404 043110 CTSD       44      STM     R0,4(RA1),PAGSCR+6 #  STORE TEST NUMBER
0017137 11 000022 061410 -------           45      SBS     8(RA1),0          #   PUT FAILURE CONSTANT IN FAILWD
0017140 11 000023 062430 -------           46      ZBS     8(RA1),1
0017141                                    47      RETURN
0017141 11 000024 056400 -------   -001-   48      BTSA
```

SUBROUTINES FOR OFF-LINE DIAGNOSTICS   23:12:05   2/05/81   ****

                                                                        CDGNOF   W77D

```
0017142                                 01 PASSOFF
                                        02 #  SUBROUTINE CALLED BY PSOFFTST MACRO USED BY
                                        03 # TYPE 3 DIAGNOSTIC TO SET PASS CODE IN CONTROL WORD FAILWD

                                        05 #    ENTRY CONDITIONS
                                        06 #    NONE

                                        08 #    EXIT CONDITIONS
                                        09 #    NONE

                                        11 #    ENTRY POINT
                                        12 #    PASSOFF

                                        14 #  RO IS DESTROYED

0017142                                 16        BEGIN    ()
0017142 11 000025 131400 043114 CTSD    17        LAL      RO,PAGSCR+10,RA1
0017144 11 000027 062400 ------         18        ZBS      O(RA1),0
0017145 11 000030 061420 ------         19        SBS      O(RA1),1
0017146                                 20        RETURN
0017146 11 000031 056400 ------  -001-  21        BTSA
                                        22 CPATCH1 BGNP    0(26)             # 12760
                                 -001-  23        NOTE     CPATCH1 'CSECT'
                                 -001-  24        NOTE     ***************** PATCH AREA BEGINS AT 000026 *****************

                                        27 DEPATCH NOTE    THIS CODE SHOULD BE INCLUDED IN THE PAGING TREE
                                        28 DDELETE NOTE    48
                                        29 #    THE FOLLOWING ROUTINES ARE USED BY VARIOUS OFF-LINE DIAGNOSTICS.
                                        30 #    IF THIS CSECT IS NON-RESIDENT IT MUST BE PART OF THE PAGING SEGMENT
                                        31 #    OF ALL TYPE 3 DIAGNOSTICS.
0112610                                 32 FAILOFF_TC
                                        33 #    SUBROUTINE CALLED BY FLOFFTST MACRO USED BY
                                        34 #    TYPE 3 DIAGNOSTIC TO STORE FAILURE INFORMATION IN
                                        35 #    CDGNM CONTROL WORDS
                                        36 #    ENTRY CONDITIONS:
                                        37 #    RO=SEQUENTIAL PART OF TROUBLE NUMBER
                                        38 #    R1=SEGMENT NUMBER
                                        39 #    R2=FIRST DATA WORD (OPTIONAL)
                                        40 #    R3=SECOND DATA WORD (OPTIONAL)
                                        41 #    R4=BINARY NUMBER OF DATA WORDS
                                        42 #    EXIT CONDITIONS:
                                        43 #    NO DATA IS RETURNED IN THE REGISTERS
                                        44 #    ENTRY POINT:
                                        45 #    FAILOFF
0112610                                 46                                   # INSURE GOOD PARITY IN R2 AND R3.
0112610 13 000026 104440 ------         47        AN       R2,0
0112611 13 000027 004460 ------         48        AN       R3,0
0112612 13 000030 035440 043104 CTSD    49        STAL     R2,PAGSCR+2,RA1   #   STORE FIRST DATA WORD
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

