```
 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
                             3        COPY  LOG4801                ** MAP EC HISTORY **
                             4 ************************************************************************
                             5 *                                                                      *
                             6 *                     ***       PREREQUISITES         ***              *
                             7 *                                                                      *
                             8 *                                  NONE                                *
                             9 *                                                                      *
                            10 ************************************************************************
                            11 *                                                                      *
                            12 *                     ***       MODIFICATIONS         ***              *
                            13 *                                                                      *
                            14 *  MODIFICATION'S MADE TO CORRECT PROBLEMS ENCOUNTERED DURING TESTING  *
                            15 *                                                                      *
                            16 ************************************************************************
                            17 *                                                                      *
                            18 *                     ***     REA'S INCORPORATED      ***              *
                            19 *                                                                      *
                            20 *                                  NONE                                *
                            21 *                                                                      *
                            22 ************************************************************************
                            23 *                                                                      *
                            24 *                     ***    SPECIAL INSTRUCTIONS     ***              *
                            25 *                                                                      *
                            26 *                                  NONE                                *
                            27 *                                                                      *
                            28 ************************************************************************
                            29 *                                                                      *
                            30 *                     ***       E. C. HISTORY         ***              *
                            31 *                                                                      *
                            32 *        DATE 01OCT76  DATE 15MAR77  DATE 10JUN77  DATE 22JUL77        *
                            33 *        E.C. 578468   E.C. 578714   E.C. 578625   E.C. 578757         *
                            34 *                                                                      *
                            35 ************************************************************************
002500                      37 I4801    START X'2500'           START ADDRESS OF ALL 'I' TYPE PROG
000100                      38 @QUES    EQU   X'0100'           EQUATED VALUE FOR MDI STATEMENT
000101                      39 @FIXT    EQU   X'0101'           EQUATED VALUE FOR MDI STATEMENT
000102                      40 @STOP    EQU   X'0102'           EQUATED VALUE FOR MDI STATEMENT
000200                      41 @GOTO    EQU   X'0200'           EQUATED VALUE FOR MDI STATEMENT
000201                      42 @CALL    EQU   X'0201'           EQUATED VALUE FOR MDI STATEMENT
000300                      43 @INPT    EQU   X'0300'           EQUATED VALUE FOR MDI STATEMENT
000400                      44 @QUXX    EQU   X'0400'           EQUATED VALUE FOR MDI STATEMENT
000500                      45 @TUXX    EQU   X'0500'           EQUATED VALUE FOR MDI STATEMENT
000600                      46 @NVLD    EQU   X'0600'           EQUATED VALUE FOR MDI STATEMENT
000000                      47 EQ       EQU   X'0000'           EQUATE FOR EQUAL
000004                      48 NE       EQU   X'0004'           EQUATE FOR NOT EQUAL
000008                      49 HI       EQU   X'0008'           EQUATE FOR HIGH
00000C                      50 NH       EQU   X'000C'           EQUATE FOR NOT HIGH
000010                      51 LO       EQU   X'0010'           EQUATE FOR LOW
000014                      52 NL       EQU   X'0014'           EQUATE FOR NOT LOW
000010                      53 LT       EQU   X'0010'           EQUATE FOR LESS THAN
00000C                      54 LE       EQU   X'000C'           EQUATE FOR LESS THAN OR EQUAL TO
000008                      55 GT       EQU   X'0008'           EQUATE FOR GREATER THAN
000014                      56 GE       EQU   X'0014'           EQUATE FOR GREATER THAN OR EQUAL TO
000200                      57 CN       EQU   X'0200'           EQUATE FOR ON
000202                      58 OF       EQU   X'0202'           EQUATE FOR OFF
000204                      59 MX       EQU   X'0204'           EQUATE FOR MIXED
000000                      60 EBC      EQU   X'0000'           EQUATE FOR EBCDIC DATA TRANSFER
000001                      61 HEX      EQU   X'0001'           EQUATE FOR HEX DATA TRANSFER
000001                      62 XTRNL    EQU   X'0001'           EQUATE FOR EXTERNAL REFERENCE
000000                      63 INTRNL   EQU   X'0000'           EQUATE FOR INTERNAL REFERENCE
000000                      64 PARM     EQU   X'0000'           EQUATE INDICATING PARAMETER
000001                      65 DA       EQU   X'0001'           EQUATE FOR DEVICE ADDRESS
000002                      66 UA       EQU   X'0002'           EQUATE FOR UNIT ADDRESS
000000                      67 DUMMY    EQU   X'0000'           DUMMY EQUATE
001800                      69 PID      EQU   *-X'0D00'         ADDRESS OF MDI HEADER
000232                      70 PIYPE    EQU   *-X'22CE'         ADDRESS OF PROCESSOR TYPE FIELD
00180C                      71 STEPNUM  EQU   PID+X'000C'       ADDRESS OF DECIMAL STEP NUMBER
00180E                      72 OPWD1    EQU   PID+X'000E'       ADDRESS OF OPTION WORD ONE
001810                      73 OPWD2    EQU   PID+X'0010'       ADDRESS OF OPTION WORD TWO
001818                      74 TUSTATUS EQU   PID+X'0018'       ADDRESS OF TU STATUS WORD
00181A                      75 TUWORK   EQU   PID+X'001A'       ADDRESS OF TU WORK AREA
00189A                      76 TUPARM1  EQU   PID+X'009A'       ADDRESS OF PARM 1 POINTER
00189C                      77 TUPARM2  EQU   PID+X'009C'       ADDRESS OF PARM 2 POINTER
00189E                      78 TUPARM3  EQU   PID+X'009E'       ADDRESS OF PARM 3 POINTER
0018A0                      79 TUPARM4  EQU   PID+X'00A0'       ADDRESS OF PARM 4 POINTER
0018A2                      80 TUPARM5  EQU   PID+X'00A2'       ADDRESS OF PARM 5 POINTER
0018A4                      81 TUPARM6  EQU   PID+X'00A4'       ADDRESS OF PARM 6 POINTER
0018A6                      82 TUPARM7  EQU   PID+X'00A6'       ADDRESS OF PARM 7 POINTER
0018A8                      83 TUPARM8  EQU   PID+X'00A8'       ADDRESS OF PARM 8 POINTER
0018AA                      84 TUPARM9  EQU   PID+X'00AA'       ADDRESS OF PARM 9 POINTER
0018AC                      85 TUPARM10 EQU   PID+X'00AC'       ADDRESS OF PARM 10 POINTER
0018AE                      86 TUPARM11 EQU   PID+X'00AE'       ADDRESS OF PARM 11 POINTER
0018B0                      87 TUPARM12 EQU   PID+X'00B0'       ADDRESS OF PARM 12 POINTER
0018B2                      88 TUPARM13 EQU   PID+X'00B2'       ADDRESS OF PARM 13 POINTER
0018B4                      89 TUPARM14 EQU   PID+X'00B4'       ADDRESS OF PARM 14 POINTER
0018B6                      90 TUPARM15 EQU   PID+X'00B6'       ADDRESS OF PARM 15 POINTER
0018B8                      91 TUPARM16 EQU   PID+X'00B8'       ADDRESS OF PARM 16 POINTER
0018BA                      92 TUMSGWTR EQU   PID+X'00BA'       ADDRESS OF -> TO COMMON MSG WRITER
0018BE                      93 TUUA     EQU   PID+X'00BE'       ADDRESS OF UNIT ADDRESS IN EBC
0018C0                      94 TUDA     EQU   PID+X'00C0'       ADDRESS OF DEVICE ADDRESS IN EBC
0018C2                      95 TUBUFF   EQU   PID+X'00C2'       ADDRESS OF LAST USED WORD IN MAP
0018C4                      96 TULAST   EQU   PID+X'00C4'       ADDRESS OF LAST ADDRESSABLE WORD
0018C6                      97 TURESULN EQU   PID+X'00C6'       ADDRESS OF LENGTH OF TU RESULTS
0018C8                      98 TURESUL  EQU   PID+X'00C8'       ADDRESS OF TU RESULTS FIELD
0018FC                      99 MAPNAME  EQU   PID+X'00FC'       ADDRESS OF MAP NAME FIELD IN HEX
001948                     100 TUINPT   EQU   PID+X'0148'       ADDRESS OF $INPT DATA
00196E                     101 PARMARA  EQU   PID+X'016E'       ADDRESS OF $INPT INPUT AREA
0019B8                     102 @LCADD1  EQU   PID+X'01B8'       MDI POINTER
0019BA                     103 @DCADD2  EQU   PID+X'01BA'       MDI POINTER
0019C4                     104 SUPSTAT  EQU   PID+X'01C4'       ADDRESS OF MDI STATUS
0019D0                     105 DEVADD   EQU   PID+X'01D0'       ADDRESS OF DEVICE ADDRESS TABLE 0
0019DA                     106 DEVADD1  EQU   PID+X'01DA'       ADDRESS OF DEVICE ADDRESS TABLE 1
0019E4                     107 DEVADD2  EQU   PID+X'01E4'       ADDRESS OF DEVICE ADDRESS TABLE 2
0019EE                     108 DEVADD3  EQU   PID+X'01EE'       ADDRESS OF DEVICE ADDRESS TABLE 3
0019F8                     109 DEVADD4  EQU   PID+X'01F8'       ADDRESS OF DEVICE ADDRESS TABLE 4
001A02                     110 DEVADD5  EQU   PID+X'0202'       ADDRESS OF DEVICE ADDRESS TABLE 5
001A0C                     111 DEVADD6  EQU   PID+X'020C'       ADDRESS IF DEVICE ADDRESS TABLE 6
001A16                     112 DEVADD7  EQU   PID+X'0216'       ADDRESS OF DEVICE ADDRESS TABLE 7
                           113          PRINT OFF
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
002500  25E6               198        DC    A(ENTPT)          POINT TO MAP ENTRY POINT TABLE
                          199 ************************************************************************
                          200 ************************************************************************
                          201 **                                                                    **
                          202 **   THE FOLLOWING TABLES ARE USED BY THE MDI SUPERVISOR (D3C00)       **
                          203 **   TO LOCATE THE CORRECT RULE TO INVOKE, TO OBTAIN THE PROPER        **
                          204 **   PARAMETERS TO PASS TO THE TU'S AND TO PASS TO THE OPERATOR        **
                          205 **   THE INDICATED MESSAGE(S). THERE ARE FOUR TABLES USED FOR THIS     **
                          206 **   PURPOSE THEY ARE:                                                **
                          207 **                                                                    **
                          208 **   STEP AND RULE ADDRESS TABLE                                      **
                          209 **        THIS TABLE GIVES THE ADDRESS OF THE RULE TO INVOKE AND      **
                          210 **        THE ASSOCIATED STEP DECIMAL STEP NUMBER OF THAT RULE.       **
                          211 **        ENTRIES ARE AS FOLLOWES                                     **
                          212 **                A)  AN ADDRESS OF THE RULE DC START AREA            **
                          213 **                B)  THE STEP NUMBER IN DECIMAL                      **
                          214 **                C)  AN EQUATE FOR THE STEP NUMBER                   **
                          215 **                                                                    **
                          216 **   RULE INFORMATION TABLE                                           **
                          217 **        THIS TABLE CONTAINES THE REQUIRED INFORMATION TO EXECUTE     **
                          218 **        THE APPROPRIATE RULE UNDER MDI. EACH RULE HAS ITS OWN       **
                          219 **        UNIQUELY DEFINED AREA INDICATED BELOW. END OF TABLE IS      **
                          220 **        INDICATED WITH A X'0000' FOR THE RULE EQUATE.               **
                          221 **                                                                    **
                          222 **        $QUES                                                       **
                          223 **                A) RULE EQUATE X'0100'                              **
                          224 **                B) ADDRESS OF THE YES LEG RULE                      **
                          225 **                                                                    **
                          226 **        $FIXT                                                       **
                          227 **                A) RULE EQUATE X'0101'                              **
                          228 **                B) ADDRESS OF MESSAGE TO PRINT                      **
                          229 **                                                                    **
                          230 **        $STOP                                                       **
                          231 **                A) RULE EQUATE X'0102'                              **
                          232 **                B) ADDRESS OF MESSAGE                               **
                          233 **                                                                    **
                          234 **        $GOTO                                                       **
                          235 **                A) RULE EQUATE X'0200'                              **
                          236 **                B) ADDRESS OF MESSAGE                               **
                          237 **                C) NAME OF MAP TO GO TO                             **
                          238 **                D) ENTRY POINT WITHIN GO TO MAP TO USE              **
                          239 **                E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE     **
                          241 **                                                                    **
                          242 **        $CALL                                                       **
                          243 **                A) RULE EQUATE X'0201'                              **
                          244 **                B) ADDRESS OF MESSAGE                               **
                          245 **                C) NAME OF MAP TO CALL                              **
                          246 **                D) ENTRY POINT WITHIN CALLED MAP TO USE             **
                          247 **                E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE     **
                          248 **                                                                    **
                          249 **        $INPT                                                       **
                          250 **                A) RULE EQUATE X'0300'                              **
                          251 **                B) INPUT TYPE (EBCDIC OR HEX)                       **
                          252 **                C) ADDRESS OF YES LEG RULE                          **
                          253 **                D) DESTINATION LOCATION OF INPUT DATA               **
                          254 **                E) LENGTH OF INPUT DATA                             **
                          255 **                F) LOWER LIMIT OF GOOD DATA                         **
                          256 **                G) HIGHER LIMIT OF GOOD DATA                        **
                          257 **                                                                    **
                          258 **        $QUXX                                                       **
                          259 **                A) RULE EQUATE X'0400'                              **
                          260 **                B) ADDRESS OF YES LEG RULE                          **
                          261 **                C) TU BRANCH TO ADDRESS (INITIAL)                   **
                          262 **                D) TU BRANCH TO ADDRESS (SECONDARY)                 **
                          263 **                E) LENGTH OF PARAMETER IN BYTES                     **
                          264 **                F) PARAMETER TO PASS TO TU                          **
                          265 **                G) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER     **
                          266 **                                                                    **
                          267 **        $TUXX                                                       **
                          268 **                A) RULE EQUATE X'0500'                              **
                          269 **                B) ADDRESS OF YES LEG RULE                          **
                          270 **                C) TU BRANCH TO ADDRESS                             **
                          271 **                D) TYPE OF COMPARE TO MAKE ON RESULTS               **
                          272 **                E) LENGTH OF COMPARED RESULTS                       **
                          273 **                F) MASK FIELD FOR COMPARE                           **
                          274 **                G) LENGTH OF PARAMETER IN BYTES                     **
                          275 **                H) PARAMETER TO PASS TO THE TU                      **
                          276 **                I) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER     **
                          277 **                                                                    **
                          278 **        $NVLD                                                       **
                          279 **                A) RULE EQUATE X'0600'                              **
                          281 **                                                                    **
                          282 **   ENTRY POINT TABLE                                                **
                          283 **        THIS TABLE CONTAINS THE ENTRY POINTS WITHIN THE MAP THAT     **
                          284 **        THE MAP CAN BE ENTERED FROM THESE ENTRY POINTS ARE           **
                          285 **        REFERENCED BY NAME AND ADDRESS. ENTRIES ARE AS FOLLOWES:     **
                          286 **                                                                    **
                          287 **            A) NAME OF ENTRY POINT                                  **
                          288 **            B) ADDRESS OF ENTRY POINT RULE TABLE                    **
                          289 **                                                                    **
                          290 **        THE ENTRY POINT TABLE END IS INDICATED BY A X'0000'         **
                          291 **                                                                    **
                          292 **   MESSAGE TABLE                                                    **
                          293 **        THIS TABLE CONTAINES THE MESSAGE PASSED TO THE OPERATOR      **
                          294 **        VIA THE MDI SUPERVISOR. THE TABLE IS AS FOLLOWES:           **
                          295 **                                                                    **
                          296 **            A) EQUATE FOR START OF MESSAGE BLOCK                    **
                          297 **            B) NUMBER OF LINES OF MESSAGE                           **
                          298 **            C) LENGTH OF FOLLOWING LINE                             **
                          299 **            D) FIRST LINE OF MESSAGE                                **
                          300 **            E) LENGTH OF FOLLOWING LINE                             **
                          301 **            F) SECOND LINE OF MESSAGE                               **
                          302 **            G) ETC.                                                 **
                          303 **                                                                    **
                          304 ************************************************************************
                          305 ************************************************************************
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 LOCTR  OBJECT TEXT   STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
                       308 ********************************************************************************
