```
 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                              3      COPY  LOG7814                 ** MAP EC HISTORY **
                              4 ************************************************************************
                              5 *                                                                      *
                              6 *                    ***       PREREQUISITES        ***               *
                              7 *                                                                      *
                              8 *                                NONE                                  *
                              9 *                                                                      *
                             10 ************************************************************************
                             11 *                                                                      *
                             12 *                    ***       MODIFICATIONS        ***               *
                             13 *                                                                      *
                             14 *                CHANGES MADE TO MEET PROGRAM REQUIREMENTS             *
                             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 17DEC76  DATE 04MAR77  DATE 10JUN77  DATE 01MAR78        *
                             33 *        E.C. 578486   E.C. 578638   E.C. 578625   E.C. 755285         *
                             34 *                                                                      *
                             35 ************************************************************************
002500                       37 I7814     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 ON        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
001600                       69 PID       EQU   *-X'0D00'          ADDRESS OF MDI HEADER
000232                       70 PTYPE     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 TUMSGWTP  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 @DCADD1   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  253C                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 COMPAPE                             **
                            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  2518               315          DC    AL2(N00001)
002504  0001               316          DC    XL2'0001'
000001                     317 EQN00001 EQU       0001
002506  251C               318          DC    AL2(N00002)
002508  0002               319          DC    XL2'0002'
000002                     320 EQN00002 EQU       0002
00250A  2520               321          DC    AL2(N00003)
00250C  0003               322          DC    XL2'0003'
000003                     323 EQN00003 EQU       0003
00250E  2532               324          DC    AL2(N00004)
002510  0004               325          DC    XL2'0004'
000004                     326 EQN00004 EQU       0004
002512  2536               327          DC    AL2(N00005)
002514  0005               328          DC    XL2'0005'
000005                     329 EQN00005 EQU       0005
002516  0000               330          DC    AL2(DUMMY)
                           331 ********************************************************************************
                           332 ********************************************************************************
                           333 **                                                                            **
                           334 **                        FULE INFORMATION TABLE                              **
                           335 **                                                                            **
                           336 ********************************************************************************
                           337 ********************************************************************************
002518  0100               338 N00001   $QUES QT=(Q00028),YES=N00003,CT=(C00019)
00251A  2520               339+N00001   DC    A(@QUES)
                           340+         DC    AL2(N00003)
00251C  0101               341 N00002   $FIXT FT=(F00031)
00251E  2542               342+N00002   DC    A(@FIXT)
                           343+         DC    A(F00031)
002520  0500               344 N00003   $TUXX T7896,02,0000,EQ,PLNG=02,PARM=00,QT=(Q00034),YES=N00005,X
002522  2536               345+N00003   DC    A(@TUXX)
002524  2606               346+         DC    AL2(N00005)
002526  0000               347+         DC    A(T7896)
002528  0002               348+         DC    AL2(EQ)
00252A  0000               349+         DC    AL2(02)
                           350+         DC    X'0000'
00252C  0002               351+         ALIGN WORD
00252E  F0F0               352+         DC    AL2(02)
                           353+         DC    C'00'
002530  196E               354+         ALIGN WORD
                           355+         DC     AL2(PARMARA)
002532  0101               356 N00004   $FIXT FT=(F00006),CT=(C00018)
002534  255A               357+N00004   DC    A(@FIXT)
                           358+         DC    A(F00005)
002536  0101               359 N00005   $FIXT FT=(F00040)
002538  2592               360+N00005   DC    A(@FIXT)
00253A  0000               361+         DC    A(F00040)
00253C                     362          DC    AL2(DUMMY)
                           363 ENTPT    EQU   *
                           364 ********************************************************************************
                           365 ********************************************************************************
                           366 **                                                                            **
                           367 **                         ENTRY POINT TABLE                                  **
                           368 **                                                                            **
                           369 ********************************************************************************
                           370 ********************************************************************************
                           371          ENTPT EP=A,STEP=00001
00253C  C140               372+         DC    CL2'A'
00253E  2518               373+         DC    A(N00001)
002540  0000               374          DC    AL2(DUMMY)
                           375 ********************************************************************************
                           376 ********************************************************************************
                           377 **                                                                            **
                           378 **                          MESSAGE TABLE                                     **
                           379 **                                                                            **
                           380 ********************************************************************************
                           381 ********************************************************************************
002542                     382 F00031   EQU   *
002542  0001               383          DC    AL2(0001)
002544  0014               384          DC    A(0020)
002546  C7D640E3D640C6D9C  385          DC    CL0020'GO TO FREELANCE MODE'
00255A                     386 F00006   EQU   *
00255A  0002               387          DC    AL2(0002)
00255C  002C               388          DC    A(0044)
00255E  D9C5D7D3C1C3C540C  389          DC    CL0044'REPLACE CARD A-A1C2,A-A1D2, 4962 ATTACHMENT '
00258A  0006               390          DC    A(0006)
00258C  C3C1D9C44B40       391          DC    CL0006'CARD. '
002592                     392 F00040   EQU   *
002592  0001               393          DC    AL2(0001)
002594  0022               394          DC    A(0034)
002596  C1D3D340F4F9F6F24  395          DC    CL0034'ALL 4962 TESTS EXECUTE CORRECTLY. '
                           396          HDIT  00B2
0025B8  0000               398+OPTN1 DC    X'0000'                 PROGRAM OPTION CONTROL WORD 1
                           399+*
0025BA  0000               400+OPTN2 DC    X'0000'                 PROGRAM OPTION CONTROL WORD 2
                           401+**                    BIT     HEX
000010                     402+B48   EQU   16      0       8       PROBLEM PROGRAM CONTROL BITS
000011                     403+B49   EQU   17      1       4       *
000012                     404+B50   EQU   18      2       2       * THESE BITS ARE USED WITH THE
000013                     405+B51   EQU   19      3       1       * SECOND OPTION WD   AND ARE TO
000014                     406+B52   EQU   20      4       8       * BE ASSIGNED BY EACH PROGRAMMER
000015                     407+B53   EQU   21      5       4       *
000016                     408+B54   EQU   22      6       2       *
000017                     409+B55   EQU   23      7       1       *
000018                     410+B56   EQU   24      8       8       *
000019                     411+B57   EQU   25      9       4       *
00001A                     412+B58   EQU   26      10      2       *
00001B                     413+B59   EQU   27      11      1       *
00001C                     414+B60   EQU   28      12      8       *
00001D                     415+B61   EQU   29      13      4       *
00001E                     416+B62   EQU   30      14      2       *
00001F                     417+B63   EQU   31      15      1       *
00001E                     418+CH    EQU   30      14      2       CHARACTER SUPPLIED
00001F                     419+CMP   EQU   31      15      1       COMPARE OPERATION
0025BC  0000               421+OPTN3 DC    X'0000'                 PROGRAM OPTION CONTROL WORD 3
                           422+*
                           423+*  0  MYSTERY INTERRUPT     MI        8  CS STATUS IN PROGRESS   CS
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
                           424+*  1  ERROR INTERRUPT       ER        9  CS AVAILABLE              CSA
                           425+*  2  EXPECTED INTERRUPT    XI       10  CS STATUS INTERRUPT ERR   CE
                           426+*  3  INTERRUPT RECEIVED    IN       11  ISB BITS ON (1-7)         ISBON
                           427+*
                           428+*  4  EXPECTED ERR/ATTENT   XE       12  TEST UNIT RESULTS VOID    NG
                           429+*  5  HARD ERROR FOUND      HE       13  OIO CC ERROR              IOCC
                           430+*  6  WRONG INTR LEVEL      $LE       14  NO INTERRUPT              NOIN
                           431+*  7  NO INTR EXPECTED      NI       15  INTERRUPT CC ERROR        INCC
                           432+*                    BIT     HEX
000020                     433+MI    EQU   32      0       8       MYSTERY INTERRUPT HAPPENED
000021                     434+ER    EQU   33      1       4       ERROR RECEIVED ON INTERRUPT
000022                     435+XI    EQU   34      2       2       EXPECTED INTERRUPT CONTROL BIT
000023                     436+IN    EQU   35      3       1       INTERRUPT RECEIVED CONTROL BIT
000024                     437+XE    EQU   36      4       8       EXPECTED ERROR RESPONSE
000025                     438+HE    EQU   37      5       4       HARD ERROR, 8 RETRIES
000026                     439+$LE   EQU   38      6       2       INTERRUPT ON WRONG LEVEL ERROR
000027                     440+NI    EQU   39      7       1       NO INTERRUPT EXPECTED E
000028                     441+CS    EQU   40      8       8       CYCLE STATUS IN PROGRESS
000029                     442+CSA   EQU   41      9       4       CYCLE STEAL AVAILABLE
00002A                     443+CE    EQU   42      10      2       CYCLE STEAL STATUS INERRRUPT ERROR
00002B                     444+ISBON EQU   43      11      1       ISB BITS ON (1-7)
00002C                     445+NG    EQU   44      12      8       TEST UNIT RESULTS NO GOOD
00002D                     446+IOCC  EQU   45      13      4       OIO CC ERROR
00002E                     447+NOIN  EQU   46      14      2       NO INTERRUPT
00002F                     448+INCC  EQU   47      15      1       INTERRUPT CC ERROR
                           449+*
                           450+*      COMMON BUFFER FOR PRINTING DATA
                           451+*
0025BE  0000               453+$TUID DC    A(*-*)                  TEST UNIT IDENTIFICATION
0025C0  0000               454+$IOIN DC    A(*-*)                  I/O AND INTR CONDITION CODES
0025C2  0000               455+$ISB  DC    A(*-*)                  R7, INTR STATUS BYTE & DEV ADRS
0025C4  0000               456+LSTIO DC    A(*-*)                  ADRS OF LAST I/O + 4 BYTES
0025C6  0000               457+DEV1  DC    A(*-*)                  DEVICE DEPENDENT DATA
0025C8  0000               458+DEV2  DC    A(*-*)                  *
0025CA  0000               459+DEV3  DC    A(*-*)                  *
0025CC  0000               460+DEV4  DC    A(*-*)                  *
0025CE                     461+SCTID EQU   DEV1                    READ ID BUFFER FOR IBIS & TERN
0025CE                     462+DCBUF EQU   *                       DCB BUFFER FOR LAST DCB USED
0025CE  0000               463+DCB1  DC    A(*-*)                  LAST DCB TABLE, CONTROL WORD
0025D0  0000               464+DCB2  DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025D2  0000               465+DCB3  DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025D4  0000               466+DCB4  DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025D6  0000               467+DCB5  DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025D8  0000               468+DCB6  DC    A(*-*)                  LAST DCB TABLE, CHAIN ADRS
0025DA  0000               469+DCB7  DC    A(*-*)                  LAST DCB TABLE, BYTE COUNT
0025DC  0000               470+DCB8  DC    A(*-*)                  LAST DCB TABLE, BUFFER ADDRESS
                           471+*
0025DE                     472+CSBUF EQU   *                       CYCLE STEAL DATA BUFFER
0025DE  0000               473+CSTL1 DC    A(*-*)                  CYCLE STEAL BUFFER, RESIDUAL ADRS
0025E0  0000               474+CSTL2 DC    A(*-*)                  CYCLE STEAL WD 2, DEVICE DEPEND
0025E2  0000               475+CSTL3 DC    A(*-*)                  CYCLE STEAL WD 3, DEVICE DEPEND
0025E4  0000               476+CSTL4 DC    A(*-*)                  CYCLE STEAL WD 4, DEVICE DEPEND
0025E6  0000               477+CSTL5 DC    A(*-*)                  CYCLE STEAL WD 5, DEVICE DEPEND
0025E8  0000               478+CSTL6 DC    A(*-*)                  CYCLE STEAL WD 6, DEVICE DEPEND
0025EA  0000               479+CSTL7 DC    A(*-*)                  CYCLE STEAL WD 7, DEVICE DEPEND
0025EC  0000               480+CSTL8 DC    A(*-*)                  CYCLE STEAL WD 8, DEVICE DEPEND
                           481+*
0025EE  0000               482+$SUBN DC    A(*-*)                  LAST SUBROUTINE ADDRESS USED
0025F0  00000000           483+$DATA DC    2A(*-*)                 OPTIONAL DATA
0025F4  0021               484+$INTL DC    X'0021'                 INTERRUPT LEVEL REQUESTED
0025F6  0000               485+TURTN DC    A(*-*)                  TEST UNIT RETURN ADRS TO MDI
0025F8  00B2               486+$DVID DC    X'00B2'                 DEVICE ID
0025FA  19D0               487+SVCAL DC    A(DEVADD)               ADRS OF DEVICE ADDRESS
0025FC  0000               489+      DC    A(*-*)                  IBIS CYLINDER ADDRESS
                           489+*
                           490+*      THIS TEST UNIT WILL RETURN TO MDI WITHOUT DOING ANY PROGRAM
                           491+*      FUNCTION. THE RESULTS THAT WERE SET UP IN THE RESULTS AREA ARE
                           492+*      STILL VALID BUT A DIFFERENT TEST IS TO BE PERFORMED.