SUBROUTINES FOR OFF-LINE DIAGNOSTICS   23:12:05   2/05/81   ****

                                                                                   CDGNOF   W77D

```
0112614 13 000032 044461 ------        01        ST     R3,1(RA1)       #   STORE SECOND DATA WORD
0112615 13 000033 044403 ------        02        ST     R0,3(RA1)       #   STORE TROUBLE NUMBER
0112616 13 000034 002424 000037        03        STM    R1,4(RA1),0(37) #   STORE SEGMENT
0112620 13 000036 010512 ------        04        RLN    R4,6
0112621 13 000037 002504 000300        05        STM    R4,4(RA1),0(300) #  STORE NUMBER OF DATA WORDS
0112623 13 000041 003000 ------        06        ZR     R0
0112624 13 000042 044402 ------        07        ST     R0,2(RA1)       #   ZERO THE DISPLACEMENT PART OF FAILING
                                                                             ADDRESS
0112625 13 000043 030400 043103 CTSD   09        LL     R0,PAGSCR+1
0112627 13 000045 010410 ------        10        RLN    R0,8
0112630 13 000046 002404 043110 CTSD   11        STM    R0,4(RA1),PAGSCR+6 #  STORE TEST NUMBER
0112632 13 000050 061410 ------        12        SBS    8(RA1),0        #   PUT FAILURE CONSTANT IN FAILWD
0112633 13 000051 062430 ------        13        ZBS    8(RA1),1
0112634                                 14        RETURN
0112634 13 000052 056400 ------  -001- 15        BTSA
0112635                                 16 PASSOFF_TC
                                        17 # SUBROUTINE CALLED BY PSOFFTST MACRO USED BY
                                        18 # TYPE 3 DIAGNOSTIC TO SET PASS CODE IN CONTROL WORD FAILWD
                                        19 #   ENTRY CONDITIONS
                                        20 #     NONE
                                        21 #   EXIT CONDITIONS
                                        22 #     NONE
                                        23 #   ENTRY POINT
                                        24 #     PASSOFF
                                        25 #   R0 IS DESTROYED
0112635 13 000053 131400 043114 CTSD   26        LAL    R0,PAGSCR+10,RA1
0112637 13 000055 062400 ------        27        ZBS    0(RA1),0
0112640 13 000056 061420 ------        28        SBS    0(RA1),1
0112641                                 29        RETURN
0112641 13 000057 056400 ------  -001- 30        BTSA
0112641                                 31        ENDP                    # 12760
                                 -001- 32        NOTE   ************ LAST PATCH ADDRESS USED IS 000057 ****************
                                 -001- 33        NOTE   ***** NUMBER OF PATCH WORDS USED IS 26 (DECIMAL) ********


                                 -001- 38 #    THIS CSECT IS 26 WORDS LONG.
                                        39 OMINTERP MAXSIZE 0,15
                                        40 OBUSPAR MAXSIZE 0,11
                                        41 OTIMERS MAXSIZE 0,100
                                        42 ODTMTCH MAXSIZE 0,221
                                       -43 OIO    MAXSIZE 0,1011
                                        44 OSTATUS MAXSIZE 0,14
                                        45 OSTATUS2 MAXSIZE 0,40
                                        46 ODGSSP MAXSIZE 0,476
                                        47 CDGOFSUB MAXSIZE 0,32
```

```
PATCH HISTORY                                              23:12:05   2/05/81  ****

   LISTING OF INDIVIDUAL PATCHES                                      CDGNOF        W77D

           */*/*/*/012760/*/*/*/*     -002- 01       PBEGIN  PROG=CDGNOF              TRNO=12760  SERNOB=47983
                                            02 #  PATCH IN A CSECT WHICH WAS LEFT OUT AT LOAD TIME.
                                            03 #  THIS WILL ALLOW TEST 77 TO ATP
  0112641                                    04       TCEND
                                       -001- 05       NOTE    *********************************************************************



           */*/*/*/790009/*/*/*/*     -002- 12       PBEGIN  PROG=CDGNOF                        TRNO=790009 SERNOB=88642
                                            13 #  THIS PATCH CHANGES CU DIAGNOSTIC TEST 74.  IN ALL APPLICATIONS
                                            14 #  IT WILL LOOK THRU EQIOCHAN IN TDATA AND INITIALIZE THE PCH
                                            15 #  IF ONE EXISTS.  THIS PREVENTS FAILURES AFTER A POWER-UP IN
                                            16 #  APPLICATIONS USING PARALLEL IO CHANNELS.
  0112641                                    17
  0112641                                    18       TCEND
                                       -001- 19       NOTE    *********************************************************************



  0112641                                    26       END
```

```