                       309 ********************************************************************************
                       310 **                                                                            **
                       311 **                        STEP AND RULE ADDRESS TABLE                         **
                       312 **                                                                            **
                       313 ********************************************************************************
                       314 ********************************************************************************
002502  2538           315          DC    AL2(N00001)
002504  0001           316          DC    XL2'0001'
000001                 317 EQN00001 EQU       0001
002506  254E           318          DC    AL2(N00002)
002508  0002           319          DC    XL2'0002'
000002                 320 EQN00002 EQU       0002
00250A  2552           321          DC    AL2(N00003)
00250C  0003           322          DC    XL2'0003'
000003                 323 EQN00003 EQU       0003
00250E  2564           324          DC    AL2(N00004)
002510  0004           325          DC    XL2'0004'
000004                 326 EQN00004 EQU       0004
002512  2570           327          DC    AL2(N00005)
002514  0005           328          DC    XL2'0005'
000005                 329 EQN00005 EQU       0005
002516  2582           330          DC    AL2(N00006)
002518  0006           331          DC    XL2'0006'
000006                 332 EQN00006 EQU       0006
00251A  258E           333          DC    AL2(N00007)
00251C  0007           334          DC    XL2'0007'
000007                 335 EQN00007 EQU       0007
00251E  25A0           336          DC    AL2(N00008)
002520  0008           337          DC    XL2'0008'
000008                 338 EQN00008 EQU       0008
002522  25AC           339          DC    AL2(N00009)
002524  0009           340          DC    XL2'0009'
000009                 341 EQN00009 EQU       0009
002526  25BE           342          DC    AL2(N00010)
002528  0010           343          DC    XL2'0010'
00000A                 344 EQN00010 EQU       0010
00252A  25CA           345          DC    AL2(N00011)
00252C  0011           346          DC    XL2'0011'
00000B                 347 EQN00011 EQU       0011
00252E  25DC           348          DC    AL2(N00012)
002530  0012           349          DC    XL2'0012'
00000C                 350 EQN00012 EQU       0012
002532  25E0           351          DC    AL2(N00013)
002534  0013           352          DC    XL2'0013'
00000D                 353 EQN00013 EQU       0013
002536  0000           354          DC    AL2(DUMMY)
                       355 ********************************************************************************
                       356 ********************************************************************************
                       357 **                                                                            **
                       358 **                          RULE INFORMATION TABLE                            **
                       359 **                                                                            **
                       360 ********************************************************************************
                       361 ********************************************************************************
                       362 N00001   $TUXX T3C00,02,0708,EQ,PING=6,PARM=6F0000,QT=(Q00035),                X
0025E6  C140           363+N00001   DC    A(@TUXX)
0025E8  2538           364+         DC    AL2(N00003)
0025EA  0000           365+         DC    A(T3C00)
                       366+         DC    AL2(EQ)
                       367+         DC    AL2(02)
                       368+         DC    X'0708'
                       369+         ALIGN WORD
                       370+         DC    AL2(6)
                       371+         DC    C'6F0000'
                       372+         ALIGN WORD
                       373+         DC     AL2(PARMARA)
                       374 N00002   $FIXT FT=(F00038),CT=(C00024)
                       375+N00002   DC    A(@FIXT)
                       376+         DC    A(F00038)
                       377 N00003   $TUXX T4803,02,0400,OF,QT=(Q00043),YES=N00005,CT=(C00042)
                       378+N00003   DC    A(@TUXX)
                       379+         DC    AL2(N00005)
                       380+         DC    A(T4803)
                       381+         DC    AL2(OF)
                       382+         DC    AL2(02)
                       383+         DC    X'0400'
                       384+         ALIGN WORD
                       385+         DC    AL2(0)
                       386+         DC    C'AA'
                       387+         ALIGN WORD
                       388+         DC     AL2(PARMARA)
                       389 N00004   $CALL TYPE=XTRNL,MAP=4820,EP=A,FT=(F00045),GTO=((4820,A))
                       390+N00004   DC    A(@CALL)
                       391+         DC    A(F00045)
                       392+         DC    CL4'4820'
                       393+         DC    CL2'A'
                       394+         DC    AL2(XTRNL)
                       395 N00005   $TUXX T3C02,02,0040,OF,QT=(Q00048),YES=N00007,ST=(S00029)
                       396+N00005   DC    A(@TUXX)
                       397+         DC    AL2(N00007)
                       398+         DC    A(T3C02)
                       399+         DC    AL2(OF)
                       400+         DC    AL2(02)
                       401+         DC    X'0040'
                       402+         ALIGN WORD
                       403+         DC    AL2(0)
                       404+         DC    C'AA'
                       405+         ALIGN WORD
                       406+         DC     AL2(PARMARA)
                       407 N00006   $CALL TYPE=XTRNL,MAP=4813,EP=D,FT=(F00052),GTO=((4813,D))
                       408+N00006   DC    A(@CALL)
                       409+         DC    A(F00052)
                       410+         DC    CL4'4813'
                       411+         DC    CL2'D'
                       412+         DC    AL2(XTRNL)
                       413 N00007   $TUXX T3C02,02,0034,OF,QT=(Q00055),YES=N00009,ST=(S00029)
                       414+N00007   DC    A(@TUXX)
                       415+         DC    AL2(N00009)
                       416+         DC    A(T3C02)
                       417+         DC    AL2(OF)
                       418+         DC    AL2(02)
                       419+         DC    X'0034'
                       420+         ALIGN WORD
                       421+         DC    AL2(0)
                       422+         DC    C'AA'
                       423+         ALIGN WORD
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 LOCTR  OBJECT TEXT   STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
0025FE  196E           424+         DC     AL2(PARMARA)
                       425 N00008   $CALL TYPE=XTRNL,MAP=4820,EP=C,FT=(F00058),GTO=((4820,C))
0025A0  0201           426+N00008   DC    A(@CALL)
0025A2  265A           427+         DC    A(F00058)
0025A4  F4F8F2F0       428+         DC    CL4'4820'
0025A8  C340           429+         DC    CL2'C'
0025AA  0001           430+         DC    AL2(XTRNL)
                       431 N00009   $TUXX T3C02,02,0001,OF,QT=(Q00061),YES=N00011,ST=(S00029)
0025AC  0500           432+N00009   DC    A(@TUXX)
0025AE  25CA           433+         DC    AL2(N00011)
0025B0  27CE           434+         DC    A(T3C02)
0025B2  0202           435+         DC    AL2(OF)
0025B4  0002           436+         DC    AL2(02)
0025B6  0001           437+         DC    X'0001'
                       438+         ALIGN WORD
0025B8  0000           439+         DC    AL2(0)
0025BA  C1C1           440+         DC    C'AA'
                       441+         ALIGN WORD
0025BC  196E           442+         DC     AL2(PARMARA)
                       443 N00010   $CALL TYPE=XTRNL,MAP=4820,EP=C,FT=(F00064),GTO=((4820,C))
0025BE  0201           444+N00010   DC    A(@CALL)
0025C0  2676           445+         DC    A(F00064)
0025C2  F4F8F2F0       446+         DC    CL4'4820'
0025C6  C340           447+         DC    CL2'C'
0025C8  0001           448+         DC    AL2(XTRNL)
                       449 N00011   $TUXX T4804,02,0000,EQ,QT=(Q00068),YES=N00013,CT=(C00067)
0025CA  0500           450+N00011   DC    A(@TUXX)
0025CC  25E0           451+         DC    AL2(N00013)
0025CE  27D6           452+         DC    A(T4804)
0025D0  0000           453+         DC    AL2(EQ)
0025D2  0002           454+         DC    AL2(02)
0025D4  0000           455+         DC    X'0000'
                       456+         ALIGN WORD
0025D6  0000           457+         DC    AL2(0)
0025D8  C1C1           458+         DC    C'AA'
                       459+         ALIGN WORD
0025DA  196E           460+         DC     AL2(PARMARA)
                       461 N00012   $FIXT FT=(F00004),CT=(C00024)
0025DC  0101           462+N00012   DC    A(@FIXT)
0025DE  2688           463+         DC    A(F00004)
                       464 N00013   $STOP FT=(F00073)
0025E0  0102           465+N00013   DC    A(@STOP)
0025E2  274A           466+         DC    A(F00073)
0025E4  0000           467          DC    AL2(DUMMY)
0025E6                 468 ENTPT    EQU   *
                       469 ********************************************************************************
                       470 ********************************************************************************
                       471 **                                                                            **
                       472 **                           ENTRY PCINT TABLE                                **
                       473 **                                                                            **
                       474 ********************************************************************************
                       475 ********************************************************************************
                       476          ENTPT EP=A,STEP=00001
0025E6  C140           477+         DC    CL2'A'
0025E8  2538           478+         DC    A(N00001)
0025EA  0000           479          DC    AL2(DUMMY)
                       480 ********************************************************************************
                       481 ********************************************************************************
                       482 **                                                                            **
                       483 **                             MESSAGE TABLE                                  **
                       484 **                                                                            **
                       485 ********************************************************************************
                       486 ********************************************************************************
0025EC                 487 F00038   EQU   *
0025EC  0001           488          DC    AL2(0001)
0025EE  002A           489          DC    A(0042)
0025F0  D9C5D7D3C1C3C540E  490      DC    CL0042'REPLACE THE DISKETTE UNIT ATTACHMENT CARD.'
00261A                 491 F00045   EQU   *
00261A  0002           492          DC    AL2(0002)
00261C  000C           493          DC    A(0012)
00261E  E3C5E2E340C6C1C9D  494      DC    CL0012'TEST FAILED '
00262E  000E           495          DC    A(0014)
002630  C7D640E3D640D4C1D  496      DC    CL0014'GO TC MAP 4820'
00263A                 497 F00052   EQU   *
00263A  0002           498          DC    AL2(0002)
00263C  000C           499          DC    A(0012)
00263E  E3C5E2E340C6C1C9D  500      DC    CL0012'TEST FAILED.'
00264E  000E           501          DC    A(0014)
002650  C7D640E3D640D4C1D  502      DC    CL0014'GO TO MAP 4820'
00265A                 503 F00058   EQU   *
00265A  0002           504          DC    AL2(0002)
00265C  0008           505          DC    A(0008)
00265E  C5E7E3C5D9D5C1D3   506      DC    CL0008'EXTERNAL'
002666  000E           507          DC    A(0014)
002668  C7D640E3D640D4C1D  508      DC    CL0014'GO TC MAP 4820'
002676                 509 F00064   EQU   *
002676  0001           510          DC    AL2(0001)
002678  000E           511          DC    A(0014)
00267A  C7D640E3D640D4C1D  512      DC    CL0014'GO TO MAP 4820'
002688                 513 F00004   EQU   *
002688  0005           514          DC    AL2(0005)
00268A  0028           515          DC    A(0040)
00268C  C3C8C5C3D240E5D6D  516      DC    CL0040'CHECK VOLTAGE PINS ON DRIVE CONTROL CARD'
0026B4  002A           517          DC    A(0042)
0026B6  4D4EF2F46B4EF56B6  518      DC    CL0042'(+24,+5,-5). SEE MID VOL.1 SF140 FOR TEST '
0026E0  002C           519          DC    A(0044)
0026E2  D7D6C9D5E3E24B40C  520      DC    CL0044'POINTS. IF VOLTAGE IS OUT OF TOLERANCE GO TO'
00270E  0028           521          DC    A(0040)
002710  D4C1D740F4F8F8F04  522      DC    CL0040'MAP 4880. IF O.K. REPLACE DISKETTE UNIT '
002738  0010           523          DC    A(0016)
00273A  C1E3E3C1C3C8D4C5D  524      DC    CL0016'ATTACHMENT CARD.'
00274A                 525 F00073   EQU   *
00274A  0002           526          DC    AL2(0002)
00274C  002C           527          DC    A(0044)
00274E  C1E4E3D640D9D6E4E  528      DC    CL0044'AUTO ROUTINES O.K. GO TO MAP 4802 TO RUN THE'
00277A  000C           529          DC    A(0012)
00277C  E6D9C9E3C540E3C5E  530      DC    CL0012'WRITE TEST. '
                       531          HDIT  0106
002788  0000           533+OPTN1 DC  X'0000'              PROGRAM OPTION CONTROL WORD 1
                       534+*
00278A  0000           535+OPTN2 DC  X'0000'              PROGRAM OPTION CONTROL WORD 2
                       536+*                    BIT    HEX
000010                 537+B48   EQU 16     0      8     PROBLEM PROGRAM CONTROL BITS
000011                 538+B49   EQU 17     1      4     *
000012                 539+B50   EQU 18     2      2     * THESE BITS ARE USED WITH THE
000013                 540+B51   EQU 19     3      1     * SECOND OPTION WD   AND ARE TO
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
000014                     541+B52  EQU   20      4       8       * BE ASSIGNED BY EACH PROGRAMMER
000015                     542+B53  EQU   21      5       4       *
000016                     543+B54  EQU   22      6       2       *
000017                     544+B55  EQU   23      7       1       *
000018                     545+B56  EQU   24      8       8       *
000019                     546+B57  EQU   25      9       4       *
00001A                     547+B58  EQU   26      10      2       *
00001B                     548+B59  EQU   27      11      1       *
00001C                     549+B60  EQU   28      12      8       *
00001D                     550+B61  EQU   29      13      4       *
00001E                     551+B62  EQU   30      14      2       *
00001F                     552+B63  EQU   31      15      1       *
00001E                     553+CH   EQU   30      14      2       CHARACTER SUPPLIED
00001F                     554+CME  EQU   31      15      1       COMPARE OPERATION
00278C  0000               555+OPTN3 DC     X'0000'                PROGRAM OPTION CONTROL WORD 3
                           557+*
                           558+*  0  MYSTERY INTERRUPT     MI        8  CS STATUS IN PROGRESS    CS
                           559+*  1  ERROR INTERRUPT       ER        9  CS AVAILABLE             CSA
                           560+*  2  EXPECTED INTERRUPT    XI       10  CS STATUS INTERRUPT ERR  CE
                           561+*  3  INTERRUPT RECEIVED    IN       11  ISB BITS ON (1-7)        ISBON
                           562+*
                           563+*  4  EXPECTED ERR/ATTENT   XE       12  TEST UNIT RESULTS VOID   NG
                           564+*  5  HARD ERROR FOUND      HE       13  OIO CC ERROR             IOCC
                           565+*  6  WRONG INTR LEVEL      $LE      14  NO INTERRUPT             NOIN
                           566+*  7  NO INTR EXPECTED      NI       15  INTERRUPT CC ERROR       INCC
                           567+*                          BIT     HEX
000020                     568+MI   EQU   32      0       8       MYSTERY INTERRUPT HAPPENED
000021                     569+ER   EQU   33      1       4       ERROR RECEIVED ON INTERRUPT
000022                     570+XI   EQU   34      2       2       EXPECTED INTERRUPT CONTROL BIT
000023                     571+IN   EQU   35      3       1       INTERRUPT RECEIVED CONTROL BIT
000024                     572+XE   EQU   36      4       8       EXPECTED ERROR RESPONSE
000025                     573+HE   EQU   37      5       4       HARD ERROR, 8 RETRIES
000026                     574+$LE  EQU   38      6       2       INTERRUPT ON WRONG LEVEL ERROR
000027                     575+NI   EQU   39      7       1       NO INTERRUPT EXPECTED E
000028                     576+CS   EQU   40      8       8       CYCLE STATUS IN PROGRESS
000029                     577+CSA  EQU   41      9       4       CYCLE STEAL AVAILABLE
00002A                     578+CE   EQU   42      10      2       CYCLE STEAL STATUS INERRUPT ERROR
00002B                     579+ISBON EQU  43      11      1       ISB BITS ON (1-7)
00002C                     580+NG   EQU   44      12      8       TEST UNIT RESULTS NO GOOD
00002D                     581+IOCC EQU   45      13      4       OIO CC ERROR
00002E                     582+NOIN EQU   46      14      2       NO INTERRUPT
00002F                     583+INCC EQU   47      15      1       INTERRUPT CC ERROR
                           584+*
                           585+*      COMMON BUFFER FOR PRINTING DATA
                           586+*
002778E  0000              588+$TUID DC     A(*-*)                 TEST UNIT IDENTIFICATION
002790  0000               589+$IOIN DC     A(*-*)                 I/O AND INTR CONDITION CODES
002792  0000               590+$ISB  DC     A(*-*)                 R7, INTR STATUS BYTE & DEV ADRS
002794  0000               591+ISTIO DC     A(*-*)                 ADRS OF LAST I/O + 4 BYTES
002796  0000               592+DEV1  DC     A(*-*)                 DEVICE DEPENDENT DATA
002798  0000               593+DEV2  DC     A(*-*)                 *
00279A  0000               594+DEV3  DC     A(*-*)                 *
00279C  0000               595+DEV4  DC     A(*-*)                 *
002796                     596+SCTID EQU    DEV1                   READ ID BUFFER FOR IBIS & TERN
00279E                     597+DCBUF EQU    *                      DCB BUFFER FOR LAST DCB USED
00279E  0000               598+DCB1  DC     A(*-*)                 LAST DCB TABLE, CONTROL WORD
0027A0  0000               599+DCB2  DC     A(*-*)                 LAST DCB TABLE, DEV DEP WORD
0027A2  0000               600+DCB3  DC     A(*-*)                 LAST DCB TABLE, DEV DEP WORD
0027A4  0000               601+DCB4  DC     A(*-*)                 LAST DCB TABLE, DEV DEP WORD
0027A6  0000               602+DCB5  DC     A(*-*)                 LAST DCB TABLE, DEV DEP WORD
0027A8  0000               603+DCB6  DC     A(*-*)                 LAST DCB TABLE, CHAIN ADRS
0027AA  0000               604+DCB7  DC     A(*-*)                 LAST DCB TABLE, BYTE COUNT
0027AC  0000               605+DCB8  DC     A(*-*)                 LAST DCB TABLE, BUFFER ADDRESS
                           606+*
0027AE                     607+CSBUF EQU    *                      CYCLE STEAL DATA BUFFER
0027AE  0000               608+CSTL1 DC     A(*-*)                 CYCLE STEAL BUFFER, RESIDUAL ADRS
0027B0  0000               609+CSTL2 DC     A(*-*)                 CYCLE STEAL WD 2, DEVICE DEPEND
0027B2  0000               610+CSTL3 DC     A(*-*)                 CYCLE STEAL WD 3, DEVICE DEPEND
0027B4  0000               611+CSTL4 DC     A(*-*)                 CYCLE STEAL WD 4, DEVICE DEPEND
0027B6  0000               612+CSTL5 DC     A(*-*)                 CYCLE STEAL WD 5, DEVICE DEPEND
0027B8  0000               613+CSTL6 DC     A(*-*)                 CYCLE STEAL WD 6, DEVICE DEPEND
0027BA  0000               614+CSTL7 DC     A(*-*)                 CYCLE STEAL WD 7, DEVICE DEPEND
0027BC  0000               615+CSTL8 DC     A(*-*)                 CYCLE STEAL WD 8, DEVICE DEPEND
                           616+*
0027BE  0000               617+$SUBN DC     A(*-*)                 LAST SUBROUTINE ADDRESS USED
0027C0  00000000           618+$DATA DC     2A(*-*)                OPTIONAL DATA
0027C4  0021               619+$INTL DC     X'0021'                INTERRUPT LEVEL REQUESTED
0027C6  0000               620+TURTN DC     A(*-*)                 TEST UNIT RETURN ADRS TO MDI
0027C8  0106               621+$DVID DC     X'0106'                DEVICE ID
0027CA  1900               622+SVCAL DC     A(DEVADD)              ADRS OF DEVICE ADDRESS
0027CC  0000               623+     DC      A(*-*)                 IBIS CYLINDER ADDRESS
                           624+*
                           625+*      THIS TEST UNIT WILL RETURN TO MDI WITHOUT DOING ANY PROGRAM
                           626+*      FUNCTION. THE RESULTS THAT WERE SET UP IN THE RESULTS AREA ARE
                           627+*      STILL VALID BUT A DIFFERENT TEST IS TO BE PERFORMED.