                           493+*
0025FE  4020 25BE 3C02     494+T3C02 MVWI  X'3C02',$TUID             SET UP TEST UNIT ID
002604  5700               495+      BXS   (RF)                      RETURN TO MDI SUPVR
                           497       COPY  COMEQU
                           498 ********************************************************************************
                           499 *                                                                              *
                           500 *                EQUATED NAMES FOR SUPPORTED SVC'S                             *
                           501 *                                                                              *
                           502 ********************************************************************************
000000                     503 OUT   EQU   0                       OUT SVC
000001                     504 OUTIN EQU   1                       OUTIN SVC
000002                     505 IDLE  EQU   2                       IDLE SVC
000003                     506 ASCII EQU   3                       HEX TO ASCII SVC
000004                     507 CHNGE EQU   4                       CHANGE LEVEL SVC
000005                     508 PGMCK EQU   5                       ALLOW RETURN ON PROGRAM CHECK SVC
000006                     509 EXIT  EQU   6                       EXIT SVC
000007                     510 TERM  EQU   7                       TERMINATE SVC
000008                     511 RESET EQU   8                       RESET DEVICE SVC
000009                     512 RID   EQU   9                       READ ID SVC
00000A                     513 START EQU   10                      START CYCLE STEAL SVC
00000B                     514 STCSS EQU   11                      START CYCLE STEAL STATUS SVC
00000C                     515 PREP  EQU   12                      PREPARE DEVICE SVC
00000D                     516 READ0 EQU   13                      READ WITH FUNCTION BIT 3 OFF SVC
00000E                     517 READ1 EQU   14                      READ WITH FUNCTION BIT 3 ON SVC
00000F                     518 RSTAT EQU   15                      READ STATUS SVC
000010                     519 WRIT0 EQU   16                      WRITE WITH FUNCTION BIT 3 OFF SVC
000011                     520 WRIT1 EQU   17                      WRITE WITH FUNCTION BIT 3 ON SVC
000012                     521 CTRL  EQU   18                      CONTROL SVC
000013                     522 RICB  EQU   19                      RELEASE INTERUPT CONTROL BLOCK SVC
000014                     523 CICB  EQU   20                      CONNECT INTERUPT CONTROL BLOCK SVC
000015                     524 HIO   EQU   21                      HALT ALL I/O
000016                     525 REQSD EQU   22                      REQUEST USE OF DCP DISK SVC
000017                     526 RELSD EQU   23                      RELEASE USE OF DCP DISK SVC
000018                     527 HALT  EQU   24                      HALT SVC
000019                     528 ETOH  EQU   25                      EBCDIC TO HEX SVC (STRING)
00001A                     529 HTOE  EQU   26                      HEX TO EBCDIC SVC (STRING)
00001B                     530 ATOH  EQU   27                      ASCII TO HEX SVC (STRING)
00001C                     531 HTOA  EQU   28                      HEX TO ASCII SVC (STRING)
00001D                     532 EBOA  EQU   29                      EBCDIC TO ASCII SVC (STRING)
00001E                     533 ATOE  EQU   30                      ASCII TO EBCDIC SVC (STRING)
00001F                     534 READI EQU   31                      READ DATA SETS FOR MDI/UTIL
000020                     535 WRITI EQU   32                      WRITE DATA SETS FOR UTIL
                           537 ********************************************************************************
                           538 *                                                                              *
                           539 *                EQUATES USED BY TU'S AS CONSTANTS                             *
                           540 *                                                                              *
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
                            541 ********************************************************************************
000004E                     542 PLUS   EQU   C'+'                    PLUS CHAR
000060                      543 MINUS  EQU   C'-'                    MINUS CHAR
000000                      545 ZERO   EQU   0
000001                      546 ONE    EQU   1
000002                      547 TWO    EQU   2
000003                      548 THREE  EQU   3
000004                      549 FOUR   EQU   4
000005                      550 FIVE   EQU   5
000006                      551 SIX    EQU   6
000007                      552 SEVEN  EQU   7
000008                      553 EIGHT  EQU   8
000009                      554 NINE   EQU   9
00000A                      555 TEN    EQU   10
00000B                      556 ELEVN  EQU   11                       11
00000C                      557 TWELV  EQU   12                       12
00000D                      558 THRTN  EQU   13                       13
00000F                      559 FIVTN  EQU   15                       15
000010                      560 SIXTN  EQU   16                       16
000020                      561 THRY2  EQU   32                       32
000040                      562 SIXT4  EQU   64                       64
000080                      563 ONE28  EQU   128                      128
000100                      564 TWO56  EQU   256                      256
000400                      565 ONEK   EQU   1024                     1024
000800                      566 TWOK   EQU   2048                     2048
000C00                      567 THREK  EQU   3072                     3072
001000                      568 FOURK  EQU   4096                     4096
FFFFFF                      570 M1     EQU   -1                       -1
FFFFFE                      571 M2     EQU   -2                       -2
FFFFFD                      572 M3     EQU   -3                       -3
FFFFFC                      573 M4     EQU   -4                       -4
                            575 ********************************************************************************
                            576 *                                                                              *
                            577 *     THE FOLLOWING ARE EQUATES FOR BIT DISPLACEMENTS FROM THE                 *
                            578 *     BEGINNING OF THE BYTE TO EACH BIT IN THE WORD OF SWITCHES.               *
                            579 *                                                                              *
                            580 ********************************************************************************
000000                      581 BS0    EQU   0
000001                      582 BS1    EQU   1
000002                      583 BS2    EQU   2
000003                      584 BS3    EQU   3
000004                      585 BS4    EQU   4
000005                      586 BS5    EQU   5
000006                      587 BS6    EQU   6
000007                      588 BS7    EQU   7
000008                      589 BS8    EQU   8
000009                      590 BS9    EQU   9
00000A                      591 BS10   EQU   10
00000B                      592 BS11   EQU   11
00000C                      593 BS12   EQU   12
00000D                      594 BS13   EQU   13
00000E                      595 BS14   EQU   14
00000F                      596 BS15   EQU   15
                            598         COPY  T7896                    01DEC76
                            599 T7896 TUIT $ERR$
                            600+********************************************************************06FEB76**
                            601+*
                            602+* TEST UNIT
                            603+*
                            604+*     (TU96)        WRITE/READ TEST                                  1/24/77
                            605+*
                            606+* PURPOSE
                            607+*
                            608+*     FUNCTION: SEEK TO CE TRACK AND WRITE/READ VARIOUS DATA PATTERNS
                            609+*     .
                            610+*     .    PROGRAM INITIALIZES ATTACHMENT.
                            611+*     .    RECALIBRATE AND SEEK OUT TO TRACK 302
                            612+*     .    USE HEAD 0
                            613+*     .    WRITE 256 BYTES IN SECTOR 0 OR NEXT GOOD SECT (X'00 THRU FF')
                            614+*     .    READ AND COMPARE TO WRITE DATA
                            615+*     .    WRITE 256 BYTES IN SECTOR 0 OR NEXT GOOD SECTOR (X'DEBF')
                            616+*     .    READ AND COMPARE TO WRITE DATA
                            617+*     .    WRITE 256 BYTES IN SECTOR 0 OR NEXT GOOD SECTOR (X'55')
                            618+*     .    READ AND COMPARE TO WRITE DATA
                            619+*     .    WRITE 256 BYTES IN SECTOR 0 OR NEXT GOOD SECTOR (X'AA')
                            620+*     .    READ AND COMPARE TO WRITE DATA
                            621+*     .    REPEAT USING HEAD 1
                            622+*     .    REPEAT USING HEAD 2 IF INSTALLED
                            623+*
                            624+* CALLING SEQUENCE
                            625+*
                            626+*     PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
                            627+*     .         TURESUL BIT 0------------NOT USED
                            628+*     .         TURESUL BIT 1------------NOT USED
                            629+*     .         TURESUL BIT 2------------NOT USED
                            630+*     .         TURESUL BIT 3------------NOT USED
                            631+*     .
                            632+*     .         TURESUL BIT 4------------NOT USED
                            633+*     .         TURESUL BIT 5------------ NOT USED
                            634+*     .         TURESUL BIT 6------------READ
                            635+*     .         TURESUL BIT 7------------ WRITE
                            636+*     .
                            637+*     .         TURESUL BIT 8------------RECAL
                            638+*     .         TURESUL BIT 9------------SEEK
                            639+*     .         TURESUL BIT 10------------ NOT READY
                            640+*     .         TURESUL BIT 11--EXCEPTION END
                            641+*     .
                            642+*     .         TURESUL BIT 12--WRITE/READ MISCOMPARE WITH RIPPLE DATA
                            643+*     .         TURESUL BIT 13--WRITE/READ MISCOMPARE WITH 'DEBF' DATA
                            644+*     .         TURESUL BIT 14--WRITE/READ MISCOMPARE WITH '55' DATA
                            645+*     .         TURESUL BIT 15--WRITE/READ MISCOMPARE WITH 'AA' DATA
                            646+*     .         TURESUL BITS 16-32 CS STATS
                            647+*     .
                            648+*     EXITS NORMAL
                            649+*     .         RETURNS TO MDI SUPERVISOR WHEN DONE.
                            650+*
                            651+*     EXITS ERROR
                            652+*     .         RETURNS TO MDI SUPERVISOR.
                            653+*
                            654+* RETURN CONTROL
                            655+*
                            656+*       B      TURTN*                  RETURN TO MDI SUPERVISOR
                            657+*
                            658********************************************************************************
```



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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
002606  6F0D 25F6          659+T7896  MVW    R7,TURTN                 SAVE RETURN ADDRESS
002608  4020 25BE 7896     660+       MVWI   X'7896',$TUID            SAVE TU ID FOR DISPLAY
002610  4424 25B8          661+       MVA    OPTN1,R4                 SET UP POINTER ADRS IN R4
002614  6E03 2CD6          662+       BAL    $CONC,R6                 CLEAR DEV DEP STG AND CONNECT I/O BL
002618  2D0A               663+       DC     A($ERR$)                 ERROR ADRS FOR INVALID PREP
                           664+*
00261A  4724 2CC2          665        MVA    IOBLK,R7                 SETUP IOBLK
00261E  6008               666        SVC    RESET                    ISSUE IO RESET
002620  C225 18C8          667        MVWZ   TURESUL,R2               CLEAR RESULTS WORD
002624  C225 18CA          668        MVWZ   TURESUL+2,R2             CLEAR RESULTS WORD 2
002628  4224 18C8          669        MVA    TURESUL,R2               ADDRESS OF RESULTS
00262C  6808 18C2          670        MVW    TUBUFF,R0                GET ADDRESS OF FIRST UNUSED STOR POS
002630  680D 2926          671        MVW    R0,WRDCB+14              LOAD BUFFER ADDRESS IN WRT DCB
002634  7801 0100          672        AWI    X'0100',R0               ADJ ADDRESS FOR READ BUFFER
002638  680D 2946          673        MVW    R0,RDDCB+14              LOAD BUFFER ADDRESS IN READ DCB
00263C  6E03 2AFC          674        BAL    $RECL,R6                 RECALIBRATE
002640  2D0A               675        DC     A($ERR$)                  ERROR
002642  4CA1               676        TBTR   (R4,ER)                  INTERRUPT ERROR?