PATCH HISTORY                                              23:12:05   2/05/81  ****

     VALUE  T  NAME      DEF/REF    ATTRIBUTES AND REFERENCES        CDGNOF        W77D

   10121334 S  .STOP
    0115400 L  %%%144    38-01  37-45
 07 0017260 L  %%%148    38-25  38-20
    0121556 L  %%%267    50-01  49-43
 07 0017707 L  %%%270    50-15  50-10
    0000201 A  %BITCNT          1-08
          0 U  %BOP             1-08
    0030730 A  %CHKTR%   86-23
    0000001 A  %CLAS            LIBNUM=6          1-08
    0000001 A  %MAXWRD          LIBNUM=6          1-08
'CDGNOF'    T  %NAME%
    0000000 A  %ORG%2
          0 J  %OW%      1-10
          0 J  %PFT%
'()'        T  %SAVREGS
    0000010 A  %TA1%     37-40  49-39, 68-20, 69-06, 71-15, 71-44, 74-18, 78-28, 79-09, 80-20
          0 J  %TCHEAD%  1-10
'PRLINE 1,1,
'
 ------------
 ------------
 ------------
 ------------
 ------------
 ------------
 ------------
 ------------
 ------------
 ------------
 ------------
 ------------"'T %US%
TT---------    T  %USING12
 ''            T  %USING14
    0000001 A  %WRDCNT          LIBNUM=6          1-08
    0000001 A  AA%              1-08
         15 R  ADMI             S=3  LIBNUM=6        22-18, 22-36, 23-16, 24-37, 26-20, 27-34, 29-23
 07 0023427 L  ADRTBL    83-01  66-26, 73-21, 75-35, 81-06
    0000234 A  AK%F             LIBNUM=6          9-42
    0000234 A  AK%T             LIBNUM=6          9-32, 63-40
 07 0017074 L  ALONES    30-06  23-10, 27-29
 07 0017073 L  ALZEROS   30-04  22-30, 24-32, 29-21
 07 0022152 L  BADBA     61-32  6-16
 07 0016141 L  BADGT     15-23  14-40, 15-04, 15-16, 16-43, 17-01, 18-46
 07 0020132 L  BADSUBTB  55-28  41-32
 07 0023344 L  BADTMR    79-05  79-31
          0 U  BB%              1-08
 07 0023457 L  BDADTBL   83-40  75-23
 07 0017411 L  BDSUBLP   41-36  42-03
         17 R  BHC              S=1  LIBNUM=6        58-26
         17 R  BPC              S=22 LIBNUM=6        63-28
    0000161 A  BR%T             LIBNUM=6    18-32
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
PATCH HISTORY                                                    23:12:05   2/05/81  ****

     VALUE  T  NAME        DEF/REF    ATTRIBUTES AND REFERENCES              CDGNOF        W77D

   0154066  A  BRXTI%                 LIBNUM=6       14-35, 14-47, 15-11, 16-29, 18-34, 60-35
   0000104  A  BUSPAR                 LIBNUM=7       11-09
07 0017115  L  CDGOFSUB      1-41
   0016000  A  CHAN         65-09   65-11
07 0017170  L  CHANLP       34-30   35-05
07 0017622  L  CHCMFL       47-33   40-31
07 0017614  L  CHCNFL       47-25   40-17
07 0017736  L  CHKCHNO      51-06   50-46
07 0017725  L  CHKIOD       50-43   51-05
07 0020031  L  CHKIOS       53-18   53-34
07 0020044  L  CHKIOSO      53-35   53-21
07 0023242  L  CHKLP        75-34   76-07
   0000132  A  CHKTIMER     77-26   77-41
         7  R  CHNCOUNT     33-06   34-20, 37-25, 38-03, 38-04, 38-06, 38-15, 38-32, 49-36, 50-42, 51-15, 52-10, 52-28, 53-17,
                                    53-48, 56-23, 56-26, 56-34, 56-38
07 0020151  L  CHNSELCT     56-01   34-33, 37-30, 38-40, 50-07, 50-45, 51-18, 52-15, 52-31, 53-20, 54-02
   0000131  A  CLRTIMBT     77-28   77-38, 82-11
   0000312  A  CLRTIMER     77-24   77-35, 79-02, 82-08
07 0017636  L  CNTER        47-49   42-32, 43-03, 43-20
07 0017435  L  CNTLP        42-18   42-35
```

```
¢.<(+!&
    !$*);
¬/
,%_>?
  :#&'=" ab
cdefghi n≤(+
† jklmnopqr^
 ¤)±≡-~stuvw
xyz+ʟ₁[≥≖012
3456789↑⌐⌐]≠
¬(abcdefghi
    )jklmno
pqr      \ s
tuvwxyz
 0123456789
 '         T CONLC            LIBNUM=12
'n
```

```
    z
¢e<hp|x
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
PATCH HISTORY                                                    23:12:05   2/05/81  ****

    VALUE  T  NAME      DEF/REF    ATTRIBUTES AND REFERENCES                   CDGNOF      W77D

      v$fgs
¬al            ',
1%_>k
   jo#b'd" ab
cdefghi n≤<+
+ jklmnopqr
  x)±=-~stuvw
xyz+ᴸ┌[≥●012
3456789↑⌐⌐]≠
─(ABCDEFGHI
    )JKLMNO
PQR      \ S
TUVWXYZ
 0123456789
'            T CONSC              LIBNUM=12
    0111432 L CPATCH     2-01
    0112562 L CPATCH1    2-02   86-23
    0114107 L CPATCH2    2-03
    0115073 L CPATCH3    2-04   37-45
    0121236 L CPATCH7    2-05   49-43
          2 R DATA1      65-13  66-28, 73-23, 75-37
          3 R DATA2      65-14  66-45, 70-15, 73-33, 75-47




  ¢.<(+!&
        !$*);
¬-/            '
,%_>?
   :#@'="
          n≤<+
+
  x)±=-~
    +ᴸ┌[≥●012
3456789↑⌐⌐]≠
─(ABCDEFGHI
    )JKLMNO
PQR      \ S
TUVWXYZ
 0123456789
'            T DELLC             LIBNUM=12
    0000115 A DGSSP             LIBNUM=7     64-09
         10 R DI                LIBNUM=6     22-20, 23-06, 24-26, 24-46, 24-48, 26-06, 27-23, 27-44, 27-46, 29-19
          7 R DK                LIBNUM=6     22-21, 27-21, 29-20
         17 R DME               S=4  LIBNUM=6     22-17
 07 0023144 L DOSEG4     73-15  70-25