                           628+*
0027CE  4020 278E 3C02     629+T3C02 MVWI   X'3C02',$TUID           SET UP TEST UNIT ID
0027D4  5700               630+      BXS    (R7)                   RETURN TO MDI SUPVR
                           632       COPY   COMEQU
                           633 ************************************************************
                           634 *                                                          *
                           635 *            EQUATED NAMES FOR SUPPORTED SVC'S             *
                           636 *                                                          *
                           637 ************************************************************
000000                     638 OUT    EQU   0                        OUT SVC
000001                     639 OUTIN  EQU   1                        OUTIN SVC
000002                     640 IDLE   EQU   2                        IDLE SVC
000003                     641 ASCII  EQU   3                        HEX TO ASCII SVC
000004                     642 CHNGE  EQU   4                        CHANGE LEVEL SVC
000005                     643 PGMCK  EQU   5                        ALLOW RETURN ON PROGRAM CHECK SVC
000006                     644 EXIT   EQU   6                        EXIT SVC
000007                     645 TERM   EQU   7                        TERMINATE SVC
000008                     646 RESET  EQU   8                        RESET DEVICE SVC
000009                     647 RID    EQU   9                        READ ID SVC
00000A                     648 START  EQU   10                       START CYCLE STEAL SVC
00000B                     649 SICSS  EQU   11                       START CYCLE STEAL STATUS SVC
00000C                     650 PREP   EQU   12                       PREPARE DEVICE SVC
00000D                     651 READ0  EQU   13                       READ WITH FUNCTION BIT 3 OFF SVC
00000E                     652 READ1  EQU   14                       READ WITH FUNCTION BIT 3 ON SVC
00000F                     653 RSTAT  EQU   15                       READ STATUS SVC
000010                     654 WRIT0  EQU   16                       WRITE WITH FUNCTION BIT 3 OFF SVC
000011                     655 WRIT1  EQU   17                       WRITE WITH FUNCTION BIT 3 ON SVC
000012                     656 CTRL   EQU   18                       CONTROL SVC
000013                     657 RICB   EQU   19                       RELEASE INTERUPT CONTROL BLOCK SVC
000014                     658 CICB   EQU   20                       CONNECT INTERUPT CONTROL BLOCK SVC
000015                     659 HIO    EQU   21                       HALT ALL I/O
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
000016                     660 REQSD  EQU   22                       REQUEST USE OF DCP DISK SVC
000017                     661 RELSD  EQU   23                       RELEASE USE OF DCP DISK SVC
000018                     662 HALT   EQU   24                       HALT SVC
000019                     663 ETOH   EQU   25                       EBCDIC TO HEX SVC (STRING)
00001A                     664 HTOE   EQU   26                       HEX TO EBCDIC SVC (STRING)
00001B                     665 ATOH   EQU   27                       ASCII TO HEX SVC (STRING)
00001C                     666 HTOA   EQU   28                       HEX TO ASCII SVC (STRING)
00001D                     667 ETOA   EQU   29                       EBCDIC TO ASCII SVC (STRING)
00001E                     668 ATOE   EQU   30                       ASCII TO EBCDIC SVC (STRING)
00001F                     669 READI  EQU   31                       READ DATA SETS FOR MDI/UTIL
000020                     670 WRITI  EQU   32                       WRITE DATA SETS FOR UTIL
                           672 ************************************************************
                           673 *                                                          *
                           674 *                EQUATES USED BY TU'S AS CONSTANTS         *
                           675 *                                                          *
                           676 ************************************************************
00004E                     677 PLUS   EQU   C'+'                    PLUS CHAR
000060                     678 MINUS  EQU   C'-'                    MINUS CHAR
000000                     679 ZERO   EQU   0
000001                     680 ONE    EQU   1
000002                     681 TWO    EQU   2
000003                     682 THREE  EQU   3
000004                     683 FOUR   EQU   4
000005                     684 FIVE   EQU   5
000006                     685 SIX    EQU   6
000007                     686 SEVEN  EQU   7
000008                     687 EIGHT  EQU   8
000009                     688 NINE   EQU   9
00000A                     689 TEN    EQU   10
00000B                     690 ELEVN  EQU   11                                    11
00000C                     691 TWELV  EQU   12                                    12
00000D                     692 THRTN  EQU   13                                    13
00000F                     693 FIVTN  EQU   15                                    15
000010                     694 SIXTN  EQU   16                                    16
000020                     695 THRTY2 EQU   32                                    32
000040                     696 SIXT4  EQU   64                                    64
000080                     697 CNE28  EQU   128                                   128
000100                     698 TWO56  EQU   256                                   256
000400                     699 ONEK   EQU   1024                                  1024
000800                     700 TWOK   EQU   2048                                  2048
000C00                     701 THRK   EQU   3072                                  3072
001000                     702 FOURK  EQU   4096                                  4096
FFFFFF                     703 M1     EQU   -1                                    -1
FFFFFE                     704 M2     EQU   -2                                    -2
FFFFFD                     705 M3     EQU   -3                                    -3
FFFFFC                     706 M4     EQU   -4                                    -4
                           708 ************************************************************
                           709 *                                                          *
                           710 *      THE FOLLOWING ARE EQUATES FOR BIT DISPLACEMENTS FROM THE *
                           711 *      BEGINNING OF THE BYTE TO EACH BIT IN THE WORD OF SWITCHES. *
                           712 *                                                          *
                           713 ************************************************************
000000                     714 BS0    EQU   0
000001                     715 BS1    EQU   1
000002                     716 BS2    EQU   2
000003                     717 BS3    EQU   3
000004                     718 BS4    EQU   4
000005                     719 BS5    EQU   5
000006                     720 BS6    EQU   6
000007                     721 BS7    EQU   7
000008                     722 BS8    EQU   8
000009                     723 BS9    EQU   9
00000A                     724 BS10   EQU   10
00000B                     725 BS11   EQU   11
00000C                     726 BS12   EQU   12
00000D                     727 BS13   EQU   13
00000E                     728 BS14   EQU   14
00000F                     729 BS15   EQU   15
                           731       COPY   T4804
                           732 T4804 TUIT $ERR$          3/03/76
                           733************************************************************06FEB76**
                           734+*
                           735+* TEST UNIT
                           736+*
                           737+*      ERROR TEST
                           738+*
                           739+* PURPOSE
                           740+*
                           741+*      THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT WILL REJECT,
                           742+*      AND THE PROPER RESPONSE WILL BE CHECKED.
                           743+*
                           744+* CALLING SEQUENCE
                           745+*
                           746+*      THE FOLLOWING ERRORS ARE FORCED:
                           747+*      .
                           748+*      0.    INVALID COMMAND
                           749+*      1.    INVALID FORMAT (N)
                           750+*      2.    INVALID CYLINDER (FORMAT CP)
                           751+*      3.    ODD BYTE COUNT
                           752+*      4.    INVALID BYTE COUNT (READ SECTOR ID)
                           753+*      5.    ODD DATA ADDRESS
                           754+*      PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
                           755+*      .
                           756+*      .     TURESUL BIT 0--INVALID COMMAND
                           757+*      .     TURESUL BIT 1--INVALID FORMAT (N)
                           758+*      .     TURESUL BIT 2--INVALID CYLINDER (FORMAT OP)
                           759+*      .     TURESUL BIT 3--ODD BYTE COUNT
                           760+*      .     TURESUL BIT 4--INVALID BYTE COUNT (READ SECTOR ID)
                           761+*      .     TURESUL BIT 5--ODD DATA ADDRESS
                           762+*      .     TURESUL BIT 6----------NOT USED
                           763+*      .     TURESUL BIT 7----------NOT USED
                           764+*      .     TURESUL BIT 8----------NOT USED
                           765+*      .     TURESUL BIT 9---------- NOT USED
                           766+*      .     TURESUL BIT 10---------- NOT USED
                           767+*      .     TURESUL BIT 11----------NOT USED
                           768+*      .     TURESUL BIT 12----------NOT USED
                           769+*      .     TURESUL BIT 13----------NOT USED
                           770+*      .     TURESUL BIT 14---------- NOT USED                                    0
                           771+*      .     TURESUL BIT 15---------- NOT USED
                           772+*      .
                           773+*
                           774+* RETURN CONTROL
                           775+*
                           776+*       B     TURTN*                 RETURN TO MDI SUPERVISOR
                           777+*
                           778************************************************************
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

0027D6 6F0D 27C6        781+T4804  MVW   R7,TURTN          SAVE RETURN ADDRESS
0027DA 4020 278E 4804   782+       MVWI  X'4804',$TUID     SAVE TU ID FOR DISPLAY
0027E0 4424 2788        783+       MVA   OPTN1,R4          SET UP POINTER ADRS IN R4
0027E4 6E03 2CFE        784+       BAL   $CONC,R6          CLEAR DEV DEP STG AND CONNECT I/O BL
0027E8 2D3C             785+       DC    A($ERR$)          ERROR ADRS FOR INVALID PREP
                        786+*
0027EA 4024 5000        787        MVWI  X'5000',R0        DELAY TO GET BY BUSY AFTER RESET
0027EE B8FF             788        JCT   *,R0              *
0027F0 CA25 18C8        789        MVWZ  TURESUL,R2        CLEAR RESULTS WORD
0027F4 4024 18C8        790        MVA   TURESUL,R0        ADDRESS OF RESULTS
0027F8 4020 2B20 2002   791        MVWI  X'2002',RDDCB     INVALID COMMAND
                        792        ERTST 1,$RD$            USE SPECIAL XIO ROUTINE
0027FE 4020 2EBC 2BBC   793+       MVA   $RD$,ERTST+4      SET UP ADDRESS FOR I/O COMMAND
002804 6A03 2EB8        794+       BAL   ERTST,R2          USE COMMON ERROR TESTING SUBROUTINE
002808 0001             795+       DC    A(1)              DISP FROM TOP OF DCB IN BYTES
00280A 28B6             796        DC    A(T04A)           ERROR ADDRESS
                        797 *
00280C 4020 2B20 2009   798        MVWI  X'2009',RDDCB     READ CONTROL WORD
002812 4020 2B26 404C   799        MVWI  X'404C',RDDCB+6   SETUP INVALID FORMAT (N=4)
002818 4020 2E2C 0002   800        MVWI  X'0002',RDDCB+12  SETUP VALID BYTE COUNT
                        801        ERTST 4,$RD$            USE SPECIAL XIO ROUTINE
00281E 4020 2EBC 2BBC   802+       MVA   $RD$,ERTST+4      SET UP ADDRESS FOR I/O COMMAND
002824 6A03 2EB8        803+       BAL   ERTST,R2          USE COMMON ERROR TESTING SUBROUTINE
002828 0007             804+       DC    A(7)              DISP FROM TOP OF DCE IN BYTES
00282A 28BA             805        DC    A(T04B)           ERROR ADDRESS
                        806 *
00282C 4020 2AC6 104D   807        MVWI  X'104D',FRDCB+6   SETUP INVALID CYL NUM
                        808        ERTST 4,$FMT            USE SPECIAL XIO ROUTINE
002832 4020 2EBC 2BD4   809+       MVA   $FMT,ERTST+4      SET UP ADDRESS FOR I/O COMMAND
002838 6A03 2EB8        810+       BAL   ERTST,R2          USE COMMON ERROR TESTING SUBROUTINE
00283C 0007             811+       DC    A(7)              DISP FROM TOP OF DCE IN BYTES
00283E 28BE             812        DC    A(T04C)           ERROR ADDRESS
                        813 *
002840 4020 2B20 2009   814        MVWI  X'2009',RDDCB     READ CONTROL WORD
002846 4020 2B2A 0000   815        MVWI  X'0000',RDDCB+10  RESTORE VALID CHAINING ADDRESS
00284C 4020 2B26 0000   816        MVWI  X'0000',RDDCB+6   RESTORE VALID FORMAT (N)
002852 4020 2B2C 0003   817        MVWI  X'0003',RDDCB+12  SETUP INVALID BYTE COUNT
                        818        ERTST 7,$RD$            USE SPECIAL XIO ROUTINE
002858 4020 2EBC 2BBC   819+       MVA   $RD$,ERTST+4      SET UP ADDRESS FOR I/O COMMAND
00285E 6A03 2EB8        820+       BAL   ERTST,R2          USE COMMON ERROR TESTING SUBROUTINE
002862 000D             821+       DC    A(13)             DISP FROM TOP OF DCE IN BYTES
002864 28C2             822        DC    A(T04D)           ERROR ADDRESS
                        823 *
002866 4020 2AD0 200A   824        MVWI  X'200A',RSDCB     READ SECTOR ID CONTROL WORD
00286C 4020 2ADC 0006   825        MVWI  X'0006',RSDCB+12  SETUP INVALID BYTE COUNT
                        826        ERTST 7,$RDID           USE SPECIAL XIO ROUTINE
002872 4020 2EBC 2B9C   827+       MVA   $RDID,ERTST+4     SET UP ADDRESS FOR I/O COMMAND
002878 6A03 2EB8        828+       BAL   ERTST,R2          USE COMMON ERROR TESTING SUBROUTINE
00287C 000D             829+       DC    A(13)             DISP FROM TOP OF DCE IN BYTES
00287E 28C6             830        DC    A(T04E)           ERROR ADDRESS
002880 4020 2ADC 0004   831        MVWI  X'0004',RSDCB+12  RESTORE VALID BYTE COUNT
                        832 *
002886 4020 2B20 2009   833        MVWI  X'2009',RDDCB     READ CONTROL WORD
00288C 4020 2B2C 0000   834        MVWI  X'0000',RDDCB+12  RESTORE VALID BYTE COUNT
002892 4020 2B2E 3FFF   835        MVWI  X'3FFF',RDDCB+14  SETUP INVALID DATA ADDRESS
                        836        ERTST 8,$RD$            USE SPECIAL XIO ROUTINE
002898 4020 2EBC 2BBC   837+       MVA   $RD$,ERTST+4      SET UP ADDRESS FOR I/O COMMAND
00289E 6A03 2EB8        838+       BAL   ERTST,R2          USE COMMON ERROR TESTING SUBROUTINE
0028A2 000F             839+       DC    A(15)             DISP FROM TOP OF DCE IN BYTES
0028A4 28CA             840        DC    A(T04F)           ERROR ADDRESS
0028A6 8828 18C2 2B2E   841        MVW   TUBUFF,RDDCB+14   RESTORE VALID DATA ADDRESS
0028AC 4029 2B2E 0400   842        AWI   X'0400',RDDCB+14  *
                        843 *
                        844 T04J   TXIT
0028B2 6802 2D8C        845+T04J   B     $CONX             RETURN TO MDI CONTROLLER
                        846+*************************************************************
                        847 *
0028B6 4840             848 T04A   TBTS  (R0,0)           INVALID COMMAND
0028B8 50FC             849        J     T04J
0028BA 4841             850 T04B   TBTS  (R0,1)           INVALID FORMAT
0028BC 50FA             851        J     T04J
0028BE 4842             852 T04C   TBTS  (R0,2)           INVALID CYLINDER (FORMAT OP)
0028C0 50F8             853        J     T04J
0028C2 4843             854 T04D   TBTS  (R0,3)           ODD BYTE COUNT
0028C4 50F6             855        J     T04J
0028C6 4844             856 T04E   TBTS  (R0,4)           INVALID BYTE COUNT (READ SECTOR ID)
0028C8 50F4             857        J     T04J
0028CA 4845             858 T04F   TBTS  (R0,5)           ODD DATA ADDRESS
0028CC 50F2             859        J     T04J
                        860 *
                        862        COPY  T3C00
                        863 T3C00 TUIT  ,1
                        864+*************************************************************06FEB76**
                        865+*
                        866+* TEST UNIT
                        867+*
                        868+*      DIRECT PROGRAM CONTROL TEST UNIT                    04MAY76
                        869+*
                        870+* PURPOSE
                        871+*
                        872+*      THREE PARAMETERS ARE NEEDED FOR THE EXECUTION OF THIS TU AND ARE
                        873+*
                        874+*      1. ONE BYTE OF FUNCTION-MODIFIER,IE, X'60' FOR PREPARE
                        875+*      2. TWO BYTES OF DATA TO BE USED IN THE SECOND PART OF THE IDCB,
                        876+*         IE, X'0005' TO SELECT LEVEL 2 FOR AN INTERRUPT.