002644  6A00 2D0A          677        BON    $ERR$                    YES
002648  4020 28F8 0005     678 T96Z   MVWI   5,SKDCB                  SEEK CONTROL WORD
00264E  4020 28FA 012E     679        MVWI   302,SKDCB+2              SEEK TO CE TRACK
002654  4020 2900 0000     680        MVWI   0,SKDCB+8                SELECT HEAD ZERO
00265A  6E03 2AF4          681        BAL    $SEEK,R6                 SEEK
00265E  2D0A               682        DC     A($ERR$)                 ERROR
002660  4CA1               683        TBTR   (R4,ER)                  INTERPUPT ERROR?
002662  6A00 2D0A          684        BON    $ERR$                    YES
002666  4020 28D8 200A     685        MVWI   X'200A',RSDCB            READ SECTOR ID CONTROL WORD
00266C  4020 2986 0000     686        MVWI   0,LGSEC                  INIT LOG SECT  LOC
002672  6E03 2AA2          687 T964   BAL    CONVT,R6                 CONVERT LOG SECT TO PHYS-1
002676  8028 2989 28DC     688        MVB    PHYSC+1,RSDCB+4          LOAD PHYSC SECT -1 IN RDSEC DCB
00267C  6E03 2B04          689        BAL    $RDID,R6                 READ SECTOR ID
002680  2D0A               690        DC     A($ERR$)                 ERROR
002682  4CA1               691        TBTR   (R4,ER)                  TEST FOR ERROR
002684  1208               692        JON    T962
002686  802B 2968 25C7     693        CB     ZERO0,SCTID+1            FLAG ZERO?
00268C  1804               694        JNE    T962                     NO
00268E  402F 25C8 012E     695        CWI    302,SCTID+2              CE TRACK?
002694  1009               696        JE     T963                     YES
002696  402F 2986 003B     697 T962   CWI    59,LGSEC                 END OF TRACK?
00269C  6800 2D0A          698        BE     $ERR$                    YES-BAD TRACK
0026A0  4029 2986 0001     699        AWI    1,LGSEC                  INCREMENT LOG SECT NUM
0026A6  50E5               700        J      T964                     LOOP
0026A8  4020 28FA 0000     701 T963   MVWI   0,SKDCB+2               SETUP SEEK NO-OP  (HEAD SELECT)
0026AE  4020 2900 0000     702        MVWI   0,SKDCB+8                SELECT HEAD ZERO
0026B4  6E03 2AF4          703        BAL    $SEEK,R6                 SEEK
0026B8  2D0A               704        DC     A($ERR$)                 ERROR
0026BA  4CA1               705        TBTR   (R4,ER)                  CHECK CC
0026BC  6A00 2D0A          706        BON    $ERR$                    ERROR
0026C0  4020 293C 0000     707        MVWI   0,RDDCB+4                FLAG=0
0026C6  4020 293E 012E     708        MVWI   302,RDDCB+6              CYL=302
0026CC  8828 2986 2940     709        MVW    LGSEC,RDDCB+8            SECT 0 OR NEXT GOOD SECTOR
0026D2  4020 2944 0100     710        MVWI   256,RDDCB+12             BYTE CTR
0026D8  4020 2918 0001     711        MVWI   X'0001',WRDCB            WRITE CTL WD
0026DE  4020 291C 0000     712        MVWI   0,WRDCB+4                FLAG=0
0026E4  4020 291E 012E     713        MVWI   302,WRDCB+6              CYL=302
0026EA  8828 2986 2920     714        MVW    LGSEC,WRDCB+8            SECT 0 OR NEXT GOOD SECTOR
0026F0  4020 2938 2009     715        MVWI   X'2009',RDDCB            READ CONTROL WORD
0026F6  4020 2924 0100     716        MVWI   256,WRDCB+12             BYTE CTR
0026FC  6908 18C2          717 T96A   MVW    TUBUFF,R1                ADD OF WRITE BUFFER
002700  4024 0000          718        MVWI   0,R0                     INIT DATA PATTERN TO '00'
002704  C058               719 T96B   MVB    R0,(R1)+                 BUILD DATA PATTERN 00-FF (RIPPLE)
002706  7801 0001          720        AWI    1,R0                     INC DATA PATTERN
00270A  7806 0100          721        CWI    X'0100',R0               JUMP IF 256 BYTES WRITTEN
00270E  16FA               722        JNE    T96B                     *
002710  4020 29F2 0001     723        MVWI   1,PATTR                  INDICATE WHICH PATTERN BEING WRITTEN
002716  6E03 27F2          724        BAL    T96C,R6                  WRITE/READ/COMPARE ROUTINE
00271A  4024 0080          725        MVWI   128,R0                   WORD COUNT
00271E  6908 18C2          726        MVW    TUBUFF,R1                WRITE BUFFER ADDRESS
002722  4050 DEBF          727 T96D   MVWI   X'DEBF',(R1)+             LOAD DATA PATTERN IN WRITE BUFFER
002726  B8FD               728        JCT    T96D,R0                  DECREMENT BYTE COUNT
002728  4020 29F2 0002     729        MVWI   2,PATTR                  INDICATE WHICH PATTERN BEING WRITTEN
00272E  6E03 27F2          730        BAL    T96C,R6                  WRITE/READ/COMPARE ROUTINE
002732  0855               731        MVBI   X'55',R0                 DATA PATTERN '55'
002734  6908 18C2          732        MVW    TUBUFF,R1                WRBUF ADDRESS
002738  4724 0100          733        MVWI   256,R7                   BYTE CTR
00273C  282C               734        FFN    R0,(R1)                  LOAD WRBUF
00273E  4020 29F2 0003     735        MVWI   3,PATTR                  INDICATE WHICH PATTERN BEING WRITTEN
002744  6E03 27F2          736        BAL    T96C,R6                  WRITE/READ/COMPARE ROUTINE
002748  08AA               737        MVBI   X'AA',R0                 DAT PATTERN 'AA'
00274A  6908 18C2          738        MVW    TUBUFF,R1                WRBUF ADDRESS
00274E  4724 0100          739        MVWI   256,R7                   BYTE COUNT
002752  282C               740        FFN    R0,(R1)                  LOAD BUFFER
002754  4020 29F2 0004     741        MVWI   4,PATTR                  INDICATE WHICH PATTERN BEING WRITTEN
00275A  6E03 27F2          742        BAL    T96C,R6                  WRITE/READ/COMPARE ROUTINE
00275E  802B 2968 18C9     743        CB     ZERO0,TURESUL+1           MDI BYTE2=0
002764  1007               744        JE     T96E                     YES
002766  802B 2968 2900     745        CB     ZERO0,SKDCB+8             HEAD0
00276C  1002               746        JE     T96F                     YES
00276E  4A41               747        TBTS   (R2,1)                   HEAD 1 FAILED
002770  5001               748        J      T96E
002772  4A40               749 T96F   TBTS   (R2,0)                   HEAD0 FAILED
002774  4724 2CC2          750 T96E   MVA    IOBLK,R7                 DEVICE RESET
002778  6008               751        SVC    RESET                    *
00277A  4724 2CC2          752        MVA    IOBLK,R7                 READ ID
00277E  6009               753        SVC    RID                      *
002780  402F 2CCC 00CA     754        CWI    X'00CA',IOMOD+4          LARGE FILE?
002786  1017               755        JE     T96S                     YES
002788  402F 2900 0000     756        CWI    0,SKDCB+8                HEAD0
00278E  182F               757        JNE    T96G                     EXIT
002790  4020 2900 0100     758 T96T   MVWI   X'0100',SKDCB+8          SET HEAD 1
002796  4020 28FA 0000     759        MVWI   0,SKDCB+2                SEEK NO-OP,SELECT HEAD1
00279C  6E03 2AF4          760        BAL    $SEEK,R6                 SEEK
0027A0  2D0A               761        DC     A($ERR$)                  ERROR
0027A2  4CA1               762        TBTR   (R4,ER)                  *
0027A4  6A00 28A4          763        BON    T96CC                    *
0027A8  8028 296B 2940     764        MVB    ONE1+1,RDDCB+8           HEAD=1
0027AE  8028 296B 2920     765        MVB    ONE1+1,WRDCB+8           HEAD=1
0027B4  50A3               766        J      T96A
0027B6  402F 2900 0000     767 T96S   CWI    0,SKDCB+8                HEAD 0?
0027BC  10E9               768        JE     T96T                     YES
0027BE  402F 2900 0100     769        CWI    X'0100',SKDCB+8          HEAD 1?
0027C4  1001               770        JE     T96U                     YES
0027C6  5013               771        J      T96G                     EXIT
0027C8  4020 2900 0200     772 T96U   MVWI   X'0200',SKDCB+8          SET HEAD 2
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
0027CE  4020 28FA 0000    773         MVWI  0,SKDCB+2                NO-OP
0027D4  6E03 2AF4         774         BAL   $SEEK,R6                 SELECT HEAD 2
0027D8  2D0A              775         DC    A($ERR$)                 *
0027DA  4CA1              776         TBTR  (R4,ER)                  ANY ERROR
0027DC  6A00 28A4         777         BON   T96CC                    YES
0027E0  4029 2940 0100    778         AWI   X'0100',RDDCB+8          SET HEAD 2
0027E6  4029 2920 0100    779         AWI   X'0100',WRDCB+8          *
0027EC  5087              780         J     T96A                     LOOP
                          781 *
                          782 T96G    TXIT
0027EE  6802 2D5A         783+T96G    B     $CONX                    RETURN TO MDI CONTROLLER
                          784+*************************************************************************
                          785 *  WRITE/READ/COMPARE
0027F2  6E0D 286E         786 T96C    MVW   R6,T96I+2                SET UP RETURN ADDRESS
0027F6  6E03 2B3A         787         BAL   $WRT,R6                  WRITE
0027FA  2D0A              788         DC    A($ERR$)                  ERROR
0027FC  4CA1              789         TBTR  (R4,ER)                  INTERRUPT ERROR?
0027FE  100C              790         JOFF  T96J                     NO----- COMPARE DATA
002800  4A4B              791         TBTS  (R2,11)                  EXCEPTION END
002802  4CA9              792         TBTR  (R4,CSA)                 CS STATS AVAILABLE
002804  6800 2D0A         793         BOFF  $ERR$                    NO----- COMPARE DATA
002808  4524 25E0         794         MVA   CSBUF+2,R5               CS STATS
00280C  4D0F              795         TBT   (R5,15)                  NOT READY ?
00280E  1004              796         JOFF  T96J
002810  4A4A              797         TBTS  (R2,10)                  NOT READY
002812  4A47              798         TBTS  (R2,7)                   WRITE
002814  6802 2898         799         B     T96BB
002818  6E03 2B1E         800 T96J    BAL   $RD,R6                   READ
00281C  2D0A              801         DC    A($ERR$)                  ERROR
00281E  4CA1              802         TBTR  (R4,ER)                  INTERRUPT ERROR?
002820  100C              803         JOFF  T96R                     NO----- COMPARE DATA
002822  4A4B              804         TBTS  (R2,11)                  EXCEPTION END
002824  4CA9              805         TBTR  (R4,CSA)                 CS STATS AVAILABLE
002826  6800 2D0A         806         BOFF  $ERR$                    NO----- COMPARE DATA
00282A  4524 25E0         807         MVA   CSBUF+2,R5               CS STATS
00282E  4D0F              808         TBT   (R5,15)                  NOT READY ?
002830  1004              809         JOFF  T96R
002832  4A4A              810         TBTS  (R2,10)                  NOT READY
002834  4A46              811         TBTS  (R2,6)                   READ
002836  6802 2898         812         B     T96BB
00283A  6F08 2924         813 T96R    MVW   WRDCB+12,R7              BYTE CTR
00283E  6D08 18C2         814         MVW   TUBUFF,R5                WRITE BUFFER ADDER
002842  7D61 0100         815         AWI   X'0100',R5,R3            READ BUFFER ADDER
002846  2BA6              816         CFNEN (R3),(R5)                COMPARE READ DATA TO WRITE
002848  1813              817         JNE   T96K                     COMPARE ERROR
00284A  4724 2CC2         818 T96M    MVA   IOBLK,R7                 DEVICE RESET
00284E  6E03 2AFC         819         BAL   $RECL,R6                 RECAL
002852  2D0A              820         DC    A($ERR$)                  ERROR
002854  4C61              821         TBTS  (R4,ER)
002856  6A00 2896         822         BON   T96AA
00285A  4020 28FA 012E    823         MVWI  X'012E',SKDCB+2          SEEK TO CE TRACK
002860  6E03 2AF4         824         BAL   $SEEK,R6                 SEEK
002864  2D0A              825         DC    A($ERR$)                  ERROR
002866  4CA1              826         TBTR  (R4,ER)                  INTERRUPT ERROR?