  OFF-LINE DIAGNOSTIC CODE                                        PR-1C933-50

    23:12:05   2/05/81   TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE 04   PAGE  91
```

```
PATCH HISTORY                                                      23:12:05   2/05/81  ****

     VALUE  T  NAME        DEF/REF    ATTRIBUTES AND REFERENCES                        CDGNOF      W77D

07 0023221 L DOSEG5        75-19  73-44
07 0017256 L DOTESTS       37-38  37-31
07 0015023 L DOTIO         12-01   6-12
07 0023254 L DOTST         75-44  75-40
07 0023074 L DOZEROS       70-05  67-03
   0000111 A DTMTCH               LIBNUM=7       20-09
   TDATA   V EQIOCHAN       5-12  35-36, 38-03, 49-24, 56-22
        12 R ER                   LIBNUM=6       34-46, 35-32, 36-04, 38-26, 41-23, 41-48, 42-31, 43-02, 43-19
   0000252 A ERXF                 LIBNUM=6       63-40
   0000252 A ERXT                 LIBNUM=6       34-38, 35-25, 35-46, 38-18, 41-20, 41-45, 42-26, 42-48, 43-16, 58-36
         0 J ESS2           1-10
         1 J ESS2E          1-09
         0 J FACTORY        1-26
07 0023057 L FAILDTA        68-35  66-49
07 0023131 L FAILDTA0       71-30  70-21
07 0017206 L FAILEXIT       35-12
07 0023354 L FAILLP1        79-26  79-40
07 0023364 L FAILMLT        80-01  76-04
07 0017115 L FAILOFF        85-11   6-23, 22-45, 35-15, 47-07, 47-15, 47-23, 47-31, 47-39, 47-47, 48-07, 48-21, 48-29, 48-37,
                                    51-34, 54-32
   0112610 L FAILOFF_TC     86-32  68-24, 69-10, 71-19, 72-02, 74-22, 79-13, 80-24
07 0023205 L FAILRD         74-01  73-40
07 0023043 L FAILRSP        68-01  66-42
07 0023116 L FAILRSP0       71-01  70-12
         1 J FIELD          1-09
   CDGNTI  V FLCHTM         5-31  47-37
   CDGNTI  V FLCHTN         5-30  47-29
   CDGNTI  V FLCNT          5-33  48-05
   CDGNTI  V FLDME          5-25  29-29
07 0016717 L FLEXIT         22-43  23-23, 24-44, 26-27, 27-42, 29-30
   CDGNTI  V FLIDLCH        5-29  47-21
   CDGNTI  V FLINBT         5-32  47-45
   CDGNTI  V FLIODPH        5-36  48-35
   CDGNTI  V FLIOOPL        5-35  48-27
   CDGNTI  V FLIODOO        5-34  48-17
07 0020075 L FLIOS          54-26  53-31
   CDGNTI  V FLMCHO         5-22  22-42, 23-22
   CDGNTI  V FLMISOO        5-23  24-42, 26-25
   CDGNTI  V FLMLTIO        5-26  35-11
   CSTATS  V FLMLTO         5-41  75-20
   CDGNTI  V FLMSKOO        5-24  27-40
   CSTATS  V FLPNLTMR       5-42  79-06
   CSTATS  V FLRDO          5-40  73-16
   CDGNTI  V FLSUBCD        5-28  47-13
07 0023340 L FLTIMER        79-01  78-19
07 0023352 L FLTIMER1       79-19  77-45
07 0023357 L FLTIMER2       79-32  78-04
   CSTATS  V FLOSRSO        5-39
   CSTATS  V FL1SRSO        5-38  66-22


OFF-LINE DIAGNOSTIC CODE                                                          PR-1C933-50

  23:12:05   2/05/81  TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE 04    PAGE  92
```

```
PATCH HISTORY                                                                    23:12:05   2/05/81  ****

     VALUE  T  NAME       DEF/REF     ATTRIBUTES AND REFERENCES                              CDGNOF        W77D

   07 0022147 L GOODBA     61-21   6-17
   07 0016137 L GOODGT     15-17   17-02
   07 0022151 L GOODHLT    61-24   61-22
      0000306 A IB%F               LIBNUM=6      10-10
   07 0017606 L IDLFL      47-17   40-03
      0026712 A IDSWQ%             LIBNUM=6      58-32, 60-33
'ILLEGAL CON
DITIONAL IN
THE IF MACRO'T IFERROR1
'DATA > 0 OR
DATA < 0 IS
MEANINGLESS
, USE DATA ¬
= 0'         T IFERROR2
'TWO CONSTAN
TS ARE BEING
COMPARED IN
IF MACRO'    T IFERROR3
'AN ITEM WAS
COMPARED TO
SOMETHING O
THER THAN A
CONSTANT'    T IFERROR4
'DESTINATION
OF AN = STA
TEMENT IS A
CONSTANT'    T IFERROR5
'ATTEMPTING
TO SET ITEM
= TO SOMETHI
NG OTHER THA
N A CONSTANT'T IFERROR6
'ITEM MAY ON
LY USE THE =
AND ¬= COND
ITIONALS'    T IFERROR7
      0134071 A INCPR%             LIBNUM=6      16-40, 16-47, 18-43
   07 0016154 L INCRLP     16-37   16-44
   07 0016152 L INCRLPS    16-32   19-02
           13 R INDEXR     21-04   24-27, 24-43, 25-02, 26-10, 26-15, 26-26, 26-31, 27-24, 27-41, 28-03
           10 R INDEXR2    65-18   66-24, 66-34, 66-37, 73-19, 73-27, 73-29, 75-33, 75-40, 75-43
            7 R INDXR      65-17   66-23, 66-27, 66-31, 66-46, 70-17, 70-24, 73-18, 73-22, 73-35, 73-43, 75-22, 75-25, 75-30,
                                   75-32, 75-36, 75-49, 76-07, 81-07, 81-09, 81-13
   07 0017630 L INHBTER    47-41   46-41
   07 0017244 L INITLP     37-27   37-37
      0000112 A IO                 LIBNUM=7      32-09
            3 R IOCHAN     33-05   38-47, 51-32, 54-30, 56-32
   07 0020106 L IOCHANTB   55-01   41-07, 42-14
   07 0017644 L IODER      48-09   39-33, 45-04


   OFF-LINE DIAGNOSTIC CODE                                                              PR-1C933-50

    23:12:05   2/05/81  TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE  04    PAGE   93
```