                        877+*
                        878+* CALLING SEQUENCE
                        879+*
                        880+*      MDI=@TUXX,T3C00,2,0708,EQ,PLNG=6,PRAM=FFXXXX'
                        881+*
                        882+* RETURN CONTROL
                        883+*
                        884+*       B      TURTN*             RETURN TO MDI SUPERVISOR
                        885+*
                        886+*************************************************************
0028CE 6F0D 27C6        887+T3C00  MVW   R7,TURTN          SAVE RETURN ADDRESS
0028D2 4020 278E 3C00   888        MVWI  X'3C00',$TUID     SAVE TU ID FOR DISPLAY
0028D8 4424 2788        889+       MVA   OPTN1,R4          SET UP POINTER ADRS IN R4
                        890+*
0028DC 4724 2CF6        891        MVA   INTBL,R7          SET R7 TO CONTROL BLOCK AND
0028E0 6014             892        SVC   CICB              * CONNECT IT TO THIS DEVICE
0028E2 4020 2790 0708   893        MVWI  X'0708',$IOIN     INIT THE CONDITION CODES
0028E8 6908 189A        894        MVW   TUPARM1,R1        SET UP PARM ADRS
0028EC 8118 293E        895        MVB   (R1)+,T3C00I      * AND SET IN FUNCTION-MODIFIER
0028F0 8028 19D0 293F   896        MVB   DEVADD,T3C00I+1   * FOLLOWED BY THE DEVICE ADRS
0028F6 8118 2940        897        MVB   (R1)+,T3C00I+2    * AND SET IN EVEN BYTE DATA
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

0028FA 8118 2941        898        MVB   (R1)+,T3C00I+3    * AND SET IN ODD BYTE DATA
0028FE D020 293E        899        MVD   T3C00I,R0         GET FUNCTION, MODIFIER AND DEV ADRS
                        900 *
002902 680C 293E        901        IC    T3C00I            ISSUE THE I/O COMMAND AND
002906 70AE             902        DC    X'70AE'           * GET THE I/O CONDITION CODE IN R5
002908 356A             903        SRL   13,R5             POSITION CC IN THE RESULTS FIELD
00290A C528 2790        904        MVB   R5,$IOIN          * AND SAVE IT IN THE RESULTS
00290E 3062             905        SRL   12,R0             * AND POSITION IT IN THE REG TO
002910 100E             906        JZ    T3C00S            * SEND BACK THE RESULTS IF READ DPC
002912 F002             907        CBI   X'02',R0          IS IT A READ STATUS
002914 1808             908        JNE   T3C00N            * NO, CONTINUE TO CHECK
002916 6A08 2940        909        MVW   T3C00I+2,R2       * YES, GET ID RECEIVED AND
00291A 6A0B 27C8        910        XW    $DVID,R2          CHECK AGAINST SHOULD BE VALUE
00291E 1807             911        JNZ   T3C00S            * SEND BACK ACTUAL DATA
002920 6A0D 18CA        912        MVW   R2,TURESUL+2      AND SEND BACK THE RESULTS (ZERO)
002924 5007             913        J     T3C00X
002926 F001             914 T3C00N CBI   X'01',R0         IS IT A READ DPC COMMAND
002928 1002             915        JE    T3C00S            * YES, SEND RESULTS TO MDI
00292A F00F             916        CBI   X'0F',R0          * IF IT IS A READ ID FUNCTION
00292C 1803             917        JNE   T3C00X            * NO, GO TO EXIT
                        918 *
00292E 8828 2940 18CA   919 T3C00S MVW   T3C00I+2,TURESUL+2  SEND BACK DATA RECEIVED AND EXIT
002934 8828 2790 18C8   920 T3C00X MVW   $IOIN,TURESUL      PUT ANY INTR COND CODE FOUND IN
                        921        TXIT                    * RESULTS AND EXIT
00293A 6802 2D8C        922+       B     $CONX             RETURN TO MDI CONTROLLER
                        923+*************************************************************
                        924 *
                        925 *            IDCB FOR DIRECT PROGRAM CONTROL COMMAND
                        926 *
00293E 0000             927 T3C00I DC    X'0000'             FUNCTION-MODIFIER-DEVICE ADDRESS
002940 0000             928        DC    X'0000'             IMMEDIATE DATA BUFFER
                        929        COPY  T4803
                        930 T4803 TUIT  T03R              3/03/76
                        931+*************************************************************06FEB76**
                        932+*
                        933+* TEST UNIT
                        934+*
                        935+*      SEEK AND READ TEST
                        936+*
                        937+* PURPOSE
                        938+*
                        939+*      VERIFY THE FOLLOWING:
                        940+*      1. SEEK AND VERIFY SECTOR ID FOR ALL TRACKS.
                        941+*      2. RECAL., SEEK AND READ SECTOR ID.
                        942+*      PERFORM THE FOLLOWING:
                        943+*      1 PREPARE TO INTERRUPT LEVEL 'X'.
                        944+*      2. SEEK RECALIBRATE AND VERIFY TRACK EQUALS ZERO.
                        945+*      3. SEEK TO CYLINDERS 76,1,75,2,74 ETC.
                        946+*      4. READ SECTOR ID AND VERIFY THAT SEEK WAS PERFORMED CORRECTLY.
                        947+*      PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
                        948+*      .
                        949+*      .       TURESUL BIT 0----------NOT USED
                        950+*      .       TURESUL BIT 1----------NOT USED
                        951+*      .       TURESUL BIT 2----------NOT USED
                        952+*      .       TURESUL BIT 3----------NOT USED
                        953+*      .       TURESUL BIT 4----------NOT USED
                        954+*      .       TURESUL BIT 5---------- VERIFY OP ERROR
                        955+*      .       TURESUL BIT 6----------NOT USED
                        956+*      .       TURESUL BIT 7---------- NOT USED
                        957+*      .       TURESUL BIT 8----------NOT USED
                        958+*      .       TURESUL BIT 9---------- WRONG DISKETTE SIDE SELECTED
                        959+*      .       TURESUL BIT 10---------- RECALIBRATE FAILURE
                        960+*      .       TURESUL BIT 11----------SEEK FAILURE
                        961+*      .       TURESUL BIT 12----------READ ID FAILURE
                        962+*      .       TURESUL BIT 13----------SEEK & READ ID FAILURE (CHAINING)
                        963+*      .       TURESUL BIT 14---------- NOT USED
                        964+*      .       TURESUL BIT 15---------- OIO CC ERROR
                        965+*      .       TURESUL BIT 16-31 ------ CYCLE STEAL STATUS FOR FAILING OP
                        966+*      .       TURESUL BIT 32-47 ------ CC 32-39 OIO CC, 40-47 INT CC
                        967+*      .       TURESUL BIT 48-63 ------ IBS
                        968+*      .       TURESUL BIT 64-79 ------ OPTION WORD 3 (ERROR INDICATORS)
                        969+*
                        970+* CALLING SEQUENCE
                        971+*
                        972+*
                        973+* RETURN CONTROL
                        974+*
                        975+*       B      TURTN*             RETURN TO MDI SUPERVISOR
                        976+*
                        977+*************************************************************
002942 6F0D 27C6        978+T4803  MVW   R7,TURTN          SAVE RETURN ADDRESS
002946 4020 278E 4803   979+       MVWI  X'4803',$TUID     SAVE TU ID FOR DISPLAY
00294C 4424 2788        980+       MVA   OPTN1,R4          SET UP POINTER ADRS IN R4
002950 6E03 2CFE        981+       BAL   $CONC,R6          CLEAR DEV DEP STG AND CONNECT I/O BL
002954 2A30             982+       DC    A(T03R)           ERROR ADRS FOR INVALID PREP
                        983+*
                        984 *
                        985 *
                        986 *************************************************************
                        987 *
                        988        MVWZ  TURESUL,R2        CLEAR RESULTS WORD
002956 CA25 18C8        989        MVWZ  TURESUL+2,R2      CLEAR RESULTS WORD 2
00295A CA25 18CA        990        MVWZ  TURESUL+4,R2      CLEAR RESULTS WORD 3
00295E CA25 18CC        991        MVWZ  TURESUL+6,R2      CLEAR RESULTS WORD 4
002962 CA25 18CE        992        MVWZ  TURESUL+8,R2      CLEAR RESULTS WORD 5
002966 CA25 18D0        993        MVA   TURESUL,R1        ADDRESS OF RESULTS
00296A 4124 18C8        994        MVWI  X'5000',R0        DELAY TO GET BY BUSY AFTER RESET
00296E 4024 5000        995        JCT   *,R0              *
002972 B8FF             996 RT210  BAL   $RECL,R6          RECALIBRATE
002974 6E03 2B94        997        DC    A(T03ER)          ERROR
002978 2A48             998        TBTR  (R4,ER)           CC ERROR?
00297A 4CA1             999        JON   T03A              YES
00297C 124F            1000        MVWI  X'000C',VRDCB     VERIFY CONTROL WORD
00297E 4020 2B10 000C  1001        MVWI  X'0D00',VRDCB+12  BYTE COUNT FULL
002984 4020 2B1C 0D00  1002        MVWI  0,VRDCB+6         N=C
00298A 4020 2B16 0000  1003        MVWI  X'0001',VRDCB+8   H=R
002990 4020 2B18 0001  1004        BAL   $RDVY,R6          VERIFY TRK 0,H=0,N=0
002996 6E03 2BC4       1005        DC    A(T03ER)          ERROR
00299A 2A48            1006        TBTR  (R4,ER)           CC ERROR?
00299C 4CA1            1007        BON   T03K              VERIFY ERROR
00299E 6A00 2A2C       1008        MVWI  X'0005',SKDCB     SEEK CONTROL WORD
0029A2 4020 2AE0 0005  1009        MVWI  X'0000',SKDCB+2   ZERO DIFF
0029A8 4020 2AE2 0000  1010        MVWI  X'0100',SKDCB+8   SELECT HD=1
0029AE 4020 2AE8 0100  1011        BAL   $SEEK,R6          SEEK
0029B4 6E03 2B8C       1012        DC    A(T03ER)          ERROR
0029BA 2A48            1013        TBTR  (R4,ER)           CC ERROR?
0029BC 4CA1
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LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
0029BC  1229            1014         JON   T03Z                  YES
0029BE  4020 2B18 0101  1015         MVWI  X'0101',VRDCB+8       H-R
0029C4  4020 2B16 1000  1016         MVWI  X'1000',VRDCB+6       N-C
0029CA  4020 2B1C 0F00  1017         MVWI  X'0F00',VRDCB+12      BYTE COUNT-FULL TRK  N=1
0029D0  6E03 2BC4       1018         BAL   $RDVFY,R6             VERIFY TRK COMMAND, H=1, N=1
0029D4  2A48            1019         DC    A(T03ER)              ERROR
0029D6  4CA1            1020         TBTR  (R4,ER)               CC ERROR
0029D8  6A00 2A2C       1021         BON   T03K                  VERIFY ERROR
0029DC  4020 2B38 004C  1022         MVWI  76,DIFF               LOAD 76 IN DIFFERENCE WORD
0029E2  4020 2AEA 2AD0  1023         MVA   RSDCB,SKDCB+10        MOVE RD SCTR ID DCB ADRS TO CHAIN ADR
0029E8  4020 2AE8 0000  1024         MVWI  0,SKDCB+8             H=0 FOR ALL REMAINING SEEKS
0029EE  4020 2B3C 0000  1025         MVWI  0,XXX                 ZERO LOC XXX
0029F4  4C9F            1026         TBTR  (R4,B63)              CLEAR SEEK DIRECTION INDICATOR
0029F6  4CDF            1027 LOOP1   TBTV  (R4,B63)              TEST AND INVERT DIRECTION BIT
0029F8  1229            1028         JON   SKRV                  BCH NEG - BCH IF REV BIT ON
0029FA  8028 2B40 2AE2  1029         MVB   ZERO0,SKDCB+2          H=0,D=0=FORWARD; PLUS DIFFERENCE
002A00  C220 2B3D       1030         MVB   XXX+1,R2              MOVE CONTENTS OF 'XXX' IN R2
002A04  C226 2B39       1031         AB    DIFF+1,R2             SEEK DIFFERENCE PLUS 'XXX'
002A08  A828 2B42 2B3C  1032         AW    ONE1,XXX               ONE PLUS 'XXX'
002A0E  5023            1033         J     GO1
                        1034 *
002A10  402B 27B0 0040  1035 T03Z    TWI   X'0040',CSTL2          WAS WRONG SIDE SELECTED?
002A16  1008            1036          JOFF  T03D                  IF NO, JUMP
002A18  4949            1037          TBTS  (R1,9)                YES
002A1A  5034            1038          J     FINS
002A1C  494A            1039 T03A     TBTS  (R1,10)              RECALIBRATE FAILURE
002A1E  5032            1040          J     FINS
002A20  494B            1041 T03B     TBTS  (R1,11)              SEEK FAILURE
002A22  5030            1042          J     FINS
002A24  494C            1043 T03C     TBTS  (R1,12)              READ ID FAILURE
002A26  502E            1044          J     FINS
002A28  494D            1045 T03D     TBTS  (R1,13)              SEEK & READ ID FAILURE -CHAINING
002A2A  502C            1046          J     FINS
002A2C  4945            1047 T03K     TBTS  (R1,5)              READ VERIFY FAILURE
002A2E  502A            1048          J     FINS
002A30  CA25 18C8       1049 T03R     MVWZ  TURESUL,R2           CLEAR RESULTS WORD
002A34  CA25 18CA       1050          MVWZ  TURESUL+2,R2         CLEAR RESULTS WORD 2
002A38  CA25 18CC       1051          MVWZ  TURESUL+4,R2         CLEAR RESULTS WORD 3
002A3C  CA25 18CE       1052          MVWZ  TURESUL+6,R2         CLEAR RESULTS WORD 4
002A40  CA25 18D0       1053          MVWZ  TURESUL+8,R2         CLEAR RESULTS WORD 5
002A44  4124 18C8       1054          MVA   TURESUL,R1           ADDRESS OF RESULTS
002A48  494F            1055 T03ER    TBTS  (R1,15)              OIO CC ERROR
002A4A  501C            1056          J     FINS
                        1057 *
002A4C  8028 2B44 2AE2  1058 SKRV    MVB   REVR,SKDCB+2
002A52  C220 2B3D       1059          MVB   XXX+1,R2
002A56  4020 2AE0 8005  1060 GO1     MVWI  X'8005',SKDCB        SEEK CONTROL WD - CHANING
002A5C  8028 2B39 2AE3  1061          MVB   DIFF+1,SKDCB+3       SETUP SEEK DIFFERENCE
002A62  6E03 2B8C       1062 RT201   BAL   $SEEK,R6             SEEK
002A66  2A48            1063          DC    A(T03ER)            ERROF
002A68  4CA1            1064          TBTR  (R4,ER)             CC ERROR?