002868  6A00 28A4         827         BON   T96CC                    ERROR
00286C  6802 0000         828 T96I    B     *-*                      RETURN
                          829 *
002870  402F 29F2 0001    830 T96K    CWI   1,PATTR                  RIPPLE PATTERN
002876  1802              831         JNE   T96L                     NO
002878  4A4C              832         TBTS  (R2,12)                  WR/RD MISCOMPARE-RIP PAT
00287A  50E7              833         J     T96M
00287C  402F 29F2 0002    834 T96L    CWI   2,PATTR                  DEBF PATTERN
002882  1801              835         JNE   T96N                     NO
002884  4A4D              836         TBTS  (R2,13)                  WR/RD MISCOMPARE-DEBF PAT
                          837 *       J     T96M
002886  402F 29F2 0003    838 T96N    CWI   3,PATTR                  '55' PATTERN
00288C  1802              839         JNE   T96P                     NO
00288E  4A4E              840         TBTS  (R2,14)                  WR/RD MISCOMPARF '55' PAT
002890  50DC              841         J     T96M
002892  4A4F              842 T96P    TBTS  (R2,15)                  WR/RD MISCOMPARE 'AA' PAT
002894  50DA              843         J     T96M
002896  4A48              844 T96AA   TBTS  (R2,8)                   READ
002898  4A4B              845 T96BB   TBTS  (R2,11)                  EXCEPTION END
00289A  8828 25E0 18CA    846         MVW   CSBUF+2,TURESUL+2
0028A0  6802 27EE         847         B     T96G
0028A4  4A49              848 T96CC   TBTS  (R2,9)                   SEEK
0028A6  50F8              849         J     T96BB
                          850 *
                          852         COPY  T78DCB                   01DEC76
                          853 ** (T78DCB)
                          854 ***************************************************12/1/76**********
                          855 *
                          856 *     DCB TABLES AND DC'S
                          857 *
                          858 *************************************************************************
                          859 *
                          860 ***** DIAGNOSTIC DCB   ********
                          861 *
0028A8  2008              862 DGDCB DC    X'2008'                    DIAGNOSTIC DCB
0028AA  0000              863       DC    X'0000'                    NOT USED
0028AC  0000              864       DC    A(*-*)                     0-7 = PHYSICAL SECTOR # MINUS ONE
0028AE  0000              865       DC    X'0000'                    NOT USED
0028B0  0000              866       DC    X'0000'                    NOT USED
0028B2  0000              867       DC    A(*-*)                     CHAINING ADDPESS
0028B4  0100              868       DC    X'0100'                    BYTE COUNT
0028B6  0000              869       DC    A(*-*)                     DATA ADDRESS
                          870 *
                          871 *
                          872 ***** RECALIBRATE DCB  ********
                          873 *
0028B8  0007              874 CLDCB DC    X'0007'                    RECALIBRATE DCB
0028BA  00000000000000000 875       DC    7A(*-*)
                          876 *
                          877 *****  WRITE SECTOR ID  **
                          878 *
0028C8  0002              879 WSDCB  DC    X'0002'                    WRITE SECTOR ID CONTROL WORD
0028CA  0000              880       DC    X'0000'                    NOT USED
0028CC  0000              881       DC    A(*-*)                     0-7 = PHYSICAL SECTOR # MINUS ONE
0028CE  0000              882       DC    A(*-*)                     NOT USED
0028D0  0000              883       DC    A(*-*)                     NOT USED
0028D2  0000              884       DC    A(*-*)                     CHAIN ADDRESS
0028D4  0006              885       DC    X'0006'                    BYTE COUNT
0028D6  298E              886       DC    A(WRSID)                   ADDR OF SECTOR ID DATA
                          887 *****  READ SECTOR ID DCB  *******
```



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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
                          888 *
0028D8  200A              889 RSDCB DC    X'200A'                    READ SECTOR ID
0028DA  0000              890       DC    X'0000'                    NOT USED
0028DC  0000              891       DC    X'0000'                    0-7 = PHYSICAL SECTOR # MINUS ONE
0028DE  0000              892       DC    X'0000'                    NOT USED
0028E0  0000              893       DC    X'0000'                    NOT USED
0028E2  0000              894       DC    X'0000'                    CHAIN ADDRESS
0028E4  0006              895       DC    X'0006'                    BYTE COUNT FOR READ SECTOR ID
0028E6  25C6              896       DC    A(SCTID)                   SECTOR ID DATA ADDRESS
                          897 *
                          898 *
                          899 ***** READ SECTOP ID IMMEDIATE DCB  *******
                          900 *
0028E8  200E              901 RIDCB DC    X'200E'                    READ SECTOR ID
0028EA  0000              902       DC    X'0000'                    NOT USED
0028EC  0000              903       DC    X'0000'                    NOT USED
0028EE  0000              904       DC    X'0000'                    NOT USED
0028F0  0000              905       DC    X'0000'                    NOT USED
0028F2  0000              906       DC    A(*-*)                     CHAIN ADDRESS
0028F4  0006              907       DC    X'0006'                    BYTE COUNT FOR READ SECTOR ID
0028F6  25C6              908       DC    A(SCTID)                   SECTOR ID DATA ADDRESS
                          909 *
                          910 *
                          911 ***** SEEK DCB  ********
                          912 *
0028F8  0005              913 SKDCB DC    X'0005'                    SEEK DCB
0028FA  0000              914       DC    X'0000'                    BIT 0-3=0;BIT4=DIRECTION;5-15=DIFFER
0028FC  0000              915       DC    F'0'
0028FE  0000              916       DC    F'0'
002900  0000              917       DC    X'0000'                    0-7 = HEAD;8-15 NOT USED
002902  0000              918       DC    A(*-*)                     CHAIN ADDRESS
002904  0000              919       DC    F'0'                       NOT USED
002906  0000              920       DC    F'0'                       NOT USED
                          921 *
                          922 ***** CYCLE STEAL STATUS DCB  ********
                          923 *
002908  2000              924 CSDCB DC    X'2000'                    CONTROL WORD
00290A  0000              925       DC    F'0'                       NOT USED
00290C  0000              926       DC    F'0'                       NOT USED
00290E  0000              927       DC    F'0'                       NOT USED
002910  0000              928       DC    F'0'                       NOT USED
002912  0000              929       DC    F'0'                       NOT USED
002914  0008              930       DC    X'0008'                    4 WORDS OF STATS
002916  25DE              931       DC    A(CSBUF)                   ADDRESS OF CYCLE STEAL STATUS DATA
                          932 *
                          933 *****  WRITE DCB  **********
                          934 *
002918  0001              935 WRDCB DC    X'0001'                    WRITE CONTROL WORD
00291A  0000              936       DC    F'0'                       NOT USED
00291C  0000              937       DC    X'0000'                    0-7=0;8-15 = FLAG BYTE
00291E  0000              938       DC    X'0000'                    SERCH ARGUMENT CYLINDER
002920  0000              939       DC    X'0000'                    SEARCH ARGUMENT HEAD-SECTOR
002922  0000              940       DC    A(*-*)                     CHAIN ADDRESS
002924  0000              941       DC    F'0'                       BYTE COUNT
002926  0000              942       DC    A(*-*)                     WRITE DATA ADDRESS
                          943 *
                          944 *****  VERIFY DCB   *******
                          945 *
002928  200C              946 VRDCB DC    X'200C'                    CONTROL WORD
00292A  0000              947       DC    F'0'                       NOT USED
00292C  0000              948       DC    X'0000'                    0-7=0;8-15 = FLAG BYTE
00292E  0000              949       DC    X'0000'                    CYLINDER
002930  0000              950       DC    X'0000'                    HEAD - SECTOR
002932  0000              951       DC    A(*-*)                     CHAIN ADDRESS
002934  0000              952       DC    F'0'                       BYTE COUNT
002936  0000              953       DC    A(*-*)                    VERIFY DATA ADDFESS
                          954 *
                          955 *****  READ DCB   *******
                          956 *
002938  2009              957 RDDCB DC    X'2009'                    READ DCB CONTROL WORD
00293A  0000              958       DC    F'0'                       NOT USED
00293C  0000              959       DC    X'0000'                    0-7=0,8-15 = FLAG BYTE
00293E  0000              960       DC    X'0000'                    SEARCH ARGUMENT CYLINDER
002940  0101              961       DC    X'0101'                    SEARCH ARGUMENT H-R
002942  0000              962       DC    A(*-*)                     CHAIN ADDRESS
002944  0000              963       DC    F'0'                       BYTE COUNT
002946  0000              964       DC    A(*-*)                     READ DATA ADDRESS
                          965 *
                          966 ****  WRITE SECTOR ID SKEWED   ****
                          967 *
002948  0003              968 WKDCB DC    X'0003'                    CONTROL WORD
00294A  0000              969       DC    X'0000'                    NOT USED
00294C  0000              970       DC    A(*-*)                     0-7 = PHYSICAL SECTOR # MINUS ONE
00294E  0000              971       DC    A(*-*)                     NOT USED
002950  0000              972       DC    A(*-*)                     NOT USED
002952  0000              973       DC    A(*-*)                     CHAIN ADDRESS
002954  0006              974       DC    X'0006'                    BYTE COUNT
002956  298E              975       DC    A(WRSID)                   ADDR OF SECTOR ID DATA
                          976 *
                          977 ****  READ SECTOR ID SKEWED    ****
                          978 *
002958  200B              979 RKDCB DC    X'200B'                    CONTROL WORD
00295A  0000              980       DC    X'0000'                    NOT USED
00295C  0000              981       DC    X'0000'                    0-7 = PHYSICAL SECTOR # MINUS ONE
00295E  0000              982       DC    X'0000'                    NOT USED
002960  0000              983       DC    X'0000'                    NOT USED
002962  0000              984       DC    A(*-*)                     CHAIN ADDRESS
002964  0006              985       DC    X'0006'                    BYTE COUNT FOR READ SECTOR ID
002966  25C6              986       DC    A(SCTID)                   SECTOR ID DATA ADDRESS
                          987 *
                          988 *     CONSTANTS AND DEFINED STORAGE  LOCATIONS
002968  0000              989 ZERO0 DC    X'0000'                    CONSTANT ZERO
00296A  0001              990 ONE1  DC    X'0001'                    CONSTANT ONE
00296C  00000000          991 TIMEOUT DC  2A(*-*)                    TIMEOUT COUNTER
002970  0000              992 TONE  DC    X'0000'                    CONSTANT FOR ADD DOUBLE
002972  0001              993       DC    X'0001'                    *
002974  0500              994 COUNT DC    F'1280'                    BYTE COUNT (1280)
002976  0000              995 DIFF  DC    A(*-*)                     SEEK DIFFERENCE
002978  0000              996 XXX   DC    A(*-*)                     WORK WORD INT TO ZERO
00297A  0000              997 BCNT  DC    X'0000'                    BYTE COUNT
00297C  0000              998 JOE   DC    A(*-*)                     WRITE PARAMETER POINTER
00297E  0000              999 JOE1  DC    A(*-*)                     SAVE LOC FOR PARM LIST ADDRESS
002980  DEB6             1000 WDATA DC    X'DEB6'                    WRITE DATA
002982  6BED             1001       DC    X'6BED'                    *
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