PATCH HISTORY

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES

CDGNOF   W77D

```
07 0017503 L IODLP         44-14   45-07
07 0017665 L IODPHER       48-31   44-42, 44-48
07 0017657 L IODPLER       48-23   44-28, 44-34
07 0017673 L IODTAB        48-39   44-10
   0025466 A IODXR11%              LIBNUM=6        39-28, 39-48, 40-13, 40-27, 44-21, 46-37, 50-49, 51-25, 53-27, 54-21
07 0022162 L IOERROR       63-22   6-19
        12 R IOMLTER               S=21  LIBNUM=6        34-47, 35-33, 36-05
   0016160 A IOSELCT       65-11   6-26, 65-32
07 0017307 L IOSLP         39-18   39-36
07 0017361 L IOSTAB        40-38   39-14
        15 R IS                    LIBNUM=6        22-35, 23-15, 24-36, 26-19, 27-33, 29-22
   0000066 A IS_R%T                LIBNUM=6        23-04, 24-19, 27-49
07 0017016 L ITSAOK        26-28   26-21
07 0017045 L ITSGOOD       27-43   27-35
07 0016770 L ITSOK         24-45   24-38
07 0023333 L ITWORKED      78-20   78-15
07 0023413 L KEEPCLR       82-05   65-20, 68-15, 68-49, 71-10, 71-38, 74-13, 78-26, 79-30, 79-36, 80-15
07 0017717 L LDCHNO        50-34   50-16
07 0021226 L LDERBT        58-22   6-14
07 0020016 L LDIOSO        52-45   52-43
07 0016143 L LDMCHBF       15-26   15-22
07 0022136 L LDTI          60-25   6-18
07 0017705 L LD1SLP        49-37   50-33
07 0023404 L LPINIT        81-08   81-13
07 0023413 L LPTIM         82-07   82-15
07 0023443 L MASKTBL       83-20   66-30, 70-16, 73-34, 75-48
         3 R MCHB                  LIBNUM=6        15-27
   0164066 A MDOIDCH%              LIBNUM=6        34-40, 35-27, 35-48, 37-36, 38-46, 39-44, 41-18, 41-43, 42-24, 42-44, 43-12,
                                                   46-13, 46-47, 50-20, 52-20, 52-38, 53-04, 53-42, 54-06
   0164071 A MD1CHTN%              LIBNUM=6        40-09, 44-09, 46-29, 50-22, 53-08, 54-08
   0164072 A MD2CHTM%              LIBNUM=6        40-23, 46-31, 53-10, 54-10
   0164074 A MD3CHC%               LIBNUM=6        39-11, 39-24, 42-28, 42-46, 43-14, 46-17, 46-33, 52-40, 53-12, 53-44, 54-12
   0074066 A MD4STCH%              LIBNUM=6        34-43, 35-29, 36-01, 46-19
   0074071 A MD5EIOS%              LIBNUM=6        39-26, 39-46, 40-11, 40-25, 46-35, 53-25, 54-19
   0074072 A MD6RAIO%              LIBNUM=6        39-09, 44-19, 46-15, 50-24, 50-39, 51-13, 51-21, 52-22, 53-06
```

```
<.-(_18
    !$*);
¬_/  _?
,%__?        !
   :#@'=" ab
cdefghi n≤(+
† jklmnopqr^
 %)±■--stuvw
```