002A6A  12DA            1065          JON   T03B                YES
002A6C  C224 2797       1066          CB    SCTID+1,R2          COMPARE CYLINDER NUMBER TO CAL NUM
002A70  18DB            1067          JNE   T03D                SECTOR ID DOES NOT MATCH,SEEK ERROR
002A72  A829 2B42 2B38  1068          SW    ONE1,DIFF           SEEK DIFFERENCE - ONE
002A78  402F 2B38 0000  1069          CWI   0,DIFF              CHECK FOR END OF TEST
002A7E  6800 2A84       1070          BE    FINS                CKECK LOOP ROUTINE
002A82  50B9            1071          J     LOOP1
002A84  8828 27B0 18CA  1072 FINS    MVW   CSTL2,TURESUL+2      CYCLE STEAL STATUS FOR FAILING OP
002A8A  8828 2790 18CC  1073          MVW   $IOIN,TURESUL+4      CONDITION CODES
002A90  8828 2792 18CE  1074          MVW   $ISB,TURESUL+6       ISB
002A96  8828 278C 18D0  1075          MVW   OPTN3,TURESUL+8      OPTION WORD 3 (ERROR INDICATORS)
002A9C  6802 2D8C       1076          TXIT
                        1077+         B     $CONX                RETURN TO MDI CONTROLLER
                        1078*****************************************************************
                        1079 *
                        1080          COPY  T48DCB
                        1081 *
                        1082 ****************************2/17/76**********************************
                        1083 *                                                                 *
                        1084 *     DCB TABLES                                                  *
                        1085 *                                                                 *
                        1086 *****************************************************************
                        1087 *
                        1088 ***** DIAGNOSTIC DCB   ********
                        1089 *
002AA0  2000            1090 DGDCB   DC    X'2000'              DIAGNOSTIC DCB
002AA2  0000            1091         DC    X'0000'              NOT USED
002AA4  0000            1092         DC    X'0000'              NOT USED
002AA6  0000            1093         DC    X'0000'              NOT USED
002AA8  0000            1094         DC    X'0000'              NOT USED
002AAA  0000            1095         DC    X'0000'              CHAIN ADDRESS
002AAC  000E            1096         DC    X'000E'              BYTE COUNT FOR READ DIAG
002AAE  2B62            1097         DC    A(DIAGW)             DATA ADDRESS
                        1098 *
                        1099 *
                        1100 ***** RECALIBRATE DCB  ********
                        1101 *
002AB0  0007            1102 CLDCB   DC    X'0007'              RECALIBRATE DCB
002AB2  00000000000000000 1103       DC    7A(*-*)
                        1104 *
                        1105 ***** FORMAT DCB  *******
                        1106 *
002AC0  0002            1107 FRDCB   DC    X'0002'              FORMAT CONTROL WORD
002AC2  0000            1108         DC    X'0000'              NOT USED
002AC4  0000            1109         DC    A(*-*)               FORMAT DATA WORD
002AC6  0000            1110         DC    A(*-*)               N - C BYTES
002AC8  0001            1111         DC    X'0001'              H - R BYTES
002ACA  0000            1112         DC    A(*-*)               CHAIN ADDRESS
002ACC  0000            1113         DC    F'0'                 NOT USED
002ACE  0000            1114         DC    F'0'                 NOT USED
                        1115 *
                        1116 ***** READ SECTOR ID DCB  *******
                        1117 *
002AD0  200A            1118 RSDCB   DC    X'200A'              READ SECTOR ID
002AD2  0000            1119         DC    X'0000'              NOT USED
002AD4  0000            1120         DC    X'0000'              NOT USED
002AD6  0000            1121         DC    X'0000'              NOT USED
002AD8  0000            1122         DC    X'0000'              NOT USED
002ADA  0000            1123         DC    X'0000'              CHAIN ADDRESS
002ADC  0004            1124         DC    X'0004'              BYTE COUNT FOR READ SECTOR ID
002ADE  2796            1125         DC    A(SCTID)             SECTOR ID DATA ADDRESS
                        1126 *
                        1127 ***** SEEK DCB  ********
                        1128 *
002AE0  0005            1129 SKDCB   DC    X'0005'              SEEK DCB
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LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002AE2  0000            1130         DC    X'0000'              BIT 3=HEAD;BIT 4=DIRECTION;8-15=DIFF
002AE4  0000            1131         DC    F'0'
002AE6  0000            1132         DC    F'0'
002AE8  0000            1133         DC    F'0'                 0-7 HEAD SELECT (NEW ARCH)
002AEA  0000            1134         DC    F'0'
002AEC  0000            1135         DC    F'0'
002AEE  0000            1136         DC    F'0'
                        1137 *
                        1138 *
                        1139 ***** CYCLE STEAL STATUS DCB  ********
                        1140 *
002AF0  2000            1141 CSDCB   DC    X'2000'              CONTROL WORD
002AF2  0000            1142         DC    F'0'                 NOT USED
002AF4  0000            1143         DC    F'0'                 NOT USED
002AF6  0000            1144         DC    F'0'                 NOT USED
002AF8  0000            1145         DC    F'0'                 NOT USED
002AFA  0000            1146         DC    F'0'                 NOT USED
002AFC  0004            1147         DC    X'0004'              2 WORDS OF STATS
002AFE  27AE            1148         DC    A(CSBUF)             ADDRESS OF CYCLE STEAL STATUS DATA
                        1149 *
                        1150 ***** WRITE DCB  **********
                        1151 *
002B00  0001            1152 WRDCB   DC    X'0001'              8-15=1- ATA AM;8-15=2-CONTROL AM
002B02  0000            1153         DC    F'0'                 NOT USED
002B04  0000            1154         DC    F'0'
002B06  0000            1155         DC    X'0000'              SERCH ARGUMENT N-C
002B08  0000            1156         DC    X'0000'              SEARCH ARGUMENT H-R
002B0A  0000            1157         DC    A(*-*)               CHAIN ADDRESS
002B0C  0000            1158         DC    F'0'                 BYTE COU T
002B0E  0000            1159         DC    A(*-*)               WRITE DATA ADDRESS
                        1160 *
                        1161 ***** VERIFY DCB   *******
                        1162 *
002B10  000C            1163 VRDCB   DC    X'000C'              CONTROL WORD
002B12  0000            1164         DC    F'0'                 NOT USED
002B14  0000            1165         DC    F'0'                 NOT USED
002B16  0000            1166         DC    A(*-*)               N-C
002B18  0000            1167         DC    A(*-*)               H-R
002B1A  0000            1168         DC    A(*-*)               CHAIN ADDRESS
002B1C  0000            1169         DC    F'0'                 BYTE COUNT
002B1E  0000            1170         DC    A(*-*)              VERIFY DATA ADDRESS
                        1171 *
                        1172 ***** READ DCB   *******
                        1173 *
002B20  2009            1174 RDDCB   DC    X'2009'              READ DCB CONTROL WORD
002B22  0000            1175         DC    F'0'                 NOT USED
002B24  0000            1176         DC    F'0'                 NOT USED
002B26  0000            1177         DC    X'0000'              SEARCH ARGUMENT N-C
002B28  0101            1178         DC    X'0101'              SEARCH ARGUMENT H-R
002B2A  0000            1179         DC    A(*-*)               CHAIN ADDRESS
002B2C  0D00            1180         DC    F'3328'              BYTE COUNT
002B2E  0000            1181         DC    A(*-*)               READ DATA ADDRESS
                        1182 *
                        1183 *
                        1184 *
                        1185 *
002B30  1000            1186 COUNT   DC    F'4096'              BYTE COUNT (4096)
002B32  0C80            1187 CTN32   DC    F'3200'              BYTE COUNT (3200)
002B34  0000            1188 SAVE    DC    X'0000'              SCTID INFO
002B36  0000            1189         DC    X'0000'              *
002B38  0000            1190 DIFF    DC    X'0000'              SEEK DIFFERENCE
002B3A  00C8            1191 FDATA   DC    X'00C8'              FORMAT DATA BYTE FOR COMPARE
002B3C  0000            1192 XXX     DC    X'0000'              WORK WORD INT TO ZERO
002B3E  0046            1193 ENDEX   DC    X'0046'              TERMINATING SEEK DIFFERENCE
002B40  0000            1194 ZERO0   DC    X'0000'              CONSTANT ZERO
002B42  0001            1195 ONE1    DC    X'0001'              CONSTANT ONE
002B44  0800            1196 REVR    DC    X'0800'              SEEK REVERSE
002B46  0000            1197 HHRR    DC    X'0000'              H-R
002B48  0000            1198 BCNT    DC    X'0000'              BYTE COUNT
002B4A  0000            1199 JOE     DC    X'0000'              WRITE PARAMETER POINTER
002B4C  0000            1200 JOE1    DC    X'0000'              SAVE LOC FOR PARM LIST ADDRESS
002B4E  7AE5            1201 WDATA   DC    X'7AE5'              WRITE DATA
002B50  69BD            1202         DC    X'69BD'              *
002B52  0000            1203 CYLND   DC    X'0000'              TEMP SAVE AREA FOR CYLINDER #
002B54  0000            1204         DC    X'0000'              *
002B56  0000            1205 FORMT   DC    X'000D'              FRCMAT BIT FROM OPERATOR
002B58  004C            1206 CYLIN   DC    X'004C'              CYLINDER NUM SELECTED FROM OPERATOR
002B5A  0000            1207 HEAD    DC    F'0000'              HEAD NUM SELECTED FROM OPERATOR
002B5C  0001            1208 SECT    DC    F'0001'              SECTOR # SELECT BY OPERATOR
002B5E  0D00            1209 BYCNO   DC    F'3328'              BYTE COUNT SELECTED BY OPER
002B60  0000            1210 TABLE   DC    A(*-*)               ADDR OF WRT PAR LIST FOR FORMAT RTNS
002B62  00000000000000000 1211 DIAGW   DC    7A(*-*)              DIAGNOSTIC BUFFER
002B70  0000            1212 CONST   DC    X'0000'              SECTOR # PLUS ONE FOR N='X'
002B72  0000            1213 SBYT    DC    X'0000'              FULL BYTE COUNT FOR N='X'
002B74  00FF            1214 CDAT    DC    X'00FF'              CONSTANT '00' & 'FF'
002B76  0001            1215 CTR01   DC    X'0001'              COUNTER 1
002B78  0000            1216 CTR02   DC    X'0000'              COUNTER 2
002B7A  0000            1217 CTR03   DC    X'0000'              COUNTER 3
002B7C  0000            1218 CTR04   DC    X'0000'              COUNTER 4
002B7E  0000            1219 CTR05   DC    X'0000'              COUNTER 5
002B80  0000            1220 SAVR3   DC    X'0000'              SAVE AREA
002B82  0000            1221 SAVR5   DC    X'0000'              SAVE AREA
002B84  0000            1222 SIDE    DC    X'0000'              SIDE BEING TESTED
002B86  0000            1223 TRK     DC    X'0000'              CURRENT CYLINDER NUMBER
002B88  0000            1224 WTDAT   DC    X'0000'              WORK AREA
002B8A  4C00            1225 SVSIX   DC    X'4C00'              CYLINDER NUMBER 76
                        1227         COPY  T48IO
                        1228 *                    4/15/76
                        1229 *     EXECUTE INPUT & OUTPUT COMMANDS
                        1230 *     TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
                        1231 *     EACH OF THESE ENTRIES SET R7 WITH THE ADRS OF ITS PARAMETER
                        1232 *     LIST AND ANY SPECIAL SWITCHES BEFORE BRANCHING TO THE
                        1233 *     SUPVR CALL.
                        1234 *     .
                        1235 *     THIS SUBROUTINE WILL CHECK FOR THE FOLLOWING:
                        1236 *     .
                        1237 *     1. LOST INTERRUPTS BY TIMING OUT A COUNTING LOOP
                        1238 *     2. ERROR INTERRUPTS RECEIVED FROM SUPVR
                        1239 *     3. LOOP ON ERROR. THE CALL MUST HAVE A 'DC' STATEMENT AFTER
                        1240 *        THE CALL WITH THE ADDRESS OF THE RETRY STATEMENT
                        1241 *     4. CYCLE STEAL IN PROGRESS WITH AN ERROR
                        1242 *     5. SOMETHING ELSE
                        1243 *
                        1244 *     THIS ROUTINE HAS THE FOLLOWING ENTRIES:
                        1245 *     .
                        1246 * 1   BAL   $SEEK,R6               SEEK
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
                         1247 *
                         1248 *  2    BAL    $RECL,R6              RECALIBRATE
                         1249 *
                         1250 *  3    BAL    $RDID,R6              READ SECTOR ID
                         1251 *
                         1252 *  4    BAL    $RD,R6                READ
                         1253 *
                         1254 *  5    BAL    $RDVY,R6              READ VERIFY
                         1255 *
                         1256 *  6    BAL    $WRT,R6               WRITE
                         1257 *
                         1258 *  7    BAL    $FMT,R6               FORMAT
                         1259 *
                         1260 *  8    BAL    XIOCS,R6              CYCLE STEAL STATUSB
                         1261 *
                         1262 *  9    BAL    $DIAG,R6              READ DIAGNOSTICS
                         1263 *
                         1264 *
002B8C  4020 2CEE 2AE0   1265 $SEEK MVA    SKDCB,IODCB           SET UP CONTROL BLOCK FOR SVC CALL
002B92  502C             1266        J      XIO
                         1267 *
002B94  4020 2CEE 2AB0   1268 $RECL MVA    CLDCB,IODCB           SET UP BLOCK FOR SVC CALL
002B9A  5028             1269        J      XIO
                         1270 *
002B9C  4020 2CEE 2AD0   1271 $RDID MVA    RSDCB,IODCB           SET UP BLOCK FOR SVC CALL
002BA2  4020 2796 9999   1272        MVWI   X'9999',SCTID         INVALIDATE SECTOR ID BUFFER AREA
002BA8  4020 2798 9999   1273        MVWI   X'9999',SCTID+2       *
002BAE  501E             1274        J      XIO
                         1275 *
002BB0  0BFF             1276 $RD    MVBI   255,R3                INIT READ BUFFER TO FF'S
002BB2  6D08 2B2E        1277        MVW    RDDCE+14,R5           *
002BB6  4724 0400        1278        MVWI   X'0400',R7            *
002BBA  2BAC             1279        FFN    R3,(R5)               *
002BBC  4020 2CEE 2B20   1280 $RD$  MVA    RDDCE,IODCB           SET UP BLOCK FOR SVC CALL
002BC2  5014             1281        J      XIO
                         1282 *
002BC4  4020 2CEE 2B10   1283 $RDVY MVA    VRDCB,IODCB           SET UP CONTROL BLOCK FOR SVC CALL
002BCA  5010             1284        J      XIO
                         1285 *
002BCC  4020 2CEE 2B00   1286 $WRT  MVA    WRDCB,IODCB           SET UP CONTROL BLOCK FOR SVC CALL
002BD2  500C             1287        J      XIO
                         1288 *
002BD4  4020 2CEE 2AC0   1289 $FMT  MVA    FRDCB,IODCB           SET UP CONTROL BLOCK FOR SVC CALL
002BDA  5008             1290        J      XIO
002BDC  4020 2CEE 2AA0   1291 $DIAG MVA    DGDCB,IODCB           SET UP CONTROL BLOCK FOR SVC CALL
002BE2  4020 2CF0 000D   1292        MVWI   X'000D',IOMOD         MODIFIER FOR DIAG OP
002BE8  5006             1293        J      XIO1
002BEA  5601             1294 CEOP2  BXS    (R6,2)                DUMMY RETURN TO USER
                         1295 *
                         1296        XEQIT 1
                         1297*************************************************************29JUL76**
                         1298**
                         1299** SUB-ROUTINE
                         1300**
                         1301**      EXECUTE INPUT AND OUTPUT COMMANDS
                         1302**
                         1303** PURPOSE
                         1304**
                         1305**      TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
                         1306**      THIS SUBROUTINE WILL DO THE FOLLOWING FUNCTIONS:
                         1307**
                         1308**        1. SAVE THE ADDRESS THAT POINTS TO THE INSTRUCTION THAT STARTED
                         1309**           THE I/O COMMAND.
                         1310**        2. SAVES THE DCB BLOCK USED UNLESS IT IS A START CYCLE STATUS
                         1311**           ISSUED BY THIS SUBROUTINE.
                         1312**        3. CLEAR OUT THE CYCLE STEAL STATUS STORAGE UNLESS THE
                         1313**           START CYCLE STATUS WAS ISSUED BY THIS SUBROUTINE.
                         1314**        4. RESETS THE INTERRUPT INDICATOR AND CHECKS FOR ANY INTERRUPT
                         1315**           SINCE THE LAST EXPECTED INTERRUPT. IF AN INTERRUPT IS FOUND,
                         1316**           MYSTERY INTERRUPT (MI) CONTROL BIT IS SET.
                         1317**        5. MOVES THE ADDRESS OF THE I/O CONTROL BLOCK IN R7, SET THE
                         1318**           EXPECTED INTERRUPT CONTROL BIT AND ISSUE THE 'SVC  START'.
                         1319**        6. WHEN THE SUPVR RETURNS AFTER ISSUING THE I/O COMMAND, TIMING
                         1320**           STARTS TO DETERMINE A LOST INTERRUPT.
                         1321**        7. EXCEPT THE INTERRUPT AND GATHER INFORMATION TO DETERMINE IF IT
                         1322**           WAS AN ERROR OR OKAY AND EXIT OFF THE INTERRUPT LEVEL.
                         1323**        8. CHECK IF THERE WAS A WRONG INTERRUPT LEVEL.
                         1324**        9. CHECK IF AN ERROR WAS EXPECTED AND IF THERE WAS RETURN.
                         1325**       10. CHECK IF THERE WAS AN ERROR CONDITION, IF NOT RETURN.
                         1326**       11. CHECK TO SEE IF THE EXERCISER IS TO BE TERMINATED.
                         1327**       12. CHECK IF A CYCLE STEAL OPERATION WAS IN PROGRESS THAT WAS
                         1328**           ISSUED BY THIS SUBROUTINE.
                         1329**       13. CHECK THE ISB BITS THAT ARE ON. IF BIT 0 IS ON, ISSUE A
                         1330**           CYCLE STEAL STATUS COMMAND. CHECK FOR ANY OTHER BIT BEING ON,
                         1331**           COUNT IT AND SET UP THE PROPER ERROR MESSAGE TO BE PRINTED.
                         1332**
                         1333** CALLING SEQUENCE
                         1334**
                         1335**      THIS ROUTINE HAS THE FOLLOWING ENTRIES:
                         1336**
                         1337** --> BAL    XIO          OR       XEQ ANY CYCLE STEAL COMMAND, MOD=0
                         1338** --> BAL    XIO1                  MOD PARM PRELOADED IN 'IOMOD'
                         1339** --> BAL    XIOCS,R6     OR       XEQ START CYCLE STEAL STATUS, MOD=F
                         1340** --> BAL    XIOCS-4,R6            AUTO CS STATUS (FOLLOWING OTHER XIO
                         1341**                                  AND DOES NOT POST INTERRUPT STATUS)
                         1342**
                         1343** RETURN CONTROL
                         1344**
                         1345**      BXS    (R6,2)                RETURN TO USER NO ERROR
                         1346** OR   B      (R6)*                 RETURN AND RETRY ON ERROR
                         1347*************************************************************************
002BEC  CB25 2CF0        1349+XIO    MVWZ   IOMOD,R3              SET MOF = 0 FOR CYCLE STEAL OP
002BF0  500A             1350+       J      XIO1                  CS I/O'S ARE NOT RETRIED
                         1351**
002BF2  4CAA             1352+       TBTR   (R4,CE)               RESET CS STATUS INTER ERROR INDICAT.