002984  0000              1002 TABLE DC    A(*-*)                   ADDR OF WRT PAR LIST FOR FORMAT RTNS
002986  0000              1003 LGSEC DC    X'0000'                  LOGICAL SECTOR #
002988  0000              1004 PHYSC DC    X'0000'                  CONVERTED PHYSICAL SEC #
00298A  1D00              1005 CB29  DC    X'1D00'                  CONSTANT BYTE 29
00298C  3B00              1006 FIVE9 DC    X'3B00'                  CONSTANT BYTE 59
00298E  0000              1007 WRSID DC    X'0000'                  FLAG,CYLINDER (WRT SECTOR ID DATA)
002990  0000              1008       DC    X'0000'                  CYLINDER,HEAD
002992  0000              1009       DC    X'0000'                  LOG SECTOR,NOT USED
002994  00FF              1010 CDAT  DC    X'00FF'                  INVALID DATA CONSTANT
002996  FF34              1011 WSIDT DC    X'FF34'                  WRITE SECTOR ID TEST DATA
002998  5678              1012       DC    X'5678'                  *
00299A  9A00              1013       DC    X'9A00'                  *
00299C  0000              1014 SCTST DC    X'0000'                  READ SECTOR ID TEST DATA BUFFER
00299E  0000              1015       DC    X'0000'                  *
0029A0  0000              1016       DC    X'0000'                  COUNTER
0029A2  0000              1017 CTR01 DC    X'0000'                  COUNTER
0029A4  0000              1018 CTR02 DC    X'0000'                  COUNTER
0029A6  0000              1019 CTR03 DC    X'0000'                  COUNTER
0029A8  0000              1020 CTR04 DC    X'0000'                  COUNTER
0029AA  0000              1021 CTR05 DC    X'0000'                  COUNTER
0029AC  0000              1022 CTR06 DC    X'0000'                  SAVE AREA
0029AE  0000              1023 SAVR3 DC    X'0000'                  SAVE AREA
0029B0  0000              1024 SAVR5 DC    X'0000'
0029B2  0000              1025 WR2   DC    X'0000'
0029B4  0000              1026 SVSEK DC    X'0000'
0029B6  0000              1027 LCT   DC    X'0000'
0029B8  0000              1028 T56AA DC    X'0000'
0029BA  0000              1029 T56BB DC    X'0000'
0029BC  0000              1030 T56CC DC    X'0000'
0029BE  0000              1031 T56DD DC    X'0000'
0029C0  0000              1032 T56EE DC    X'0000'
0029C2  0000              1033 T56FF DC    X'0000'
0029C4  0000              1034 T56GG DC    X'0000'
0029C6  0000              1035 T86AA DC    X'0000'
0029C8  0000              1036 T86BB DC    X'0000'
0029CA  0000              1037 T86CC DC    X'0000'
0029CC  0000              1038 T86DD DC    X'0000'
0029CE  0000              1039 T86EE DC    X'0000'
0029D0  0000              1040 T86FF DC    X'0000'
0029D2  0000              1041 T86GG DC    X'0000'
0029D4  0000              1042 T41D  DC    X'0000'
0029D6  0000              1043 T41LP DC    X'0000'
0029D8  0000              1044 WRLCT DC    X'0000'
0029DA  0000              1045 CYLOC DC    X'0000'
0029DC  0000              1046 PASS1 DC    A(*-*)
0029DE  0000              1047 HEAD0 DC    A(*-*)
0029E0  0000              1048 HEAD1 DC    A(*-*)
0029E2  0000              1049 GDSE0 DC    A(*-*)
0029E4  0000              1050 GDSE1 DC    A(*-*)
0029E6  0000              1051 ER00  DC    A(*-*)
0029E8  0000              1052 ER01  DC    A(*-*)
0029EA  0000              1053 HD0SV DC    A(*-*)
0029EC  0000              1054 HD1SV DC    A(*-*)
0029EE  0000              1055 ER0SV DC    A(*-*)
0029F0  0000              1056 ER1SV DC    A(*-*)
0029F2  0000              1057 PATTR DC    A(*-*)
0029F4  0000              1058 CECYL DC    A(*-*)
0029F6  0000              1059 STATS DC    A(*-*)
                          1060 *
                          1062       COPY  T78DPCIO                 01DEC76
                          1063 ** (T78DPCIO)
                          1064 *                                                    2/07/77
                          1065 *     EXECUTE DPC INPUT/OUTPUT COMMANDS
                          1066 *     THIS ROUTINE HAS THE FOLLOWING ENTRIES:
                          1067 *
                          1068 * 1   BAL   CEOP1,R6               CE DIAGNOSTIC OP1(TURN ON DIAG MODE)
                          1069 *     .
                          1070 * 2   BAL   CEOP2,R6               WRITE DIAG CLOCK STEP DATA
                          1071 *     .
                          1072 * 3   BAL   SENS0,R6               CE READ SENSE WORD ZERO
                          1073 *     .
                          1074 * 4   BAL   SENS1,R6               CE READ SENSE WORD ONE
                          1075 *     .
                          1076 * 5   BAL   WRAP,R6                READ DIAGNOSTIC WRAP
                          1077 *     .
                          1078 *     BXS   (R6,2)                 RETURN
                          1079 *
                          1080 ********************************************************************
                          1081 *
                          1082 *     CE DIAGNOSTIC OP2 DATA WORD  (CLOCK STEP)
                          1083 *
                          1084 *     BIT 00  - SET READY
                          1085 *     BIT 01  - RESET READY
                          1086 *     BIT 02  - SET WRITE CLOCK
                          1087 *     BIT 03  - SET READ CLOCK
                          1088 *     BIT 04  - INDEX PULSE
                          1089 *     BIT 05  - SECTOR PULSE
                          1090 *     BIT 06  - STANDARD READ DATA
                          1091 *     BIT 07  - SPEED PULSE
                          1092 *     BIT 08  - BEHIND HOME
                          1093 *     BIT 09  - SET SEEK COMPLETE
                          1094 *     BIT 10  - RESET SEEK COMPLETE
                          1095 *     BIT 11  - PLO OUT OF SYNC
                          1096 *     BIT 12  - RST RD/WRT CLOCK
                          1097 *     BIT 13  -
                          1098 *     BIT 14  -
                          1099 *     BIT 15  - RESET DIAGNOSTIC MODE
                          1100 *
                          1101 ********************************************************************
                          1102 *
                          1103 *
0029F8  6E0D 25C4         1104 WRAP  MVW   R6,LSTIO                SAVE ADDRESS OF LAST IO
0029FC  8028 19D0 2A7B    1105       MVB   DEVADD,IDCERAP+1        LOAD DEVICE ADDRESS IN IDCB
002A02  680C 2A7A         1106       IO    IDCERAP                 READ SENSE WORD 1
002A06  6F05 2A5C         1107       BNCC  7,CCERR                 CHECK COND CODE
002A0A  5601              1108       BXS   (R6,2)                  RETURN TO CALLER
                          1109 *
002A0C  6E0D 25C4         1110 CEOP1 MVW   R6,LSTIO                SAVE ADDRESS OF LAST IO
002A10  8028 19D0 2A73    1111       MVB   DEVADD,IDCBCE1+1        LOAD DEVICE ADDRESS IN IDCB
002A16  680C 2A72         1112       IO    IDCBCE1                 SET DIAGNOSTIC MODE
002A1A  6F05 2A5C         1113       BNCC  7,CCERR                 CHECK COND CODE
002A1E  5601              1114       BXS   (R6,2)                  RETURN TO CALLEP
                          1115 *
002A20  6E0D 25C4         1116 CEOP2 MVW   R6,LSTIO                SAVE ADDRESS OF LAST IO
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

002A24  8028 19D0 2A77    1117       MVB   DEVADD,IDCBCE2+1        LOAD DEVICE ADDRESS IN IDCB
002A2A  680C 2A76         1118       IO    IDCBCE2                 WRITE DIAG CLOCK STEP
002A2E  6F05 2A5C         1119       BNCC  7,CCERR                 CHECK COND CODE
002A32  5601              1120       BXS   (R6,2)                  RETURN TO CALLER
                          1121 *
                          1122 *
002A34  6E0D 25C4         1123 SENS1 MVW   R6,LSTIO                SAVE ADDRESS OF LAST IO
002A38  8028 19D0 2A6F    1124       MVB   DEVADD,IDCB1+1          LOAD DEVICE ADDRESS IN IDCB
002A3E  680C 2A6E         1125       IO    IDCB1                   READ SENSE WORD 2
002A42  6F05 2A5C         1126       BNCC  7,CCERR                 CHECK COND CODE
002A46  5601              1127       BXS   (R6,2)                  RETURN TO CALLER
                          1128 *
002A48  6E0D 25C4         1129 SENS0 MVW   R6,LSTIO                SAVE ADDRESS OF LAST IO
002A4C  8028 19D0 2A6B    1130       MVB   DEVADD,IDCB0+1          LOAD DEVICE ADDRESS IN IDCB
002A52  680C 2A6A         1131       IO    IDCB0                   READ SENSE WORD 1
002A56  6F05 2A5C         1132       BNCC  7,CCERR                 CHECK COND CODE
002A5A  5601              1133       BXS   (R6,2)                  RETURN TO CALLER
                          1134 *
002A5C  706E              1135 CCERR DC    X'706E'                  COPY STATUS ANY LEVEL INTO R3
002A5E  336A              1136       SRL   13,R3                   POSITION CC CODE TO BITS 13-15
002A60  C328 25C0         1137       MVB   R3,$IOIN                * PUT IN LOG AREA
002A64  68D2 0000         1138       B     (R6)*                   RETURN TO USER
                          1139 *
002A68  6F05              1140 IORST DC    X'6F05'                  RESET IO
002A6A  2205              1141 IDCB0 DC    X'2205'                  SENSE WORD ZERO
002A6C  0000              1142 RDATA0 DC   A(*-*)                   DATA WORD
002A6E  2105              1143 IDCB1 DC    X'2105'                  SENSE WORD ONE
002A70  0000              1144 RDATA DC    A(*-*)
002A72  4005              1145 IDCBCE1 DC  X'4005'                  CE DIAG OP1
002A74  0000              1146 CEDAT DC    A(*-*)                   SENSE DATA
002A76  4105              1147 IDCBCE2 DC  X'4105'                  CE DIAG OP2
002A78  0000              1148 CEDAT2 DC   A(*-*)                   SENSE DATA
002A7A  2F05              1149 IDCBRAP DC  X'2F05'                  READ DIAG WRAP
002A7C  0000              1150 RADDAT DC   A(*-*)                   SENSE DATA
000232                    1151 CPUID  EQU  X'0232'                  CPU ID
                          1152 *
                          1154       COPY  T78IO                    01DEC76
                          1155 ** (T78IO)
                          1156 ********************************12/01/76**********************************
                          1157 *
                          1158 *  SUBROUTINE
                          1159 *
                          1160 *     PURPOSE
                          1161 *
                          1162 *          COMPARE READ SECTOR ID DATA TO WRITE SECTOR ID DATA
                          1163 *          NORMAL AND TEST DATA.
                          1164 *
                          1165 *     CALLING SEQUENCE
                          1166 *
                          1167 *          BAL  CMPRW,R6           (NORMAL)
                          1168 *          BAL  CMPRT,R6           (TEST)
                          1169 *
                          1170 *     RETURN
                          1171 *
                          1172 *          BXS (R6,2)     -   NORMAL
                          1173 *
                          1174 *
                          1175 ********************************************************************
                          1176 *
002A7E  4724 0005         1177 CMPRT MVWI  5,R7                    BYTE COUNT
002A82  4324 299D         1178       MVA   SCTST+1,R3              ADDR OF RD SECT ID DATA (TEST)
002A86  4524 2996         1179       MVA   WSIDT,R5                ADDP OF WR SECT ID DATA (TEST)
002A8A  5006              1180       J     TT4Y
002A8C  4724 0005         1181 CMPRW MVWI  5,R7                    COMPARE BYTE COUNT
002A90  4324 25C7         1182       MVA   SCTID+1,R3              ADDR OF RD SEC ID DATA
002A94  4524 298E         1183       MVA   WRSID,R5                ADDR OF WR SEC ID DATA
002A98  2BA6              1184 TT4Y  CFNEN (R3),(R5)               COMPARE ID DATA
002A9A  68C0 0002         1185       BE    (R6,2)                  BCH IF WRITE ID DATA OK
002A9E  68D2 0000         1186       B     (R6)*                   COMPARE ERROR
                          1187 *
                          1188 ********************************************************************
                          1189 *
                          1190 *  SUBROUTINE
                          1191 *
                          1192 *     PURPOSE
                          1193 *          CONVERT LOGICAL SECTOR NUMBER TO A PHYSICAL SECTOR MINUS
                          1194 *          ONE.