OFF-LINE DIAGNOSTIC CODE

```
PATCH HISTORY                                                    23:12:05   2/05/81  ****

     VALUE  T  NAME      DEF/REF    ATTRIBUTES AND REFERENCES              CDGNOF      W77D

xyz←ᴸ⌈[≥●012
3456789↑↓⌐]≠
¬(ABCDEFGHI
      )JKLMNO
PQR       \ S
TUVWXYZ
 0123456789
        '     T  MICODETR          LIBNUM=6
    0000101  A  MINTERP           LIBNUM=7           9-09
07  0013744  L  MITST1      9-29   6-03
07  0013747  L  MITST1A     9-39   6-04
07  0013752  L  MITST2     10-01   6-05
07  0017761  L  MLTIOD     51-28  51-02
    CDGNTI   V  MLTIODOO    5-37  51-31, 54-29
'3E800104'   T  MRNO
        16   R  MS                 LIBNUM=6           12-05, 34-18, 65-30
07  0017030  L  MSKLP      27-25  28-03
07  0017204  L  MULTER     35-08  35-02, 35-34, 36-06
07  0023230  L  MULTLP     75-24  75-30
07  0017264  L  NEWCHAN    38-35  46-48
07  0020172  L  NOCHAN     56-40  56-24
    0000360  A  NOPXF             LIBNUM=6           11-35, 34-38, 35-25, 35-46, 38-18, 41-20, 41-45, 42-26, 42-48, 43-16
    0115416  L  NOPCH      38-14  38-08
         4   R  NUMDATA    65-16  68-17, 69-02, 71-12, 71-41, 74-15, 80-18
07  0015020  L  OBUSPAR     1-34  12-13
07  0017115  L  ODGOFSUB   85-02  85-03, 87-38
07  0023000  L  ODGS3P      1-40  84-09
07  0016674  L  ODTMTCH     1-36  30-27
07  0023000  L  OFFSSP     65-26   6-13
07  0017162  L  OIO         1-37  56-45
07  0013744  L  OMINTERP    1-33  10-16
07  0023012  L  ONESLP     66-25  70-24
```

```
 ¢.<(AON
     X$*);
¬S/
,%_>?
   :#@'L" ab
cdefghi ⌐≤(+
+ jklmnopqr`
 ⌐)±=¬¬stuvw
xyz←ᴸ⌈[≥●012
3456789↑↓⌐]≠
¬(IBCLEFGHI
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
PATCH HISTORY                                                    23:12:05   2/05/81   ****

     VALUE  T NAME       DEF/REF    ATTRIBUTES AND REFERENCES
                                                                     CDGNOF         W77D

     >JKLMNO
PQR       \ S
LLLWLYZ         '
 0123456789
 '             T OPTR
   0000767 A ORG_000026    86-27
   0000611 A ORG_000054    68-20
   0000621 A ORG_000071    69-06
   0000216 A ORG_000074    37-40
   0000632 A ORG_000126    71-15
   0000641 A ORG_000141    71-44
   0000656 A ORG_000216    74-18
   0000220 A ORG_000305    38-02
   0000413 A ORG_000320    50-02
   0000700 A ORG_000335    78-28
   0000706 A ORG_000347    79-09
   0000722 A ORG_000375    80-20
   0000411 A ORG_000523    49-39
07 0021226 L OSTATUS       1-38    58-42
07 0022136 L OSTATUS2      1-39    63-44
07 0016106 L OTIMERS       1-35    19-10
        16 R OVLOF                 S=0  LIBNUM=6         12-04, 34-16, 65-29
     CTSD    V PAGSCR       5-11    85-33, 85-42, 85-44, 86-17, 86-49, 87-09, 87-11, 87-26
07 0017524 L PARH1        44-46    44-39
07 0017515 L PARL1        44-32    44-25
07 0020103 L PASSIO       54-39    49-26, 54-25
07 0017142 L PASSOFF      86-01     6-22, 29-33, 54-41
   0112635 L PASSOFF_TC   87-16    78-33
   0115404 L PCHINITLP    38-05    38-15
        14 P RA0                   LIBNUM=3         26-07, 26-15, 38-03, 38-06, 39-14, 39-19, 39-31, 41-07, 41-12, 41-32, 41-37,
                                   42-14, 42-19, 44-10, 44-15, 56-22, 56-25, 56-26
        16 P RA1                   LIBNUM=3         66-26, 66-27, 66-30, 66-31, 66-46, 70-16, 70-17, 73-21, 73-22, 73-34, 73-35,
                                   75-23, 75-25, 75-35, 75-36, 75-48, 75-49, 81-06, 81-09, 85-33, 85-34, 85-35, 85-36, 85-38,
                                   85-40, 85-44, 85-45, 85-46, 86-17, 86-18, 86-19, 86-49, 87-01, 87-02, 87-03, 87-05, 87-07,
                                   87-11, 87-12, 87-13, 87-26, 87-27, 87-28
07 0023152 L RDONLY       73-20    73-43
07 0022155 L RNSANITY     62-17     6-15
         0 R R0                    LIBNUM=3         12-04, 12-05, 15-02, 15-03, 15-21, 15-25, 15-27, 16-33, 16-44, 21-03, 33-02,
                                   35-36, 35-37, 66-26, 66-30, 66-31, 66-32, 66-41, 66-46, 66-47, 68-16, 69-01, 69-03, 70-06,
                                   70-07, 70-11, 70-16, 70-17, 70-18, 70-19, 71-11, 71-40, 73-21, 73-34, 73-35, 73-36, 73-37,
                                   73-38, 74-14, 75-23, 75-35, 75-48, 75-49, 76-01, 76-02, 79-06, 80-17, 81-06, 85-35, 85-39,
                                   85-40, 85-42, 85-43, 85-44, 86-17, 87-02, 87-06, 87-07, 87-09, 87-10, 87-11, 87-26
   0000123 A R0XF                  LIBNUM=6         10-06, 58-36
   0000123 A R0XT                  LIBNUM=6         10-10, 11-35
         1 R R1                    LIBNUM=3         14-38, 14-39, 15-01, 15-03, 15-14, 15-15, 16-41, 16-42, 16-48, 16-49, 18-26,
                                   18-44, 18-45, 21-02, 33-03, 58-23, 58-25, 60-26, 60-28, 65-12, 65-29, 65-30, 68-13, 68-47,
                                   71-08, 71-36, 74-11, 77-48, 78-07, 78-10, 78-18, 79-21, 79-39, 80-13, 82-15, 85-36, 87-03