002BF4  4C68             1353+       TBTS   (R4,CS)               SET 'CYCLE STEAL STATUS' IN PROGRESS
002BF6  4020 2CEE 2AF0   1354+XIOCS  MVA    CSDCB,IODCB           SET UP CONTROL BLOCK FOR SVC CALL
002BFC  4020 2CF0 000F   1355+       MVWI   X'000F',IOMOD         SET CYCLE STEAL MODIFIER
002C02  4C28             1356+       TBT    (R4,CS)               IS CS IN PROGRESS, ERROR CONDITION
002C04  1213             1357+       JON    XIO2                  * YES, BYPASS SAVING I/O ADRS
002C06  6E0D 2794        1358+XIO1   MVW    R6,LSTIO              SAVE IAR FOR RETRY IF REQUESTED
002C0A  4324 279E        1359+       MVA    DCBUF,R3              SET UP TO ADRS TO MOVE DCB TABLE
002C0E  6D08 2CEE        1360+       MVW    IODCE,R5              * AND THE FROM ADRS, ALONG WITH
002C12  0F10             1361+       MVBI   16,R7                 * THE NUMBER OF MOVES
002C14  2D64             1362+       MVFN   (R5),(R3)             MOVE 1 STATUS WORD AND ADJUST
002C16  0BFF             1363+       MVBI   255,R3                CLEAR CYCLE STATUS BUFFER
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
002C18  4524 27AE        1364+       MVA    CSBUF,R5              *  TO ALL ONES  *
002C1C  0F10             1365+       MVBI   16,R7                 *
002C1E  2BAC             1366+       FFN    R3,(R5)               *
002C20  4020 2790 0708   1367+       MVWI   X'0708',$IOIN         OVERLAY OLD CONDITION CODES
002C26  CB25 2792        1368+       MVWZ   $ISB,R3               ZERO OUT OLD ISB VALUE
                         1369+*
002C2A  4CA1             1370+       TBTR   (R4,ER)               RESET ANY ERROR BEFORE I/O COMMAND
002C2C  4CA3             1371+XIO2   TBTR   (R4,IN)               CLEAR INTERRUPT RECEIVED CNTL BIT
002C2E  4724 2CEA        1372+       MVA    IOBLK,R7              SET UP CONTROL BLOCK FOR SUPVR
002C32  4CA6             1373+       TBTR   (R4,SLE)              RESET LEVEL ERROR INDICATOR
002C34  4C62             1374+       TBTS   (R4,XI)               SET EXPECTED INTR CONTROL BIT
002C36  600A             1375+       SVC    START                 CALL SUPVR FOR I/O COMMAND
                         1376+*
002C38  4CA7             1377+       TBTR   (R4,MI)               IS AN INTR EXPECTED
002C3A  6AC0 0002        1378+       BN     (R6,2)                * NO, RETURN TO USER
                         1379+*
                         1380+*           THE INTR SHOULD OCCUR WHILE SPINNING IN THE NEXT SECTION
                         1381+*
002C3E  0D00             1382+       MVBI   X'00',R5              SET UP WORK REG FOR 'LOST INTR'
002C40  4CA3             1383+XIO8   TBTR   (R4,IN)               HAS INTERRUPT BEEN RECEIVED
002C42  1238             1384+       JON    XIOCK                 * YES, CHECK IF ALL WAS SATISFACTORY
002C44  6002             1385+       SVC    IDLE                  ALLOW ANOTHER PROGRAM A CHANCE TO RUN
                         1386+*                                   SUPVR WILL RETURN HERE
002C46  7DA1 0001        1387+       AWI    1,R5                  ADVANCE TIME OUT COUNT
002C4A  18FA             1388+       JNZ    XIO8                  BCH IF TIME OUT NOT REACHED
002C4C  4C61             1389+       TBTS   (R4,ER)               SET ON ERROR CONTROL BIT
002C4E  68D2 0000        1390+       B      (R6)*                 ERR 'NO INTERRUPT'
                         1392+*************************************************************03FEB76**
                         1393+*
                         1394** SUBROUTINE
                         1395**
                         1396**      I/O EXECUTE ERROR HANDLING ROUTINE
                         1397**
                         1398** PURPOSE
                         1399**
                         1400**      THIS ROUTINE WILL COLLECT INFORMATION TO HELP DETERMINE THE
                         1401**      PROBLEM THAT WAS FOUND WHEN THE I/O COMMAND WAS ISSUED BY THE
                         1402**      SUPERVISOR AND IT WAS NOT ACCEPTED.
                         1403**
                         1404** CALLING SEQUENCE
                         1405**
                         1406**      SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O COMMAND
                         1407**
                         1408** RETURN CONTROL
                         1409**
                         1410**      B      (R6)*                 RETURN TO USERS ERROR HANDLER
                         1411**
                         1412*************************************************************************
                         1413**
                         1414** CC         0= DEVICE NOT ATTACHED
                         1415** FOR        1= DEVICE BUSY
                         1416** I/O        2= DEVICE BUSY AFTER RESET
                         1417**           3= COMMAND REJECT
                         1418**           4= INTERVENTION REQUIRED
                         1419**           5= INTERFACE DATA CHECK
                         1420**           6= CONTROLLER BUSY
                         1421**           7= I/O COMMAND EXCEPTED
                         1422**
002C52  706E             1423+XIOER  DC     X'706E'               COPY STATUS ANY LEVEL INTO R3
002C54  336A             1424+       SRL    13,R3                 POSITION CC CODE TO BITS 13-15
002C56  C328 2790        1425+       MVB    R3,$IOIN              * PUT IN LOG OUT AREA
002C5A  68D2 0000        1426+       B      (R6)*                 RETURN TO USER ERROR HANDLER
                         1428*************************************************************14APR76**
                         1429**                                                                        IL
                         1430** SUB-ROUTINE                                                           IL
                         1431**                                                                        IL
                         1432**      ERROR INTERRUPT              RUNS ON INTERRUPT LEVEL '$INTL'     IL
                         1433**                                                                        IL
                         1434** PURPOSE                                                              IL
                         1435**                                                                        IL
                         1436**      THIS ROUTINE WILL BE ENTERED WHEN THE SUPVR DETECTS AN ERROR     IL
                         1437**      OR THE INTERRUPTING CONDITION CODE DOES NOT AGREE WITH THE        IL
                         1438**      EXPECTED CODE.                                                    IL
                         1439**                                                                        IL
                         1440** CALLING SEQUENCE                                                     IL
                         1441**                                                                        IL
                         1442**      SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O INTERRUPT         IL
                         1443**                                                                        IL
                         1444** RETURN CONTROL                                                       IL
                         1445**                                                                        IL
                         1446**      SVC    EXIT                  RETURN TO USER VIA SUPVR            IL
                         1447**                                                                        IL
                         1448*************************************************************************IL
                         1449**                                                                        IL
                         1450** CC         0= CONTROLLER END                 ISB   0= ADD STATUS     IL
                         1451** FOR        1= PROGRAM CONTROL INTERRUPT      BITS  1= COMD REJECT    IL
                         1452** INTR       2= EXCEPTION INTERRUPT            FOR   2= INCOR LENGTH   IL
                         1453**           3= DEVICE END INTERRUPT           INTR  3= DCB SPEC CK    IL
                         1454**           4= ATTENTION INTERRUPT                  4= STG DATA CK    IL
                         1455**           5= ATTENTION / PROGRAM CNTL INTR        5= INV STG ADRS   IL
                         1456**           6= ATTENTION / EXCEPTION INTR           6= PROTECT CK     IL
                         1457**           7= ATTENTION / DEVICE END INTR          7= I-FACE DATA    IL
                         1458**                                                                        IL
002C5E  706E             1459+INTER  DC     X'706E'               COPY STATUS ANY LEVEL INTO R3     IL
002C60  336A             1460+       SRL    13,R3                 POSITION INDICATORS IN R3         IL
002C62  4424 2788        1461+       MVA    OPTN1,R4              SET UP BASE ADRS                  IL
002C66  4C28             1462+       TBT    (R4,CS)               IS CS IN PROGRESS                 IL
002C68  1006             1463+       JOFF   INTES                 * NO                              IL
002C6A  4C6A             1464+       TBTS   (R4,CE)               TURN ON CYCLE STEAL INTER ERROR   IL
002C6C  6F0D 27BC        1465+       MVW    R7,CSTL8              SAVE CS ERR ISB VALUE, BITS 0-7   IL
002C70  C328 27BD        1466+       MVB    R3,CSTL8+1            * AND THE COND CODE               IL
002C74  500A             1467+       J      INTR1                                                   IL
002C76  4C24             1468+INTES  TBT    (R4,XE)               TEST  EXPECTED ATTEN / ERROR IND  IL
002C78  1002             1469+       JOFF   INTET                 BCH IF NOT EXPECTED               IL
002C7A  F304             1470+       CBI    4,R3                  IS THIS AN 'ATTENTION' INTR       IL
002C7C  1006             1471+       JE     INTR1                 * YES, BCH TO END INTR SEQUENCE   IL
002C7E  4C61             1472+INTET  TBTS   (R4,ER)               SET ERROR ON I/O COMMAND CNTL BIT IL
002C80  5004             1473+       J      INTR1                                                   IL
                         1474+*                                   THE ERROR INTERRUPT USES THE SAME IL
                         1475**                                   ENDING SEQUENCE AS THE NORMAL INTR IL
                         1477*************************************************************14APR76IL
                         1478**                                                                        IL
                         1479** SOUBROUTINE                                                          IL
                         1480**                                                                        IL
                         1481**      OKAY   INTERRUPT             RUNS ON INTERRUPT LEVEL '$INTL'     IL
                         1482**                                                                        IL
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976

                          1483+* PURPOSE                                                                  IL
                          1484+*                                                                          IL
                          1485+*      TO CHECK THE INTERRUPT AND CONTINUE THE TEST                        IL
                          1486+*                                                                          IL
                          1487+* CALLING SEQUENCE                                                        IL
                          1488+*                                                                          IL
                          1489+*      SUPERVISOR WILL ENTER HERE  IF INTR CC IS AS REQUESTED              IL
                          1490+*      THE ERROR INTERRUPT HANDLER WILL BRANCH TO THIS ROUTINE             IL
                          1491+*      AFTER THE SPECIAL PART HAS BEEN COMPLETED  AND THE                  IL
                          1492+*      COMMON SECTION IS HANDLED HERE.                                     IL
                          1493+*                                                                          IL
                          1494+* RETURN CONTROL                                                          IL
                          1495+*                                                                          IL
                          1496+*      SVC   EXIT                    RETURN TO USER VIA SUPVR              IL
                          1497+*                                                                          IL
                          1498+*****************************************************************************IL
002C82  706E              1499+INIOK DC    X'706E'                  COPY STATUS ANY LEVEL INTO R3         IL
002C84  336A              1500+      SRL   13,R3                    POSITION INDICATORS IN R3             IL
002C86  4424 2788         1501+      MVA   OPTN1,R4                 SET UP BASE ADRS                      IL
002C8A  4C63              1502+INTR1 TBTS  (R4,IN)                  SET 'CS' INTERRUPT RECEIVED           IL
002C8C  4C28              1503+      TBT   (R4,CS)                  IS 'CS IN PROGRESS' ON                IL
002C8E  1204              1504+      JON   INTR2                    * YES, BCH AROUND UPDATE              IL
002C90  C328 2791         1505+      MVB   R3,$IOIN+1               SAVE INTERRUPTING CC CODE             IL
002C94  6F0D 2792         1506+      MVW   R7,$ISB                  SAVE INTR STATUS AND DEV ADRS         IL
002C98                    1507+INTR2 EQU   *                                                             IL
                          1508+      CPCL  R5                       CURRENT LEVEL COPIED BY DCP           IL
002C98  3521              1509+      SLL   4,R5                     POSITION INTR LEVEL AND PUT           IL
002C9A  0501              1510+      ABI   1,R5                     * IN 'I' BIT                          IL
002C9C  CD24 27C4         1511+      CW    $INTL,R5                 IS THIS THE CORRECT INTR LEVEL        IL
002CA0  1002              1512+      JE    INTR3                    * YES, GO EXIT THIS LEVEL             IL
002CA2  4C66              1513+      TBTS  (R4,$LE)                 SET INTR LEVEL ERROR CONTROL BIT      IL
002CA4  4C61              1514+      TBTS  (R4,ER)                  SET ERROR ON I/O COMMAND CNTL BIT     IL
002CA6  4CA2              1515+INTR3 TBTR  (R4,XI)                  WAS INTERRUPT EXPECTED                IL
002CA8  1204              1516+      JON   INTRX                    * YES, EXIT OFF THIS INTR LEVEL       IL
002CAA  4C60              1517+      TBTS  (R4,MI)                  * NO, SET MYSTERY INTR CONTROL BIT    IL
002CAC  F304              1518+      CBI   4,R3                     ATTENTION INTERRUPT?                  IL
002CAE  1001              1519+      JE    INTRX                    YES                                   IL
002CB0  4C6C              1520+      TBTS  (R4,NG)                  ERROR,UNEXPECTED INTERRUPT            IL
002CB2  6006              1521+INTRX SVC   EXIT                      EXIT THIS LEVEL VIA SUPVR TO PGM      IL
                          1523+*****************************************************************03FEB76**
                          1524+*
                          1525+*      THIS IS THE CONTINUATION OF EXECUTE I/O AFTER THE INTERRUPT
                          1526+*      HAS BEEN SERVICED. THE EXERCISER FINDS AN INTERRUPT HAS BEEN
                          1527+*      RECEIVED AND BRANCHES HERE TO CHECK FOR ANY ERROR CONDITIONS.
                          1528+*
                          1529+*
002CB4  4CA4              1530+XIOCK TBTR  (R4,XE)                  WAS AN ERROR EXPECTED
002CB6  6AC0 0002         1531+      BN    (R6,2)                   * YES, EXIT THIS ROUTINE
002CBA  4CA8              1532+      TBTR  (R4,CS)                  WAS AUTO CS IN PROGRESS
002CBC  1006              1533+      JOFF  XIOCV                    * NO, CONTINUE CHECKING
002CBE  4C2A              1534+      TBT   (R4,CE)                  IS CS IN AN ERR CONDITION
002CC0  1002              1535+      JOFF  XIOCO                    * NO, BCH
002CC2  68D2 0000         1536+      B     (R6)*                    CS ERROR
002CC6  4C69              1537+XIOCO TBTS  (R4,CSA)                 TURN ON CS STATS AVAIL FLAG
002CC8  5601              1538+      BXS   (R6,2)                   GO TO USER
002CCA  4C21              1539+XIOCV TBT   (R4,ER)                  WAS ERROR INTR CONTROL BIT ON
002CCC  100B              1540+      JOFF  XIOCX                    * NO, EXIT THIS ROUTINE
                          1541+*
002CCE  C520 2791         1542+      MVB   $IOIN+1,R5               GET LAST INTR CC CODE
002CD2  F502              1543+      CBI   2,R5                     IS THIS CC=2
002CD4  68D1 0000         1544+      BNE   (R6)*                    * NO, BCH TO ERROR HANDLER
002CD8  C520 2792         1545+XIOCQ MVB   $ISB,R5                  GET LAST ISB DATA BYTE AND IF CS
002CDC  6A00 2BF2         1546+      BN    XIOCS-4                  * AVAILABLE, GO AND GET IT
002CE0  68D2 0000         1547+      B     (R6)*                    ERROR
002CE4  CB25 278C         1548+XIOCX MVWZ  OPTN3,R3                 CLEAR OUT OPTION 3 CNTL BITS
002CE8  5601              1549+      BXS   (R6,2)                   RETURN TO USER VIA REG 6
                          1550+*
                          1551+*           I/O   PARAMETER LIST
                          1552+*
002CEA  19D0              1553+IOBLK DC    A(DEVADD)                ADRS OF DEVICE ADRS
002CEC  2C52              1554+      DC    A(XIOER)                 ERROR ROUTINE ADRS
002CEE  0000              1555+IODCB DC    A(*-*)                   DCB ADRS OR LEVEL & INTR
002CF0  0000              1556+IOMOD DC    A(*-*)                   MODIFIER
002CF2  0000              1557+      DC    A(*-*)                   ADRS OF LAST SVC CALL
002CF4  0000              1558+IORSP DC    A(*-*)                   SECOND WORD OF LAST IDCB
                          1559+*
                          1560+*           INTERRUPT CONTROL BLOCK FOR I/O COMMANDS
                          1561+*
002CF6  19D0              1562+INTBL DC    A(DEVADD)                ADRS OF DEVICE ADRS
002CF8  2C82              1563+      DC    A(INTOK)                 INTERRUPT OK RETURN ADRS
002CFA  2C5E              1564+      DC    A(INTER)                 INTERRUPT ERROR ADRS
002CFC  0003              1565+INTCC DC    X'0003'                  INTERRUPT CODE EXPECTED
                          1567+*****************************************************************11MAY76**
                          1568+*
                          1569+* SUBROUTINE
                          1570+*
                          1571+*      CONNECT INTERRUPT CONTROL BLOCK & PREPARE DEVICE
                          1572+*
                          1573+* PURPOSE
                          1574+*
                          1575+*      TO CONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
                          1576+*      PREPARE ON THE DESIRED INTERRUPT LEVEL AND TO ALLOW THE DEVICE
                          1577+*      TO INTERRUPT.
                          1578+*
                          1579+* CALLING SEQUENCE
                          1580+*
                          1581+*      THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
                          1582+*
                          1583+* --> BAL   $CONC,R6                 CLEAR DEV DEP STG AND CONNECT I/O BLK
                          1584+* --> BAL   $CONP,R6                 PREPARE DEVICE ONLY, ALREADY CONNECT
                          1585+*
                          1586+* RETURN CONTROL
                          1587+*
                          1588+*      BXS   (R6,2)                   RETURN TO USER VIA REG 6 IF OKAY
                          1589+* OR  B     (R6)*                    IF THE DEVICE COULD NOT BE CONNECTED
                          1590+*
                          1591+*****************************************************************************
002CFE  0F06              1592+$CONC MVBI  6,R7                     NUMBER OF BYTE TO CLEAR
002D00  0B00              1593+      MVBI  0,R3                     * AND THE DATA TO USE
002D02  4524 2796         1594+      MVA   DEV1,R5                  * ALONG WITH THE ADRS TO USE
002D06  2BAC              1595+      PFN   R3,(R5)                  *
002D08  CB25 278C         1596+      MVWZ  OPTN3,R3                 CLEAR OLD CONTROLS FOR NEW ROUTINE
002D0C  4724 27CA         1597+      MVA   SVCAL,R7                 SET UP TO REQUEST DCP SUPR DISK
002D10  6016              1598+      SVC   REQSD                    *
002D12  0FFF              1599+      MVBI  -1,R7                    SET UP DELAY FOR IBIS
002D14  BFFF              1600+      JCT   *,R7                     * AND DECREMENT IT DOWN
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976

002D16  4724 2CF6         1601+      MVA   INTBL,R7                 SET R7 TO CONTROL BLOCK AND
002D1A  6014              1602+      SVC   CICB                     * CONNECT IT TO THIS DEVICE
002D1C  6AD0 0000         1603+      BN    (R6)*                    ERROR RETURN TO USER
                          1604+*
002D20  8828 27C4 2CEE    1605+$CONP MVW   $INTL,IODCB              PUT IN LEVEL & INTR PARAMETER
002D26  4724 2CEA         1606+      MVA   IOBLK,R7                 SET R7 TO CONTROL BLOCK TO PREPARE
002D2A  4020 2790 0708    1607+      MVWI  X'0708',$IOIN            INITIALIZE CONDITION CODE STORAGE
002D30  CB25 2792         1608+      MVWZ  $ISB,R3                  * AND CLEAR OLD ISB VALUE
002D34  6E0D 2794         1609+      MVW   R6,LSTIO                 SET UP ADDRESS THAT STARTED LAST I/O
002D38  600C              1610+      SVC   PREP                     * AND CALL CN SUPVR
002D3A  5601              1611+      BXS   (R6,2)                   RETURN TO USER
                          1613+*****************************************************************06APR76**
                          1614+*
                          1615+* SUBROUTINE
                          1616+*
                          1617+*      DISCONNECT THE INTERRUPT CONTRCL BLOCK AND LOG ERRORS
                          1618+*
                          1619+* PURPOSE
                          1620+*
                          1621+*      DISCONNECT THE INTERRUPT CONTROL BLOCK TC THIS DEVICE AND
                          1622+*      SET THE 'NO GOOD' CONTROL BIT, THEN LOG THE DATA THAT HAS
                          1623+*      BEEN FOUND TO HELP THE OPERATOR DEFINE THE ERROR CONDITION.