                          1195 *          SETUP LOGICAL SECTOR # IN LOCATION 'LGSEC'
                          1196 *          PHYSICAL SECTOR # WILL BE LOADED IN LOCATION 'PHYSC'
                          1197 *
                          1198 *     LOGICAL SECTOR# TO PHYSICAL SECTOR# CONVERSION
                          1199 * LOGICAL- X 00, 1E, 01, 1F, 02, 20, 03, 21, 04, 22, 05, 23, 06, 24,
                          1200 * PHYSICAL X 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B, 0C, 0D,
                          1201 *
                          1202 * LOGICAL-   07, 25, 08, 26, 09, 27, 0A, 28, 0B, 29, 0C, 2A, 0D, 2B,
                          1203 * PHYSICAL   0E, 0F, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 1A, 1B,
                          1204 *
                          1205 * LOGICAL-   0E, 2C, 0F, 2D, 10, 2E, 11, 2F, 12, 30, 13, 31, 14, 32,
                          1206 * PHYSICAL   1C, 1D, 1E, 1F, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
                          1207 *
                          1208 * LOGICAL-   15, 33, 16, 34, 17, 35, 18, 36, 19, 37, 1A, 38, 1B, 39,
                          1209 * PHYSICAL   2A, 2B, 2C, 2D, 2E, 2F, 30, 31, 32, 33, 34, 35, 36, 37,
                          1210 *
                          1211 * LOGICAL-   1C, 3A, 1D, 3B, X
                          1212 * PHYSICAL   38, 39, 3A, 3B, X
                          1213 *
                          1214 *
                          1215 *     CALLING SEQUENCE
                          1216 *
                          1217 *          BAL  CONVT,R6
                          1218 *
                          1219 *     RETURN
                          1220 *
                          1221 *          B    (TT304+2)
                          1222 *
                          1223 ********************************************************************
                          1224 *
002AA2  6E0D 2AE2         1225 CONVT MVW   R6,TT304+2              SETUP RETURN ADDR
002AA6  802B 2968 2987    1226       CB    ZER00,LGSEC+1           CK FOR LOG # ZERO
002AAC  100D              1227       JE    TT303                   BCH IF LOG # IS ZERO
002AAE  802B 2987 298A    1228       CB    LGSEC+1,CB29            COMP LOG TO 29
002AB4  1C0D              1229       JGE   RTT01                   BCH IF LGSEC EQ OF LESS THAN CB29
002AB6  4024 0002         1230       MVWI  2,R0                    SETUP MULTIPLIER
002ABA  E821 2987         1231       MB    LGSEC+1,R0              LOG SECTOR # TIMES 2
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002ABE  7802 003C          1232         SWI   60,R0                 LOG SEC TIMES 2 MINUS 60
002AC2  C028 2989          1233         MVB   R0,PHYSC+1            PHYSICAL SECTOR NUMBER
002AC6  500C               1234         J     TT304                 RETURN TO CALLER
002AC8  8028 298C 2989     1235 TT303   MVB   FIVE9,PHYSC+1         PHYSICAL SECTOR # 59
002ACE  5008               1236         J     TT304                 RETURN TO CALLER
002AD0  4024 0002          1237 RTT01   MVWI  2,R0                  LOAD MULTIPLIER
002AD4  E821 2987          1238         MB    LGSEC+1,R0            LOG SECTOR # TIMES 2
002AD8  7802 0001          1239         SWI   1,R0                  SUBTRACT ONE
002ADC  C028 2989          1240         MVB   R0,PHYSC+1            LOAD PHYSICAL SECTOR #
002AE0  6802 0000          1241 TT304   B     *-*                   RETURN TO CALLER
                           1242 *
                           1243 ********************************************************************
                           1244 *
                           1245 *  SUBROUTINE
                           1246 *
                           1247 *     PURPOSE
                           1248 *
                           1249 *          LOAD WRITE SECTOR ID DATA BUFFER FROM RD SEC ID BUFFER
                           1250 *
                           1251 *     CALLING SEQUENCE
                           1252 *
                           1253 *          BAL  LWSID,R6
                           1254 *
                           1255 *     RETURN
                           1256 *
                           1257 *          BXS    (R6)
                           1258 *
                           1259 ********************************************************************
                           1260 *
                           1261 *
002AE4  4724 0005          1262 LWSID MVWI  5,R7                    BYTE COUNT
002AE8  4324 25C7          1263         MVA   SCTID+1,R3            ADDR OF RD SECT ID DATA BUFFER
002AEC  4524 298E          1264         MVA   WRSID,R5              ADDR OF WR SECT ID DATA BUFFER
002AF0  2BA4               1265         MVFN  (R3),(R5)             MOVE DATA FROM RD TO WR BUFFER
002AF2  5600               1266         BXS   (R6)                  RETURN TO CALLER
                           1267 *
                           1269 *
                           1270 *     EXECUTE INPUT & OUTPUT COMMANDS
                           1271 *     TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
                           1272 *     EACH OF THESE ENTRIES SET R7 WITH THE ADRS OF ITS PARAMETER
                           1273 *     LIST AND ANY SPECIAL SWITCHES BEFORE BRANCHING TO THE
                           1274 *     SUPVR CALL.
                           1275 *
                           1276 *     THIS SUBROUTINE WILL CHECK FOR THE FOLLOWING:
                           1277 *
                           1278 *     1. LOST INTERRUPTS BY TIMING OUT A COUNTING LOOP
                           1279 *     2. ERROR INTERRUPTS RECEIVED FROM SUPVR
                           1280 *
                           1281 *     THIS ROUTINE HAS THE FOLLOWING ENTRIES:
                           1282 *
                           1283 *  1  BAL   $RKEW,R6                 READ SECTOR ID SKEWED
                           1284 *
                           1285 *  2  BAL   $WKST,R6                 WRITE SECTOR ID SKEWED (TEST)
                           1286 *
                           1287 *  3  BAL   $RWST,R6                 READ SECTOR ID SKEWED (TEST)
                           1288 *
                           1289 *  4  BAL   $RIDS,R6                 READ SECTOR ID (TEST)
                           1290 *
                           1291 *  5  BAL   $WKEW,R6                 WRITE SECTOR ID SKEWED
                           1292 *
                           1293 *  6  BAL   $WSEC,R6                 WRITE SECTOR ID
                           1294 *
                           1295 *  7  BAL   $WSTS,R6                 WRITE SECTOR ID (TEST
                           1296 *
                           1297 *  8  BAL   $DIAG,R6                 DIAGNOSTIC
                           1298 *
                           1299 *  9  BAL   XIOCS,R6                 CYCLE STEAL STATUS
                           1300 *
                           1301 *  10 BAL   $SEEK,R6                 SEEK
                           1302 *
                           1303 *  11 BAL   $RECL,R6                 RECALIBRATE
                           1304 *
                           1305 *  12 BAL   $RDID,R6                 READ SECTOR ID
                           1306 *
                           1307 *  13 BAL   $RD,R6                   READ
                           1308 *
                           1309 *  14 BAL   $RDVY,R6                 READ VERIFY
                           1310 *
                           1311 *  15 BAL   $WPT,R6                  WRITE
                           1312 *
                           1313 *
002AF4  4020 2CC6 28F8     1314 $SEEK  MVA   SKDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002AFA  5064               1315         J     XIO
                           1316 *
002AFC  4020 2CC6 28B8     1317 $RECL  MVA   CLDCB,IODCB             SET UP BLOCK FOR SVC CALL
002B02  5060               1318         J     XIO
                           1319 *
002B04  4020 2CC6 28D8     1320 $RDID  MVA   RSDCB,IODCB             SET UP BLOCK FOR SVC CALL
002B0A  0BFF               1321         MVBI  X'FF',R3              SET BUFFER TO F'S
002B0C  4524 25C6          1322         MVA   SCTID,R5              SETUP READ SECTOR ID BUFFER ADRS
002B10  4724 0006          1323         MVWI  6,R7                  SETUP BUFFER LENGTH
002B14  2BAC               1324         FFN   R3,(R5)               INIT READ SECTOR ID BUFFER
002B16  4020 28B6 25C6     1325         MVA   SCTID,RSDCB+14        DATA ADDR
002B1C  5053               1326         J     XIO
                           1327 *
002B1E  0BFF               1328 $RD    MVBI  X'FF',R3              SETRD BUFFER TO ALL F'S
002B20  6D08 2946          1329         MVW   RDDCB+14,R5           SET UP READ BUFFER ADRS
002B24  4724 0100          1330         MVWI  X'0100',R7            SET UP BUFFER LENGTH
002B28  2BAC               1331         FFN   R3,(R5)               CLEAR READ BUFFER
002B2A  4020 2CC6 2938     1332 $RD$   MVA   RDDCB,IODCB             SET UP BLOCK FOR SVC CALL
002B30  5049               1333         J     XIO
                           1334 *
002B32  4020 2CC6 2928     1335 $PDVY  MVA   VRDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002B38  5045               1336         J     XIO
                           1337 *
002B3A  4020 2CC6 2918     1338 $WRT   MVA   WRDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002B40  5041               1339         J     XIO
                           1340 *
002B42  4020 2CC6 2958     1341 $PKEW  MVA   RKDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
002B48  0BFF               1342         MVBI  X'FF',R3              SET BUFFER TO F'S
002B4A  4524 25C6          1343         MVA   SCTID,R5              SETUP READ SECTOR ID BUFFER ADRS
002B4E  4724 0006          1344         MVWI  6,R7                  SETUP BUFFER LENGTH
002B52  2BAC               1345         FFN   R3,(R5)               INIT READ SECTOR ID BUFFER
002B54  4020 2966 25C6     1346         MVA   SCTID,RKDCB+14         DATA ADDR
```



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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002B5A  5034               1347         J     XIO
                           1348 *
002B5C  4020 2CC6 2948     1349 $WKST  MVA   WKDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002B62  4020 2956 2996     1350         MVA   WSIDT,WKDCB+14        DATA ADDR
002B68  502D               1351         J     XIO
                           1352 *
002B6A  4020 2CC6 2958     1353 $RWST  MVA   RKDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002B70  4020 2966 299C     1354         MVA   SCTST,RKDCB+14        DATA ADDR
002B76  5026               1355         J     XIO
                           1356 *
002B78  4020 2CC6 28D8     1357 $RIDS  MVA   RSDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002B7E  0BFF               1358         MVBI  X'FF',R3              SET BUFFER TO F'S
002B80  4524 299C          1359         MVA   SCTST,R5              SETUP READ SECTOR ID BUFFER ADRS
002B84  4724 0006          1360         MVWI  6,R7                  SETUP BUFFER LENGTH
002B88  2BAC               1361         FFN   R3,(R5)               INIT READ SECTOR ID BUFFER
002B8A  4020 28B6 299C     1362         MVA   SCTST,RSDCB+14        DATA ADDR
002B90  5019               1363         J     XIO
                           1364 *
002B92  4020 2CC6 2948     1365 $WKEW  MVA   WKDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
002B98  4020 2956 298E     1366         MVA   WRSID,WKDCB+14        DATA ADDR
002B9E  5012               1367         J     XIO
                           1368 *
002BA0  4020 2CC6 28C8     1369 $WSEC  MVA   WSDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
002BA6  4020 28D6 298E     1370         MVA   WRSID,WSDCB+14        DATA ADDR
002BAC  500B               1371         J     XIO
002BAE  4020 2CC6 28C8     1372 $WSTS  MVA   WSDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002BB4  4020 28D6 2996     1373         MVA   WSIDT,WSDCB+14        DATA ADDR
002BBA  5004               1374         J     XIO
                           1375 *
002BBC  4020 2CC6 28A8     1376 $DIAG  MVA   DGDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002BC2  5000               1377         J     XIO
                           1378         XEQIT
                           1379+*****************************************************************29JUL76**
                           1380+*
                           1381+* SUB-POUTINE
                           1382+*
                           1383+*     EXECUTE INPUT AND OUTPUT COMMANDS
                           1384+*
                           1385+* PURPOSE
                           1386+*
                           1387+*     TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
                           1388+*     THIS SUBROUTINE WILL DO THE FOLLOWING FUNCTIONS:
                           1389+*
                           1390+*     1. SAVE THE ADDRESS THAT POINTS TO THE INSTRUCTION THAT STARTED
                           1391+*        THE I/O COMMAND.