   0000125 A R1XF                  LIBNUM=6         10-08, 18-32
   0000125 A R1XT                  LIBNUM=6         10-06


OFF-LINE DIAGNOSTIC CODE                                                    PR-1C933-50

  23:12:05   2/05/81   TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF   ISSUE 04   PAGE  96
```

```
PATCH HISTORY                                                                    23:12:05   2/05/81  ****

   VALUE  T  NAME       DEF/REF    ATTRIBUTES AND REFERENCES                                    CDGNOF        W77D

      12  R  R10                   LIBNUM=3      22-18, 39-03, 39-31, 39-32, 44-15, 44-24, 44-38, 45-03, 46-07, 48-14, 48-15,
                                                 48-16, 50-08, 50-36, 51-10, 51-14, 52-12, 52-48, 63-23, 66-27, 66-28, 66-29, 66-32, 66-33,
                                                 66-48, 70-07, 70-18, 70-20, 73-22, 73-23, 73-24, 73-25, 73-26, 73-38, 73-39, 75-25, 75-26,
                                                 75-27, 75-28, 75-36, 75-37, 75-38, 75-39, 76-01, 76-03, 77-35, 77-38, 77-41, 79-02, 81-09,
                                                 81-10, 81-11, 82-08, 82-11
 0000152  A  R10%F                 LIBNUM=6      23-04, 24-19, 27-49
      13  R  R11                   LIBNUM=3      21-04, 39-32, 40-02, 40-16, 40-30, 44-27, 44-33, 44-41, 44-47, 45-03, 46-08,
                                                 46-40, 48-14, 51-01, 51-26, 53-30, 54-24, 66-45, 66-47, 66-48, 70-15, 70-19, 70-20, 73-33,
                                                 73-36, 73-39, 75-47, 76-02, 76-03, 77-44, 78-03, 78-14
      14  R  R12                   LIBNUM=3      73-17, 73-25, 75-21, 75-27
       2  R  R2                    LIBNUM=3      33-04, 34-47, 35-33, 36-05, 38-47, 58-26, 63-28, 65-13, 85-31, 85-33, 86-47,
                                                 86-49
 0000126  A  R2%F                  LIBNUM=6      58-34
 0000126  A  R2%T                  LIBNUM=6      10-08
       3  R  R3                    LIBNUM=3      33-05, 63-29, 65-14, 85-32, 85-34, 86-48, 87-01
       4  R  R4                    LIBNUM=3      35-13, 39-17, 39-36, 41-10, 41-12, 41-27, 41-35, 41-37, 42-03, 42-17, 42-19,
                                                 42-35, 44-13, 44-15, 45-07, 47-04, 47-12, 47-20, 47-28, 47-36, 47-44, 48-04, 48-19, 48-26,
                                                 48-34, 65-15, 65-16, 85-37, 85-38, 87-04, 87-05
 0000143  A  R6%F                  LIBNUM=6       9-32
 0000143  A  R6%T                  LIBNUM=6       9-42
       7  R  R7                    LIBNUM=3      21-05, 33-06, 65-17
      10  R  R8                    LIBNUM=3      65-18
      11  R  R9                    LIBNUM=3      22-17, 35-21, 35-42, 37-28, 37-33, 38-09, 38-12, 38-38, 39-05, 39-20, 41-14,
                                                 41-39, 42-13, 42-20, 42-40, 43-08, 46-09, 46-25, 46-44, 50-35, 51-09, 51-22, 52-33, 52-49,
                                                 53-38, 53-47, 54-15, 56-31, 63-24, 65-32
 0000151  A  R9%F                  LIBNUM=6      22-29, 22-34, 23-09, 23-14, 24-31, 24-35, 26-14, 26-18, 27-28, 27-32
 CINIT   V  SANITYDG      5-10     62-22
 0023712  A  SBR%                  LIBNUM=6      14-45
 0025471  A  SBTC%                 LIBNUM=6      14-28, 16-25, 18-30
       7  R  SCRATCH      21-05    22-19, 22-20, 22-21, 22-30, 22-35, 22-36, 23-05, 23-06, 23-10, 23-15, 23-16, 24-25, 24-26,
                                   24-32, 24-36, 24-37, 24-46, 24-47, 24-48, 26-05, 26-06, 26-07, 26-15, 26-19, 26-20, 27-20,
                                   27-21, 27-22, 27-23, 27-29, 27-33, 27-34, 27-44, 27-45, 27-46, 29-18, 29-19, 29-20, 29-21,
                                   29-22, 29-23
       2  R  SCRTCH       33-04    34-16, 34-18, 34-24, 37-32, 37-33, 38-06, 38-07, 38-09, 38-10, 38-12, 39-04, 39-05, 39-14,
                                   39-19, 39-20, 41-07, 41-12, 41-13, 41-14, 41-32, 41-37, 41-38, 41-39, 42-12, 42-13, 42-14,
                                   42-19, 42-20, 42-39, 42-40, 43-07, 43-08, 44-10, 46-06, 46-09, 46-24, 46-25, 46-42, 46-44,
                                   48-16, 48-18, 49-24, 49-25, 52-32, 52-33, 56-22, 56-23, 56-25, 56-26, 56-27, 56-31, 56-32
       1  R  SEGMENT      21-02    22-24, 24-20, 27-17, 29-15, 33-03, 34-23, 37-20, 49-19, 65-12, 68-18, 69-04, 71-13, 71-42,
                                   74-16, 79-07, 80-16
 07 0017162 L  SEGMNT1    34-11     6-06
 07 0017242 L  SEGMNT2    37-19    35-39
 07 0017676 L  SEGMNT3    49-18    38-43
 07 0016674 L  SEG1       22-16     6-07
 07 0016743 L  SEG2       24-11    23-17
 07 0017020 L  SEG3       27-11
 07 0017054 L  SEG4       29-11
    0001007 A  SERNO_047983  88-02
    0001013 A  SERNO_088642  88-13
 07 0020001 L  SETIOS     52-26    52-16
```