                          1624+*
                          1625+* CALLING SEQUENCE
                          1626+*
                          1627+*      THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
                          1628+*
                          1629+* --> B     $ERR$                    SET 'NG' BIT AND CONVERT DATA TO LOG
                          1630+* --> B     $CONX                    RETURN TO MDI SUPERVISOR TO TEST STS
                          1631+*
                          1632+* RETURN CONTROL
                          1633+*
                          1634+*      B     *RTN*                    RETURN TO MDI
                          1635+* OR  B     (R6)*                    IF THE DEVICE COULD NOT BE CONNECTED
                          1636+*
                          1637+*****************************************************************************
002D3C  4020 1818 8000    1638+$ERR$ MVWI  X'8000',TUSTATUS          SET ON 'NO GOOD' STATUS BIT
002D42  4724 2EB2         1639+      MVA   HEBLK,R7                 GET ADRS OF CONTRCL BLOCK
002D46  601A              1640+      SVC   HTOE                     CONVERT HEX TO EBC VIS DCP
002D48  0D03              1641+$PRNT MVBI  3,R5
002D4A  4324 181A         1642+      MVA   TUWCRK,R3                SET UP BUFFER STORAGE
002D4E  6B0D 2EAA         1643+      MVW   R3,BUFPT
002D52  4124 2DDA         1644+      MVA   LINE1,R1
002D56  0F04              1645+      MVBI  4,R7
002D58  0E08              1646+      MVBI  8,R6
002D5A  2B24              1647+MVBUF  MVFN  (R3),(R1)
002D5C  0F04              1648+      MVBI  4,R7
002D5E  0A40              1649+      MVBI  X'40',R2
002D60  C258              1650+      MVB   R2,(R1)+
002D62  BEFB              1651+      JCT   MVBUF,R6
002D64  0E08              1652+      MVBI  8,R6
002D66  7921 002C         1653+      AWI   44,R1
002D6A  BDF7              1654+      JCT   MVBUF,R5
002D6C  4020 1802 F1F0    1655+      MVWI  PIDMSG10,PID+2
002D72  4020 19B8 2EB0    1656+      MVA   FAKETU,@DCADD1
002D78  4020 19BA 2EAC    1657+      MVA   DC2PT,@DCADD2
002D7E  402C 19C4 0080    1658+      OWI   BIT0080,SUPSTAT
002D84  4324 278E         1659+      MVA   $TUID,R3                 SET UP BUFFER STORAGE
002D88  6F13 18BA         1660+      BAI   TUMSGWTR*,R7             GO TO MESSAGE WRITER
                          1661+*
002D8C                    1662+$CONX EQU   *
002D8C  8028 2797 27CD    1663+      MVB   SCTID+1,SVCAL+3          SETUP CURRENT CYLINDER NUM
002D92  4724 27CA         1664+      MVA   SVCAL,R7                 ADDR OF RELEASE PARM LIST
002D96  6017              1665+      SVC   RELSD                    RELEASE CONTROL
002D98  C720 19D0         1666+      MVB   DEVADD,R7                GET DEVICE ADDRESS FROM MDI
002D9C  6013              1667+      SVC   RICB                     RELEASE INTERRUPT CONTROL BLOCK
002D9E  6812 27C6         1668+      B     TURTN*                   RETURN TO MDI SUPERVISOR
                          1669+*
002DA2  0007              1670+BEGIN  DC    A(0007)                  NUMBER CF LINES TO PRINT
002DA4  0008              1671+      DC    A(0008)                  LINE LENGTH = 8 CHAR
002DA6  5C5C40C1C2D6D9E3  1672+      DC    C'** ABCRT'
002DAE  0028              1673+      DC    A(0040)                  LINE LENGTH = 40 CHAR
002DB0  E3E4C9C440C9D6C9D 1674+      DC    C'TUID IOIN ISB  INST DEV1 DEV2 DEV3 DEV4 '
002DD8  0028              1675+      DC    A(0040)                  LINE LENGTH = 40 CHAR
002DDA  4040404040404040  1676+LINE1 DC    C'                       '
002DE2  0028              1677+      DC    A(0040)                  LINE LENGTH = 40 CHAR
002E04  C3D5E3D340C4C3C2F 1678+      DC    C'CNTL DCB2 DCB3 DCB4 DCB5 CHAD BYCT ADRS '
002E2C  0028              1679+      DC    A(0040)                  LINE LENGTH = 40 CHAR
002E2E  4040404040404040  1680+LINE2 DC    C'                       '
002E56  0028              1681+      DC    A(0040)                  LINE LENGTH = 40 CHAR
002E58  D9E2C9C440C3E260F 1682+      DC    C'RSID CS-2 CS-3 CS-4 CS-5 CS-6 CS-7 CS-8 '
002E80  0028              1683+      DC    A(0040)                  LINE LENGTH = 40 CHAR
002E82  4040404040404040  1684+LINE3 DC    C'                       '
                          1685+*
002EAA  0000              1686+BUFPT  DC    A(*-*)
002EAC  2DA2              1687+DC2PT  DC    A(BEGIN)
002EAE  0101              1688+FIXTU  DC    X'0101'
002EB0  0101              1689+FAKETU    DC X'0101'
00F1F0                    1690+PIDMSG10  EQU   X'F1F0'
000080                    1691+BIT0080   EQU   X'0080'
                          1692+*
                          1693+*      DATA CONTROL BLOCK FOR CONVERTING HEX TO EBCDIC
                          1694+*
002EB2  0030              1695+HEBLK  DC    A(48)                    NUMBER OF BYTES TO CONVERT
002EB4  278E              1696+      DC    A($TUID)                 FROM ADRS
002EB6  181A              1697+      DC    A(TUWORK)                AND THE TO ADRS
                          1699+*****************************************************************11SEP75**
                          1700+*
                          1701+* SUBROUTINE
                          1702+*
                          1703+*      SPECIAL ERROR CHECKING OF THE DCB
                          1704+*
                          1705+* PURPOSE
                          1706+*
                          1707+*      TO SET THE CONTROL BITS BEFORE ISSUEING THE I/O COMMAND,
                          1708+*      TESTING TO VERIFY THAT THE ERROR DID OCCUR, AND VERIFYING
                          1709+*      THAT THE RESIDUAL ADDRESS IS WHAT IT SHOULD BE.
                          1710+*
                          1711+* CALLING SEQUENCE
                          1712+*
                          1713+* -->  BAL   ERTST,R2               USE COMMOM ERROR TEST SUBRTN
                          1714+*      DC    A(1)                     DISPLACEMENT FOR RESIDUAL ADRS
                          1715+*      DC    A(*-*)                   ERROR ADDRESS
                          1716+*
                          1717+* RETURN CONTROL
                          1718+*
```

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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

                         1719+**      BXS   (R2,6)              RETURN TO USER VIA REG 2
                         1720+**
                         1721+*********************************************************************
002EB8  4C64             1722+ERTST   TBTS  (R4,XE)             SET EXPECTED ERROR FOR EACH FAULT
002EBA  6E03 0000        1723+        BAL   *-*,(R6             GO XEQ I/O COMMAND
002EBE  2D3C             1724+        DC    A($ERR$)            RETRY
002EC0  4C21             1725+        TBT   (R4,ER)             DID ERROR CONTROL BIT GET SET
002EC2  1202             1726+        JON   ERTSV               * YES,GO CKECK RESIDUAL ADDRESS
002EC4  6852 0002        1727+        B     (R2,2)*             ERROR
                         1728+**
002EC8  AA08 2CEE        1729+ERTSV   AW    (R2),IODCB          DEVELOF DCB ERROR ADDRESS
002ECC  5000             1730+        NOP   ,                   FOR ALL ARCH ADD (SWI 1,IODCB)
002ECE  5000             1731+        NOP   ,                   * (402E (ADD OF IODCB) 0001
002ED0  5000             1732+        NOP   *
002ED2  8828 2CEE 2EF6   1733+        MVW   IODCB,ERTSZ         SAVE DCB ADDRESS
002ED8  4CA1             1734+        TBTR  (R4,ER)             RESET ERROR BIT
002EDA  6E03 2BF2        1735+        BAL   XIOCS-4,R6          REQUEST START CYCLE STEAL STAUTS
002EDE  2D3C             1736+        DC    A($ERR$)            RETRY
002EE0  4C21             1737+        TBT   (R4,ER)             DID ERROR CONTROL BIT GET SET
002EE2  6A00 2D3C        1738+        BON   $ERR$               YES-ERROR
002EE6  8828 27AE 2EF6   1739+        CW    CSTL1,ERTSZ         TEST FOR CORRECT RESIDUAL ADDRS
002EEC  1002             1740+        JE    ERTSX               RESIDUAL ADDRESS OK
002EEE  6852 0002        1741+        B     (R2,2)*             ERROR
002EF2  4CA8             1742+ERTSX   TBTR  (R4,CS)             RESET CS IN PROGRESS CNTL BIT
002EF4  5202             1743+        BXS   (R2,4)              OK, RETURN TO CALLER
                         1744+**
002EF6  0000             1745+ERTSZ   DC    A(*-*)              DCB SAVE LOCATION
                         1746 *
000000                   1748         END
```


CROSS-REFERENCE LISTING COPYRIGHT IBM CORP 1976

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
       0  .R0.      ABSOLUTE. HEX VALUE(00000000)
                    787   788   790   848   850   852   854   856   858
                    899   905   907   914   916   994   995
       0  .R1.      ABSOLUTE. HEX VALUE(00000001)
                    894   895   897   898   993  1037  1039  1041  1043
                   1045  1047  1054  1055  1644  1647  1650  1653
       0  .R2.      ABSOLUTE. HEX VALUE(00000002)
                    789   794   803   810   820   828   838   909   910
                    912   988   989   990   991   992  1030  1031  1049
                   1050  1051  1052  1053  1059  1066  1649  1650  1727
                   1729  1741  1743
       0  .R3.      ABSOLUTE. HEX VALUE(00000003)
                   1276  1279  1349  1359  1362  1363  1366  1368  1424
                   1425  1460  1466  1470  1500  1505  1518  1548  1593
                   1595  1596  1608  1642  1643  1647  1659
       0  .R4.      ABSOLUTE. HEX VALUE(00000004)
                    783   889   980   998  1006  1013  1020  1026  1027
                   1064  1352  1353  1356  1370  1371  1373  1374  1377
                   1383  1389  1461  1462  1464  1468  1472  1501  1502
                   1503  1513  1514  1515  1517  1520  1530  1532  1534
                   1537  1539  1722  1725  1734  1737  1742
       0  .R5.      ABSOLUTE. HEX VALUE(00000005)
                    903   904  1277  1279  1360  1362  1364  1366  1382
                   1387  1509  1510  1511  1542  1543  1545  1594  1595
                   1641  1654
       0  .R6.      ABSOLUTE. HEX VALUE(00000006)
                    784   981   996  1004  1011  1018  1062  1294  1358
                   1378  1390  1426  1531  1536  1538  1544  1547  1549
                   1603  1609  1611  1646  1651  1652  1723  1735
       0  .R7.      ABSOLUTE. HEX VALUE(00000007)
                    630   781   887   891   978  1278  1361  1365  1372
                   1465  1506  1592  1597  1599  1600  1601  1606  1639
                   1645  1648  1660  1664  1666
    1592  $CONC     ADDRESS. HEX LOCATION(00002CFE) IN CSECT(I4801   ) LENGTH(2)
                    784   981
    1662  $CONX     ADDRESS. HEX LOCATION(00002D8C) IN CSECT(I4801   ) LENGTH(1)
                    845   922  1077
     621  $DVID     ADDRESS. HEX LOCATION(000027C8) IN CSECT(I4801   ) LENGTH(2)
                    910
    1638  $ERR$     ADDRESS. HEX LOCATION(00002D3C) IN CSECT(I4801   ) LENGTH(6)
                    785  1724  1736  1738
    1289  $FMT      ADDRESS. HEX LOCATION(00002BD4) IN CSECT(I4801   ) LENGTH(6)
                    809
     619  $INTL     ADDRESS. HEX LOCATION(000027C4) IN CSECT(I4801   ) LENGTH(2)
                   1511  1605
     589  $IOIN     ADDRESS. HEX LOCATION(00002790) IN CSECT(I4801   ) LENGTH(2)
                    893   904   920  1073  1367  1425  1505  1542  1607
     590  $ISB      ADDRESS. HEX LOCATION(00002792) IN CSECT(I4801   ) LENGTH(2)
                   1074  1368  1506  1545  1608
     574  $LE       ABSOLUTE. HEX VALUE(00000026)
                   1373  1513
    1280  $RD$      ADDRESS. HEX LOCATION(00002BBC) IN CSECT(I4801   ) LENGTH(6)
                    793   802   819   837
    1271  $RDID     ADDRESS. HEX LOCATION(00002B9C) IN CSECT(I4801   ) LENGTH(6)
                    827
    1283  $RDVY     ADDRESS. HEX LOCATION(00002BC4) IN CSECT(I4801   ) LENGTH(6)
                   1004  1018
    1268  $RECL     ADDRESS. HEX LOCATION(00002B94) IN CSECT(I4801   ) LENGTH(6)
                    996
    1265  $SEEK     ADDRESS. HEX LOCATION(00002B8C) IN CSECT(I4801   ) LENGTH(6)
                   1011  1062
     588  $TUID     ADDRESS. HEX LOCATION(0000278E) IN CSECT(I4801   ) LENGTH(2)
                    629   782   888   979  1659  1696
      42  @CALL     ABSOLUTE. HEX VALUE(00000201)
                    390   408   426   444
     102  @DCADD1   ADDRESS. HEX LOCATION(000019B8) IN CSECT(I4801   ) LENGTH(1)
                   1656
     103  @DCADD2   ADDRESS. HEX LOCATION(000019BA) IN CSECT(I4801   ) LENGTH(1)
                   1657
      39  @FIXT     ABSOLUTE. HEX VALUE(00000101)
                    375   462
      40  @STOP     ABSOLUTE. HEX VALUE(00000102)
                    465
      45  @TUXX     ABSOLUTE. HEX VALUE(00000500)
                    363   378   396   414   432   450
    1670  BEGIN     ADDRESS. HEX LOCATION(00002DA2) IN CSECT(I4801   ) LENGTH(2)
                   1687
    1691  BIT0080   ABSOLUTE. HEX VALUE(00000080)
                   1658
    1686  BUFPT     ADDRESS. HEX LOCATION(00002EAA) IN CSECT(I4801   ) LENGTH(2)
                   1643
     552  B63       ABSOLUTE. HEX VALUE(0000001F)
                   1026  1027
     578  CE        ABSOLUTE. HEX VALUE(0000002A)
                   1352  1464  1534
     658  CICB      ABSOLUTE. HEX VALUE(00000014)
                    892  1602
    1102  CLDCB     ADDRESS. HEX LOCATION(00002AB0) IN CSECT(I4801   ) LENGTH(2)
                   1268
     576  CS        ABSOLUTE. HEX VALUE(00000028)
                   1353  1356  1462  1503  1532  1742
     577  CSA       ABSOLUTE. HEX VALUE(00000029)
                   1537
     607  CSBUF     ADDRESS. HEX LOCATION(000027AE) IN CSECT(I4801   ) LENGTH(1)
                   1148  1364
    1141  CSDCB     ADDRESS. HEX LOCATION(00002AF0) IN CSECT(I4801   ) LENGTH(2)
                   1354
     608  CSTL1     ADDRESS. HEX LOCATION(000027AE) IN CSECT(I4801   ) LENGTH(2)
                   1739
     609  CSTL2     ADDRESS. HEX LOCATION(000027B0) IN CSECT(I4801   ) LENGTH(2)
                   1035  1072
     615  CSTL8     ADDRESS. HEX LOCATION(000027BC) IN CSECT(I4801   ) LENGTH(2)
                   1465  1466
     597  DCBUF     ADDRESS. HEX LOCATION(0000279E) IN CSECT(I4801   ) LENGTH(1)
                   1359
    1687  DC2PT     ADDRESS. HEX LOCATION(00002EAC) IN CSECT(I4801   ) LENGTH(2)
                   1657
     105  DEVADD    ADDRESS. HEX LOCATION(000019D0) IN CSECT(I4801   ) LENGTH(1)