                           1392+*     2. SAVES THE DCB BLOCK USED UNLESS IT IS A START CYCLE STATUS
                           1393+*        ISSUED BY THIS SUBROUTINE.
                           1394+*     3. CLEAR OUT THE CYCLE STEAL STATUS STORAGE UNLESS THE
                           1395+*        START CYCLE STATUS WAS ISSUED BY THIS SUBROUTINE.
                           1396+*     4. RESETS THE INTERRUPT INDICATOR AND CHECKS FOR ANY INTERRUPT
                           1397+*        SINCE THE LAST EXPECTED INTERRUPT. IF AN INTERRUPT IS FOUND,
                           1398+*        MYSTERY INTERRUPT (MI) CONTROL BIT IS SET.
                           1399+*     5. MOVES THE ADDRESS OF THE I/O CONTROL BLOCK IN R7, SET THE
                           1400+*        EXPECTED INTERRUPT CONTROL BIT AND ISSUE THE 'SVC  START'.
                           1401+*     6. WHEN THE SUPVR RETURNS AFTER ISSUING THE I/O COMMAND, TIMING
                           1402+*        STARTS TO DETERMINE A LOST INTERRUPT.
                           1403+*     7. EXCEPT THE INTERRUPT AND GATHER INFORMATION TO DETERMINE IF IT
                           1404+*        WAS AN ERROR OR OKAY AND EXIT OFF THE INTERRUPT LEVEL.
                           1405+*     8. CHECK IF THERE WAS A WRONG INTERRUPT LEVEL.
                           1406+*     9. CHECK IF AN ERROR WAS EXPECTED AND IF THERE WAS RETURN.
                           1407+*    10. CHECK IF THERE WAS AN ERROR CONDITION, IF NOT RETURN.
                           1408+*    11. CHECK TO SEE IF THE EXERCISER IS TO BE TERMINATED.
                           1409+*    12. CHECK IF A CYCLE STEAL OPERATION WAS IN PROGRESS THAT WAS
                           1410+*        ISSUED BY THIS SUBROUTINE.
                           1411+*    13. CHECK THE ISB BITS THAT ARE ON. IF BIT 0 IS ON, ISSUE A
                           1412+*        CYCLE STEAL STATUS COMMAND. CHECK FOR ANY OTHER BIT BEING ON,
                           1413+*        COUNT IT AND SET UP THE PROPER ERROR MESSAGE TO BE PRINTED.
                           1414+*
                           1415+* CALLING SEQUENCE
                           1416+*
                           1417+*     THIS POUTINE HAS THE FOLLOWING ENTRIES:
                           1418+*
                           1419+* --> BAL   XIO          OR          XEQ ANY CYCLE STEAL COMMAND, MOD=0
                           1420+* --> BAL   XIO1                    MOD PARM PRELOADED IN 'IOMOD'
                           1421+* --> BAL   XIOCS,R6     OR          XEQ START CYCLE STEAL STATUS, MOD=F
                           1422+* --> BAL   XIOCS-4,P6               AUTO CS STATUS (FOLLOWING OTHER XIO
                           1423+*        .                           AND DOES NOT POST INTERRUPT STATUS)
                           1424+*
                           1425+* RETURN CONTROL
                           1426+*
                           1427+*     BXS   (R6,2)                  RETURN TO USER NO ERROR
                           1428+* OR  B     (R6)*                   RETURN AND RETRY ON ERROR
                           1429+*****************************************************************
002BC4  CB25 2CC8          1431+XIO    MVWZ  IOMOD,R3                SET MOF OF 0 FOR CYCLE STEAL OP
002BC8  500A               1432+       J     XIO1                    CS I/O'S ARE NOT RETRIED
                           1433+*
002BCA  4CAA               1434+       TBTR  (R4,CE)                 RESET CS STATUS INTER ERROR INDICAT.
002BCC  4C68               1435+       TBTS  (R4,CS)                 SET 'CYCLE STEAL STATUS' IN PROGRESS
002BCE  4020 2CC6 2908     1436+XIOCS  MVA   CSDCB,IODCB             SET UP CONTROL BLOCK FOR SVC CALL
002BD4  4020 2CC8 000F     1437+       MVWI  X'000F',IOMOD           SET CYCLE STEAL MODIFIER
002BDA  4C28               1438+       TBT   (R4,CS)                 IS CS IN PROGRESS, ERROP CONDITION
002BDC  1213               1439+       JON   XIO2                    * YES, BYPASS SAVING I/O ADRS
002BDE  6E0D 25C4          1440+XIO1   MVW   R6,LSTIO                SAVE ERR FOR RETRY IF REQUESTED
002BE2  4324 25CE          1441+       MVA   DCBUF,R3                SET UP TO ADRS TO MOVE DCB TABLE
002BE6  6D08 2CC6          1442+       MVW   IODCB,R5                * AND THE FROM ADRS, ALONG WITH
002BEA  0F10               1443+       MVBI  16,R7                   * THE NUMBER OF MOVES
002BEC  2D64               1444+       MVFN  (R5),(R3)               MOVE 1 STATUS WORD AND ADJUST
002BEE  0BFF               1445+       MVBI  255,R3                  CLEAR CYCLE STATUS BUFFER
002BF0  4524 25DE          1446+       MVA   CSBUF,R5                *  TO ALL ONES  *
002BF4  0F10               1447+       MVBI  16,R7                   *
002BF6  2BAC               1448+       FFN   R3,(R5)                 *
002BF8  4020 25C0 0708     1449+       MVWI  X'0708',$IOIN           OVERLAY OLD CONDITION CODES
002BFE  CB25 25C2          1450+       MVWZ  $ISB,R3                 ZERO OUT OLD ISB VALUE
                           1451+*
002C02  4CA1               1452+       TBTR  (R4,ER)                 RESET ANY ERROR BEFORE I/O COMMAND
002C04  4CA3               1453+XIO2   TBTR  (R4,IN)                 CLEAR INTERRUPT RECEIVED CNTL BIT
002C06  4724 2CC2          1454+       MVA   IOBLK,R7                SET UP CONTROL BLOCK FOR SUPVR
002C0A  4CA6               1455+       TBTR  (R4,SLE)                RESET LEVEL ERROR INDICATOR
002C0C  4C62               1456+       TBTS  (R4,XI)                 SET EXPECTED INTR CONTROL BIT
002C0E  600A               1457+       SVC   START                   CALL SUPVR FOR I/O COMMAND
                           1458+*
002C10  4CA7               1459+       TBTR  (R4,NI)                 IS AN INTR EXPECTED
002C12  6AC0 0002          1460+       BN    (R6,2)                  * NO, RETURN TO USER
                           1461+*
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976

                         1462+*          THE INTR SHOULD OCCUR WHILE SPINNING IN THE NEXT SECTION
                         1463+*
002C16  0D00             1464+      MVBI  X'00',P5              SET UP WORK REG FOP 'LOST INTP'
002C18  4CA3             1465+XIO8  TBTR  (R4,IN)               HAS INTERRUPT BEEN PECEIVED
002C1A  1238             1466+      JON   XIOCK                 * YES, CHECK IF ALL WAS SATISFACTORY
002C1C  6002             1467+      SVC   IDLE                  ALLOW ANOTHER PROGRAM A CHANCE TO RUN
                         1468+*                                 SUPVR WILL PETURN HFFE
002C1E  7DA1 0001        1469+      AWI   1,R5                  ADVANCE TIME OUT COUNT
002C22  18FA             1470+      JNZ   XIO8                  BCH IF TIME OUT NOT REACHED
002C24  4C61             1471+      TBTS  (R4,EP)               SET ON ERROR CONTROL BIT
002C26  68D2 0000        1472+      B     (R6)*                 EPR 'NO INTEPRUPT'
                         1474+*****************************************************************03FEB76**
                         1475+*
                         1476+* SUBROUTINE
                         1477+*
                         1478+*     I/O EXECUTE ERROR HANDLING ROUTINE
                         1479+*
                         1480+* PURPOSE
                         1481+*
                         1482+*     THIS ROUTINE WILL COLLECT INFORMATION TO HELP DETERMINE THE
                         1483+*     PROBLEM THAT WAS FOUND WHEN THE I/O COMMAND WAS ISSUED BY THE
                         1484+*     SUPERVISOR AND IT WAS NOT ACCEPTED.
                         1485+*
                         1486+* CALLING SEQUENCE
                         1487+*
                         1488+*     SUPVR WILL ENTER WHEN AN ERROP OCCURS ON AN I/O COMMAND
                         1489+*
                         1490+* RETURN CONTROL
                         1491+*
                         1492+*     B     (R6)*                 RETURN TO USERS ERROR HANDLER
                         1493+*
                         1494+*************************************************************************
                         1495+*
                         1496+* CC        0= DEVICE NOT ATTACHED
                         1497+* FOR       1= DEVICE BUSY
                         1498+* I/O       2= DEVICE BUSY AFTEP RESET
                         1499+*           3= COMMAND REJECT
                         1500+*           4= INTERVENTION REQUIRED
                         1501+*           5= INTERFACE DATA CHECK
                         1502+*           6= CONTROLLER BUSY
                         1503+*           7= I/O COMMAND EXCEPTED
                         1504+*
002C2A  706E             1505+XIOER DC    X'706E'               COPY STATUS ANY LEVEL INTO R3
002C2C  336A             1506+      SRL   13,R3                 POSITION CC CODE TO BITS 13-15
002C2E  C328 25C0        1507+      MVB   R3,$IOIN              * PUT IN LOG OUT AREA
002C32  68D2 0000        1508+      B     (R6)*                 RETURN TO USER ERROP HANDLER
                         1510+*****************************************************************14APR76**
                         1511+*                                                                       IL
                         1512+* SUB-ROUTINE                                                          IL
                         1513+*                                                                       IL
                         1514+*     ERROR INTERRUPT             RUNS ON INTERRUPT LEVEL '$INTL'       IL
                         1515+*                                                                       IL
                         1516+* PURPOSE                                                             IL
                         1517+*                                                                       IL
                         1518+*     THIS ROUTINE WILL BE ENTERED WHEN THE SUPVR DETECTS AN ERROR      IL
                         1519+*     OR THE INTERRUPTING CONDITION CODE DOES NOT AGREE WITH THE        IL
                         1520+*     EXPECTED CODE.                                                    IL
                         1521+*                                                                       IL
                         1522+* CALLING SEQUENCE                                                    IL
                         1523+*                                                                       IL
                         1524+*     SUPVR WILL ENTER WHEN AN ERROP OCCURS ON AN I/O INTERRUPT         IL
                         1525+*                                                                       IL
                         1526+* RETURN CONTROL                                                      IL
                         1527+*                                                                       IL
                         1528+*     SVC   EXIT                  RETURN TO USER VIA SUPVR          IL
                         1529+*                                                                       IL
                         1530+*************************************************************************IL
                         1531+*                                                                       IL
                         1532+* CC        0= CONTROLLER END               ISB   0= ADD STATUS        IL
                         1533+* FOR       1= PROGRAM CONTROL INTERRUPT    BITS  1= COMD REJECT       IL
                         1534+* INTR      2= EXCEPTION INTERRUPT          FOR   2= INCOR LENGTH      IL
                         1535+*           3= DEVICE END INTEPRUPT         INTR  3= DCB SPEC CK       IL
                         1536+*           4= ATTENTION INTERRUPT                4= STG DATA CK       IL
                         1537+*           5= ATTENTION / PROGRAM CNTL INTR      5= INV STG ADPS      IL
                         1538+*           6= ATTENTION / EXCEPTION INTR         6= PROTRCT CK        IL
                         1539+*           7= ATTENTION / DEVICE END INTR        7= I-FACE DATA       IL
                         1540+*                                                                       IL
002C36  706E             1541+INTER DC    X'706E'               COPY STATUS ANY LEVEL INTO R3       IL
002C38  336A             1542+      SRL   13,R3                 POSITION INDICATORS IN R3           IL
002C3A  4424 25B8        1543+      MVA   OPTN1,R4              SET UP BASE ADRS                    IL
002C3E  4C28             1544+      TBT   (R4,CS)               IS CS IN PROGRESS                   IL