OFF-LINE DIAGNOSTIC CODE   PR-1C933-50

```
PATCH HISTORY                                                    23:12:05   2/05/81  ****

    VALUE  T NAME      DEF/REF   ATTRIBUTES AND REFERENCES                       CDGNOF        W77D

07 0020002 L SETIOSLP  52-29  52-44
   CSYSUB  V SIO        5-14  66-40, 70-10, 73-32, 75-46, 77-37, 77-40, 77-43, 78-02, 78-13, 79-04, 82-10, 82-13
   CDGNTI  V SKIOER     5-27  47-05
07 0023031 L SNDIO     66-38  66-34
07 0023077 L SNDIOO    70-08
07 0023166 L SNDRD     73-30  73-27
07 0020170 L SPCHAN    56-37  56-29
        17 R SS_R             LIBNUM=6        63-30
   0000216 A SS_RXT          LIBNUM=6        22-34, 23-14, 24-35, 26-18, 27-32, 58-34
   0000213 A SS_SXT          LIBNUM=6        22-29, 23-09, 24-31, 26-14, 27-28
07 0023400 L SSPINIT   81-01  65-19, 65-34, 68-07, 68-41, 74-06, 80-09
07 0022137 L STAL      60-27  60-28
07 0021227 L STALL     58-24  58-25
   0000113 A STATUS           LIBNUM=7        58-09
   0000114 A STATUS2          LIBNUM=7        59-09
07 0017572 L STKIOER   47-01  38-31
07 0017371 L SUBCHLP   41-11  41-27
   0000160 A SUBCHN    65-10  65-11
07 0017600 L SUBCHNER  47-09  41-24, 41-49
   0000000 A SV_REG
   0000115 A TESTNO     9-09  11-09, 13-09, 20-09, 32-09, 58-09, 59-09, 64-09
   0116774 L TFAPCH2    2-07
         0 R TI               LIBNUM=6        14-38, 15-01, 15-14, 16-41, 16-48, 18-44
   0000106 A TIMERS           LIBNUM=7        13-09
07 0023310 L TIMLP1    77-49  78-07
07 0023322 L TIMLP2    78-11  78-18
07 0016145 L TIMPRE    16-21   6-08
07 0016106 ! TIMRGT    14-25   6-09
07 0016171 L TI125     18-25   6-10
         0 R TLMNO     21-03  22-42, 23-22, 24-42, 24-43, 26-25, 26-26, 27-40, 27-41, 29-29, 33-02, 35-11, 47-05, 47-13,
                              47-21, 47-29, 47-37, 47-45, 48-05, 48-17, 48-18, 48-27, 48-35, 51-31, 51-32, 54-29, 54-30
         4 R TLMNU     65-15  66-22, 66-35, 68-16, 69-01, 71-05, 71-11, 71-33, 71-40, 73-16, 73-28, 74-14, 75-20, 75-41,
                              80-17
'DGOFSUB'   T TNAME
   0600000 L TPATCH     2-09
   0001007 A TR_012760  88-02
   0000767 A TR_12760   68-20  69-06, 71-15, 71-44, 74-18, 78-28, 79-09, 80-20, 86-27
   0000413 A TR_3E800104 49-39  50-02
   0001013 A TR_790009  37-40  38-02, 88-13
07 0023375 L TRORG      37-40  49-39, 68-20, 69-06, 71-15, 71-44, 74-18, 78-28, 79-09, 80-20
07 0020151 L TRYAGAIN   56-21  56-39
07 0017223 L TRYMLT     35-35
07 0017212 L TRYNO      35-18  34-34
07 0016722 L TRY1S      22-47  22-37
07 0017070 L TSTATP     29-31  29-24
07 0017526 L TSTBITS    45-02  44-45
07 0017476 L TSTIOD     44-01
07 0017767 L TSTIOS     52-01  51-27
07 0015020 L TSTNOP     11-28   6-11


   OFF-LINE DIAGNOSTIC CODE                                                      PR-1C933-50

    23:12:05   2/05/81   TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET   CDGNOF    ISSUE 04      PAGE   98
```

```
PATCH HISTORY                                                    23:12:05   2/05/81  ****

    VALUE  T  NAME      DEF/REF     ATTRIBUTES AND REFERENCES              CDGNOF        W77D

07 0017517 L TSTPH     44-37  44-31
07 0017002,L W1SBUSLP  26-11  26-31
07 0016753 L W1SDILP   24-28  25-02
07 0017075 L W1TOS     30-08  26-07
   0000011 A XBUSPAR   12-13  12-14
   0000032 A XDGOFSUB  87-38  87-39
   0000476 A XDGSSP    84-09  84-10
   0000221 A XDTMTCH   30-27  30-28
   0001011 A XIO       56-45  56-46
   0000015 A XMINTERP  10-16  10-17
   0000014 A XSTATUS   58-42  58-43
   0000040 A XSTATUS2  63-44  63-45
   0000100 A XTIMERS   19-10  19-11
   0025712 A ZBR%             LIBNUM=6      14-33, 15-09, 16-27
   0025750 A ZER%             LIBNUM=6      12-08, 58-30, 62-20, 63-27
07 0017771 L ZEROIOD   52-13  52-25
   0026750 A ZMINT%           LIBNUM=6      10-12, 14-37, 14-49, 15-13, 16-31, 18-36, 34-45, 35-31, 36-03, 39-13, 39-30,
                                            40-01, 40-15, 40-29, 41-22, 41-47, 42-30, 43-01, 43-18, 44-23, 46-21, 46-39, 50-26, 52-24,
                                            52-42, 53-14, 53-29, 53-46, 54-14, 54-23, 58-38, 60-39
   0134350 A ZPT%             LIBNUM=6      60-37
         1 J 3ACC      1-09
07 0017365 L 306CDS    41-05  40-32
   0000007 A 3X6_0            LIBNUM=3      38-10
```

PATCH HISTORY   23:12:05   2/05/81   ****

    COUNT   FLAG   PAGE-LINE OF FLAG   CDGNOF   W77D
       7   F   38-31, 39-33, 40-03, 40-17, 40-31, 41-24, 46-48
      14   E   14-38, 15-01, 15-14, 16-41, 16-48, 18-44, 22-35, 23-15, 24-36, 24-46, 26-19

21 FLAG(S) FOUND IN THIS ASSEMBLY