                    622   896  1553  1562  1666
     592  DEV1      ADDRESS. HEX LOCATION(00002796) IN CSECT(I4801   ) LENGTH(2)
                    596  1594
    1090  DGDCB     ADDRESS. HEX LOCATION(00002AA0) IN CSECT(I4801   ) LENGTH(2)
                   1291
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CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
    1211  DIAGW       ADDRESS. HEX LOCATION(00002B62) IN CSECT(I4801   ) LENGTH(2)
                     1097
    1190  DIFF        ADDRESS. HEX LOCATION(00002B38) IN CSECT(I4801   ) LENGTH(2)
                     1022  1031  1061  1069  1069
      67  DUMMY       ABSOLUTE. HEX VALUE(00000000)
                      354   467   479
     468  ENTPT       ADDRESS. HEX LOCATION(000025E6) IN CSECT(I4801   ) LENGTH(1)
                      198
      47  EQ          ABSOLUTE. HEX VALUE(00000000)
                      366   453
     569  ER          ABSOLUTE. HEX VALUE(00000021)
                      998  1006  1013  1020  1064  1370  1389  1472  1514
                     1539  1725  1734  1737
    1722  ERTST       ADDRESS. HEX LOCATION(00002EB8) IN CSECT(I4801   ) LENGTH(2)
                      793   794   802   803   809   810   819   820   827
                      828   837   838
    1729  ERTSV       ADDRESS. HEX LOCATION(00002EC8) IN CSECT(I4801   ) LENGTH(4)
                     1726
    1742  ERTSX       ADDRESS. HEX LOCATION(00002FF2) IN CSECT(I4801   ) LENGTH(2)
                     1740
    1745  ERTSZ       ADDRESS. HEX LOCATION(00002EF6) IN CSECT(I4801   ) LENGTH(2)
                     1733  1739
     644  EXIT        ABSOLUTE. HEX VALUE(00000006)
                     1521
    1689  FAKETU      ADDRESS. HEX LOCATION(00002EB0) IN CSECT(I4801   ) LENGTH(2)
                     1656
    1072  FINS        ADDRESS. HEX LOCATION(00002A84) IN CSECT(I4801   ) LENGTH(6)
                     1038  1040  1042  1044  1046  1048  1056  1070
    1107  FRDCB       ADDRESS. HEX LOCATION(00002AC0) IN CSECT(I4801   ) LENGTH(2)
                      807  1289
     513  F00004      ADDRESS. HEX LOCATION(00002688) IN CSECT(I4801   ) LENGTH(1)
                      463
     487  F00038      ADDRESS. HEX LOCATION(000025EC) IN CSECT(I4801   ) LENGTH(1)
                      376
     491  F00045      ADDRESS. HEX LOCATION(0000261A) IN CSECT(I4801   ) LENGTH(1)
                      391
     497  F00052      ADDRESS. HEX LOCATION(0000263A) IN CSECT(I4801   ) LENGTH(1)
                      409
     503  F00058      ADDRESS. HEX LOCATION(0000265A) IN CSECT(I4801   ) LENGTH(1)
                      427
     509  F00064      ADDRESS. HEX LOCATION(00002676) IN CSECT(I4801   ) LENGTH(1)
                      445
     525  F00073      ADDRESS. HEX LOCATION(0000274A) IN CSECT(I4801   ) LENGTH(1)
                      466
    1060  GO1         ADDRESS. HEX LOCATION(00002A56) IN CSECT(I4801   ) LENGTH(6)
                     1033
    1695  HEBLK       ADDRESS. HEX LOCATION(00002EB2) IN CSECT(I4801   ) LENGTH(2)
                     1639
     664  HTOE        ABSOLUTE. HEX VALUE(0000001A)
                     1640
     640  IDLE        ABSOLUTE. HEX VALUE(00000002)
                     1385
     571  IN          ABSOLUTE. HEX VALUE(00000023)
                     1371  1383  1502
    1562  INTBL       ADDRESS. HEX LOCATION(00002CF6) IN CSECT(I4801   ) LENGTH(2)
                      891  1601
    1459  INTER       ADDRESS. HEX LOCATION(00002C5E) IN CSECT(I4801   ) LENGTH(2)
                     1564
    1468  INTES       ADDRESS. HEX LOCATION(00002C76) IN CSECT(I4801   ) LENGTH(2)
                     1463
    1472  INTET       ADDRESS. HEX LOCATION(00002C7E) IN CSECT(I4801   ) LENGTH(2)
                     1469
    1499  INTOK       ADDRESS. HEX LOCATION(00002C82) IN CSECT(I4801   ) LENGTH(2)
                     1563
    1521  INTRX       ADDRESS. HEX LOCATION(00002CB2) IN CSECT(I4801   ) LENGTH(2)
                     1516  1519
    1502  INTR1       ADDRESS. HEX LOCATION(00002C8A) IN CSECT(I4801   ) LENGTH(2)
                     1467  1471  1473
    1507  INTR2       ADDRESS. HEX LOCATION(00002C98) IN CSECT(I4801   ) LENGTH(1)
                     1504
    1515  INTR3       ADDRESS. HEX LOCATION(00002CA6) IN CSECT(I4801   ) LENGTH(2)
                     1512
    1553  IOBLK       ADDRESS. HEX LOCATION(00002CEA) IN CSECT(I4801   ) LENGTH(2)
                     1372  1606
    1555  IODCB       ADDRESS. HEX LOCATION(00002CEE) IN CSECT(I4801   ) LENGTH(2)
                     1265  1268  1271  1280  1283  1286  1289  1291  1354
                     1360  1605  1729  1733
    1556  IOMOD       ADDRESS. HEX LOCATION(00002CF0) IN CSECT(I4801   ) LENGTH(2)
                     1292  1349  1355
      37  I4801       CSECT. START(00002500) LENGTH(2552) ESDID(0)
                       37
    1676  LINE1       ADDRESS. HEX LOCATION(00002DDA) IN CSECT(I4801   ) LENGTH(40)
                     1644
    1027  LOOF1       ADDRESS. HEX LOCATION(000029F6) IN CSECT(I4801   ) LENGTH(2)
                     1071
     591  LSTIO       ADDRESS. HEX LOCATION(00002794) IN CSECT(I4801   ) LENGTH(2)
                     1358  1609
     568  MI          ABSOLUTE. HEX VALUE(00000020)
                     1517
    1647  MVBUF       ADDRESS. HEX LOCATION(00002D5A) IN CSECT(I4801   ) LENGTH(2)
                     1651  1654
     580  NG          ABSOLUTE. HEX VALUE(0000002C)
                     1520
     575  NI          ABSOLUTE. HEX VALUE(00000027)
                     1377
     363  N00001      ADDRESS. HEX LOCATION(00002538) IN CSECT(I4801   ) LENGTH(2)
                      315   478
     375  N00002      ADDRESS. HEX LOCATION(0000254E) IN CSECT(I4801   ) LENGTH(2)
                      318
     378  N00003      ADDRESS. HEX LOCATION(00002552) IN CSECT(I4801   ) LENGTH(2)
                      321   364
     390  N00004      ADDRESS. HEX LOCATION(00002564) IN CSECT(I4801   ) LENGTH(2)
                      324
     396  N00005      ADDRESS. HEX LOCATION(00002570) IN CSECT(I4801   ) LENGTH(2)
                      327   379
     408  N00006      ADDRESS. HEX LOCATION(00002582) IN CSECT(I4801   ) LENGTH(2)
                      330
     414  N00007      ADDRESS. HEX LOCATION(0000258E) IN CSECT(I4801   ) LENGTH(2)
                      333   397
     426  N00008      ADDRESS. HEX LOCATION(000025A0) IN CSECT(I4801   ) LENGTH(2)
                      336
     432  N00009      ADDRESS. HEX LOCATION(000025AC) IN CSECT(I4801   ) LENGTH(2)
                      339   415
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CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
     444  N00010      ADDRESS. HEX LOCATION(000025BE) IN CSECT(I4801   ) LENGTH(2)
                      342
     450  N00011      ADDRESS. HEX LOCATION(000025CA) IN CSECT(I4801   ) LENGTH(2)
                      345   433
     462  N00012      ADDRESS. HEX LOCATION(000025DC) IN CSECT(I4801   ) LENGTH(2)
                      348
     465  N00013      ADDRESS. HEX LOCATION(000025E0) IN CSECT(I4801   ) LENGTH(2)
                      351   451
      58  OF          ABSOLUTE. HEX VALUE(00000202)
                      381   399   417   435
    1195  ONE1        ADDRESS. HEX LOCATION(00002B42) IN CSECT(I4801   ) LENGTH(2)
                     1032  1068
     533  OPTN1       ADDRESS. HEX LOCATION(00002788) IN CSECT(I4801   ) LENGTH(2)
                      783   889   980  1461  1501
     556  OPTN3       ADDRESS. HEX LOCATION(0000278C) IN CSECT(I4801   ) LENGTH(2)
                     1075  1548  1596
     101  PARMARA     ADDRESS. HEX LOCATION(0000196E) IN CSECT(I4801   ) LENGTH(1)
                      373   388   406   424   442   460
      69  PID         ADDRESS. HEX LOCATION(00001800) IN CSECT(I4801   ) LENGTH(1)
                       71    72    73    74    75    76    77    78    79
                       80    81    82    83    84    85    86    87    88
                       89    90    91    92    93    94    95    96    97
                       98    99   100   101   102   103   104   105   106
                      107   108   109   110   111   112  1655
    1690  PIDMSG10    ABSOLUTE. HEX VALUE(0000F1F0)
                     1655
     650  PREP        ABSOLUTE. HEX VALUE(0000000C)
                     1610
    1174  RDDCB       ADDRESS. HEX LOCATION(00002E20) IN CSECT(I4801   ) LENGTH(2)
                      791   798   799   800   814   815   816   817   833
                      834   835   841   842  1277  1280
     661  RELSD       ABSOLUTE. HEX VALUE(00000017)
                     1665
     660  REQSD       ABSOLUTE. HEX VALUE(00000016)
                     1598
    1196  REVR        ADDRESS. HEX LOCATION(00002B44) IN CSECT(I4801   ) LENGTH(2)
                     1058
     657  RICB        ABSOLUTE. HEX VALUE(00000013)
                     1667
    1118  RSDCB       ADDRESS. HEX LOCATION(00002AD0) IN CSECT(I4801   ) LENGTH(2)
                      824   825   831  1023  1271
     596  SCTID       ADDRESS. HEX LOCATION(00002796) IN CSECT(I4801   ) LENGTH(2)
                     1066  1125  1272  1273  1663
    1129  SKDCB       ADDRESS. HEX LOCATION(00002AE0) IN CSECT(I4801   ) LENGTH(2)
                     1008  1009  1010  1023  1024  1029  1058  1060  1061
                     1265
    1058  SKRV        ADDRESS. HEX LOCATION(00002A4C) IN CSECT(I4801   ) LENGTH(6)
                     1028
     648  START       ABSOLUTE. HEX VALUE(0000000A)
                     1375
     104  SUPSTAT     ADDRESS. HEX LOCATION(000019C4) IN CSECT(I4801   ) LENGTH(1)
                     1658
     622  SVCAL       ADDRESS. HEX LOCATION(000027CA) IN CSECT(I4801   ) LENGTH(2)
                     1597  1663  1664
      95  TUBUFF      ADDRESS. HEX LOCATION(000018C2) IN CSECT(I4801   ) LENGTH(1)
                      841
      92  TUMSGWTR    ADDRESS. HEX LOCATION(000018BA) IN CSECT(I4801   ) LENGTH(1)
                     1660
      76  TUPARM1     ADDRESS. HEX LOCATION(0000189A) IN CSECT(I4801   ) LENGTH(1)
                      894
      98  TURESUL     ADDRESS. HEX LOCATION(000018C8) IN CSECT(I4801   ) LENGTH(1)
                      789   790   912   919   920   988   989   990   991
                      992   993  1049  1050  1051  1052  1053  1054  1072
                     1073  1074  1075
     620  TURTN       ADDRESS. HEX LOCATION(000027C6) IN CSECT(I4801   ) LENGTH(2)
                      781   887   978  1668
      74  TUSTATUS    ADDRESS. HEX LOCATION(00001818) IN CSECT(I4801   ) LENGTH(1)
                     1638
      75  TUWORK      ADDRESS. HEX LOCATION(0000181A) IN CSECT(I4801   ) LENGTH(1)
                     1642  1697
    1039  T03A        ADDRESS. HEX LOCATION(00002A1C) IN CSECT(I4801   ) LENGTH(2)
                      999
    1041  T03B        ADDRESS. HEX LOCATION(00002A20) IN CSECT(I4801   ) LENGTH(2)
                     1065
    1045  T03D        ADDRESS. HEX LOCATION(00002A28) IN CSECT(I4801   ) LENGTH(2)
                     1036  1067
    1055  T03ER       ADDRESS. HEX LOCATION(00002A48) IN CSECT(I4801   ) LENGTH(2)
                      997  1005  1012  1019  1063
    1047  T03K        ADDRESS. HEX LOCATION(00002A2C) IN CSECT(I4801   ) LENGTH(2)
                     1007  1021
    1049  T03R        ADDRESS. HEX LOCATION(00002A30) IN CSECT(I4801   ) LENGTH(4)
                      982
    1035  T03Z        ADDRESS. HEX LOCATION(00002A10) IN CSECT(I4801   ) LENGTH(6)
                     1014
     848  T04A        ADDRESS. HEX LOCATION(000028B6) IN CSECT(I4801   ) LENGTH(2)
                      796
     850  T04B        ADDRESS. HEX LOCATION(000028BA) IN CSECT(I4801   ) LENGTH(2)
                      805
     852  T04C        ADDRESS. HEX LOCATION(000028BE) IN CSECT(I4801   ) LENGTH(2)
                      812
     854  T04D        ADDRESS. HEX LOCATION(000028C2) IN CSECT(I4801   ) LENGTH(2)
                      822
     856  T04E        ADDRESS. HEX LOCATION(000028C6) IN CSECT(I4801   ) LENGTH(2)
                      830
     858  T04F        ADDRESS. HEX LOCATION(000028CA) IN CSECT(I4801   ) LENGTH(2)
                      840
     845  T04J        ADDRESS. HEX LOCATION(000026B2) IN CSECT(I4801   ) LENGTH(4)
                      849   851   853   855   857   859
     887  T3C00       ADDRESS. HEX LOCATION(000028CE) IN CSECT(I4801   ) LENGTH(4)
                      365
     927  T3C00I      ADDRESS. HEX LOCATION(0000293E) IN CSECT(I4801   ) LENGTH(2)
                      895   896   897   898   899   901   909   919
     914  T3C00N      ADDRESS. HEX LOCATION(00002926) IN CSECT(I4801   ) LENGTH(2)
                      908
     919  T3C00S      ADDRESS. HEX LOCATION(0000292E) IN CSECT(I4801   ) LENGTH(6)
                      906   911   915
     920  T3C00X      ADDRESS. HEX LOCATION(00002934) IN CSECT(I4801   ) LENGTH(6)
                      913   917
     629  T3C02       ADDRESS. HEX LOCATION(000027CE) IN CSECT(I4801   ) LENGTH(6)
                      398   416   434
     978  T4803       ADDRESS. HEX LOCATION(00002942) IN CSECT(I4801   ) LENGTH(4)
                      380
     781  T4804       ADDRESS. HEX LOCATION(000027D6) IN CSECT(I4801   ) LENGTH(4)
```

CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
		452
1163	VRDCB	ADDRESS. HEX LOCATION(00002B10) IN CSECT(I4801) LENGTH(2)
		1000 1001 1002 1003 1015 1016 1017 1283
1152	WRDCB	ADDRESS. HEX LOCATION(00002B00) IN CSECT(I4801) LENGTH(2)
		1286
572	XE	ABSOLUTE. HEX VALUE(00000024)
		1468 1530 1722
570	XI	ABSOLUTE. HEX VALUE(00000022)
		1374 1515
1349	XIO	ADDRESS. HEX LOCATION(00002BEC) IN CSECT(I4801) LENGTH(4)
		1266 1269 1274 1281 1284 1287 1290
1530	XIOCK	ADDRESS. HEX LOCATION(00002CB4) IN CSECT(I4801) LENGTH(2)
		1384
1537	XIOCO	ADDRESS. HEX LOCATION(00002CC6) IN CSECT(I4801) LENGTH(2)
		1535
1354	XIOCS	ADDRESS. HEX LOCATION(00002BF6) IN CSECT(I4801) LENGTH(6)
		1546 1735
1539	XIOCV	ADDRESS. HEX LOCATION(00002CCA) IN CSECT(I4801) LENGTH(2)
		1533
1548	XIOCX	ADDRESS. HEX LOCATION(00002CE4) IN CSECT(I4801) LENGTH(4)
		1540
1423	XIOER	ADDRESS. HEX LOCATION(00002C52) IN CSECT(I4801) LENGTH(2)
		1554
1358	XIO1	ADDRESS. HEX LOCATION(00002C06) IN CSECT(I4801) LENGTH(4)
		1293 1350
1371	XIO2	ADDRESS. HEX LOCATION(00002C2C) IN CSECT(I4801) LENGTH(2)
		1357
1383	XIO8	ADDRESS. HEX LOCATION(00002C40) IN CSECT(I4801) LENGTH(2)
		1388
62	XTRNL	ABSOLUTE. HEX VALUE(00000001)
		394 412 430 448
1192	XXX	ADDRESS. HEX LOCATION(00002B3C) IN CSECT(I4801) LENGTH(2)
		1025 1030 1032 1059
1194	ZERO0	ADDRESS. HEX LOCATION(00002B40) IN CSECT(I4801) LENGTH(2)
		1029

********** LAST PAGE **********