002C40  1006             1545+      JOFF  INTBS                 * NO                                IL
002C42  4C6A             1546+      TBTS  (R4,CE)               TURN ON CYCLE STEAL INTER EPROR     IL
002C44  6F0D 25EC        1547+      MVW   R7,CSTL8              SAVE CS ERR ISB VALUE, BITS 0-7     IL
002C48  C328 25ED        1548+      MVB   R3,CSTL8+1            * AND THE COND CODE                 IL
002C4C  500A             1549+      J     INTP1                                                     IL
002C4E  4C24             1550+INTES TBT   (R4,XE)               TEST  EXPECTED ATTEN / ERROR IND    IL
002C50  1002             1551+      JOFF  INTET                 BCH IF NOT EXPECTED                 IL
002C52  F304             1552+      CBI   4,R3                  IS THIS AN 'ATTENTION' INTR         IL
002C54  1006             1553+      JE    INTE1                 * YES, BCH TO END INTR SEQUENCE     IL
002C56  4C61             1554+INTET TBTS  (R4,ER)               SET ERROR ON I/O COMMAND CNTL BIT   IL
002C58  5004             1555+      J     INTP1                                                     IL
                         1556+*                                 THE ERROR INTERRUPT USES THE SAME   IL
                         1557+*                                 ENDING SEQUENCE AS THE NORMAL INTR  IL
                         1559+*************************************************************************IL
                         1560+*                                                                       IL
                         1561+* SOUBROUTINE                                                          IL
                         1562+*                                                                       IL
                         1563+*     OKAY  INTERRUPT             RUNS ON INTERRUPT LEVEL '$INTL'       IL
                         1564+*                                                                       IL
                         1565+* PURPOSE                                                             IL
                         1566+*                                                                       IL
                         1567+*     TO CHECK THE INTERRUPT AND CONTINUE THE TEST                      IL
                         1568+*                                                                       IL
                         1569+* CALLING SEQUENCE                                                    IL
                         1570+*                                                                       IL
                         1571+*     SUPERVISOR WILL ENTER HEPE  IF INTR CC IS AS REQUESTED            IL
                         1572+*     THE ERROR INTERPUPT HANDLER WILL BRANCH TO THIS ROUTINE           IL
                         1573+*     AFTER THE SPECIAL PART HAS BEEN COMPLETED  AND THE                IL
                         1574+*     COMMON SECTION IS HANDLED HERE.                                   IL
                         1575+*                                                                       IL
                         1576+* RETURN CONTROL                                                      IL
                         1577+*                                                                       IL
                         1578+*     SVC   EXIT                  RETURN TO USER VIA SUPVR          IL
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976

                         1579+*                                                                       IL
                         1580+*************************************************************************IL
002C5A  706E             1581+INTOK DC    X'706E'               COPY STATUS ANY LEVEL INTO R3       IL
002C5C  336A             1582+      SRL   13,R3                 POSITION INDICATORS IN R3           IL
002C5E  4424 25B8        1583+      MVA   OPTN1,P4              SET UP BASE ADPS                    IL
002C62  4C63             1584+INTR1 TBTS  (R4,IN)               SET   INTERRUPT RECEIVED            IL
002C64  4C28             1585+      TBT   (R4,CS)               IS 'CS IN PROGRESS' ON              IL
002C66  1204             1586+      JON   INTP2                 * YES, BCH AROUND UPDATE            IL
002C68  C328 25C1        1587+      MVB   R3,$IOIN+1            SAVE INTERRUPTING CC CODE           IL
002C6C  6F0D 25C2        1588+      MVW   R7,$ISB               SAVE INTF STATUS AND DEV ADRS       IL
002C70                   1589+INTR2 EQU   *                                                        IL
                         1590+*     CPCL  R5                    CURRENT LEVEL COPIED BY DCP         IL
002C70  3521             1591+      SLL   4,R5                  POSITION INTR LEVEL AND PUT         IL
002C72  0501             1592+      ABI   1,R5                  * IN 'I' BIT                        IL
002C74  CD24 25F4        1593+      CW    $INTL,R5              IS THIS THE CORRECT INTR LEVEL      IL
002C78  1002             1594+      JE    INTR3                 * YES, GO EXIT THIS LEVEL           IL
002C7A  4C66             1595+      TBTS  (R4,$LE)              SET INTR LEVEL ERROR CONTROL BIT    IL
002C7C  4C61             1596+      TBTS  (R4,ER)               SET ERROR ON I/O COMMAND CNTL BIT   IL
002C7E  4CA2             1597+INTP3 TBTR  (R4,XI)               WAS INTERRUPT EXPECTED              IL
002C80  1204             1598+      JON   INTRX                 * YES, EXIT OFF THIS INTR LEVEL     IL
002C82  4C60             1599+      TBTS  (R4,MI)               * NO, SET MYSTERY INTR CONTROL BIT  IL
002C84  F304             1600+      CBI   4,R3                  ATTENTION INTEPRUPT?                IL
002C86  1001             1601+      JE    INTRX                 YES                                 IL
002C88  4C6C             1602+      TBTS  (R4,NG)               ERROR,UNEXPECTED INTERRUPT          IL
002C8A  6006             1603+INTRX SVC   EXIT                  EXIT THIS LEVEL VIA SUPVR TO PGM    IL
                         1605+*****************************************************************03FEB76**
                         1606+*
                         1607+*     THIS IS THE CONTINUATION OF EXECUTE I/O AFTER THE INTERRUPT
                         1608+*     HAS BEEN SERVICED. THE EXERCISER FINDS AN INTERPUPT HAS BEEN
                         1609+*     RECEIVED AND BRANCHES HERE TO CHECK FOR ANY ERROR CONDITIONS.
                         1610+*
                         1611+*
002C8C  4CA4             1612+XIOCK TBTR  (R4,XE)               WAS AN ERROR EXPECTED
002C8E  6AC0 0002        1613+      BN    (R6,2)                * YES, EXIT THIS ROUTINE
002C92  4CA8             1614+      TBTR  (P4,CS)               WAS AUTO CS IN PROGRESS
002C94  1006             1615+      JOFF  XIOCV                 * NO, CONTINUE CHECKING
002C96  4C2A             1616+      TBT   (R4,CE)               IS CS IN AN ERR CONDITION
002C98  1002             1617+      JOFF  XIOCO                 * NO, BCH
002C9A  68D2 0000        1618+      B     (R6)*                 CS ERROR
002C9E  4C69             1619+XIOCO TBTS  (R4,CSA)              TURN ON CS STATS AVAIL FLAG
002CA0  5601             1620+      BXS   (R6,2)                GO TO USEP
002CA2  4C21             1621+XIOCV TBT   (R4,ER)               WAS ERROP INTR CONTROL BIT ON
002CA4  100B             1622+      JOFF  XIOCX                 * NO, EXIT THIS ROUTINE
                         1623+*
002CA6  C520 25C1        1624+      MVB   $IOIN+1,R5            GET LAST INTR CC CODE
002CAA  F502             1625+      CBI   2,R5                  IS THIS CC=2
002CAC  68D1 0000        1626+      BNE   (R6)*                 * NO, BCH TO ERROR HANDLER
002CB0  C520 25C2        1627+XIOCQ MVB   $ISB,R5               GET LAST ISB DATA BYTE AND IF CS
002CB4  6A00 2BCA        1628+      BN    XIOCS-4               * AVAILABLE, GO AND GET IT
002CB8  68D2 0000        1629+      B     (R6)*                 ERROR
002CBC  CB25 25BC        1630+XIOCX MVWZ  OPTN3,R3              CLEAR OUT OPTION 3 CNTL BITS
002CC0  5601             1631+      BXS   (R6,2)                RETURN TO USER VIA REG 6
                         1632+*
                         1633+*               I/O   PARAMETER LIST
                         1634+*
002CC2  19D0             1635+IOBLK DC    A(DEVADD)             ADRS OF DEVICE ADRS
002CC4  2C2A             1636+      DC    A(XIOER)              ERROR ROUTINE ADRS
002CC6  0000             1637+IODCB DC    A(*-*)                DCB ADRS OR LEVEL & INTP
002CC8  0000             1638+IOMOD DC    A(*-*)                MODIFIER
002CCA  0000             1639+      DC    A(*-*)                ADRS OF LAST SVC CALL
002CCC  0000             1640+IORSP DC    A(*-*)                SECOND WORD OF LAST IDCB
                         1641+*
                         1642+*               INTERRUPT CONTROL BLOCK FOR I/O COMMANDS
                         1643+*
002CCE  19D0             1644+INTBL DC    A(DEVADD)             ADRS OF DEVICE ADRS
002CD0  2C5A             1645+      DC    A(INTOK)              INTERRUPT OK RETURN ADRS
002CD2  2C36             1646+      DC    A(INTER)              INTERRUPT ERROR ADRS
002CD4  0003             1647+INTCC DC    X'0003'               INTERRUPT CODE EXPECTED
                         1649+*****************************************************************11MAY76**
                         1650+*
                         1651+* SUBROUTINE
                         1652+*
                         1653+*     CONNECT INTERRUPT CONTROL BLOCK & PREPARE DEVICE
                         1654+*
                         1655+* PURPOSE
                         1656+*
                         1657+*     TO CONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
                         1658+*     PREPARE ON THE DESIRED INTERRUPT LEVEL AND TO ALLOW THE DEVICE
                         1659+*     TO INTERRUPT.
                         1660+*
                         1661+* CALLING SEQUENCE
                         1662+*
                         1663+*     THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
                         1664+*
                         1665+* --> BAL   $CONC,R6            CLEAR DEV DEP STG AND CONNECT I/O BLK
                         1666+* --> BAL   $CONP,R6            PREPARE DEVICE ONLY, ALREADY CONNECT
                         1667+*
                         1668+* RETURN CONTROL
                         1669+*
                         1670+*     BXS   (R6,2)                RETURN TO USER VIA REG 6 IF OKAY
                         1671+* OR  B     (R6)*                 IF THE DEVICE COULD NOT BE CONNECTED
                         1672+*
                         1673+*************************************************************************
002CD6  0F06             1674+$CONC MVBI  6,R7                  NUMBER OF BYTE TO CLEAR
002CD8  0B00             1675+      MVBI  0,R3                  * AND THE DATA TO USE
002CDA  4524 25C6        1676+      MVA   DEV1,R5               * ALONG WITH THE ADRS TO USE
002CDE  2BAC             1677+      FPN   R3,(R5)               *
002CE0  CB25 25BC        1678+      MVWZ  OPTN3,R3              CLEAR OLD CONTROLS FOR NEW ROUTINE
002CE4  4724 2CCE        1679+      MVA   INTBL,R7              SET P7 TO CONTROL BLOCK AND
002CE8  6014             1680+      SVC   CICB                  * CONNECT IT TO THIS DEVICE
002CEA  6AD0 0000        1681+      BN    (R6)*                 ERROR RETURN TO USEP
                         1682+*
002CEE  8828 25F4 2CC6   1683+$CONP MVW   $INTL,IODCB          PUT IN LEVEL & INTR PARAMETER
002CF4  4724 2CC2        1684+      MVA   IOBLK,R7              SET R7 TO CONTROL BLOCK TO PREPARE
002CF8  4020 25C0 0708   1685+      MVWI  X'0708',$IOIN         INITIALIZE CONDITION CODE STORAGE
002CFE  CB25 25C2        1686+      MVWZ  $ISB,R3               * AND CLEAR OLD ISB VALUE
002D02  6F0D 25C4        1687+      MVW   R6,LSTIO              SET UP ADDRESS THAT STARTED LAST I/O
002D06  600C             1688+      SVC   PREP                  * AND CALL ON SUPVR
002D08  5601             1689+      BXS   (R6,2)                RETURN TO USER
                         1691+*****************************************************************06APR76**
                         1692+*
                         1693+* SUBROUTINE
                         1694+*
                         1695+*     DISCONNECT THE INTERRUPT CONTROL BLOCK AND LOG ERRORS
```

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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
                           1696+**
                           1697+** PURPOSE
                           1698+**
                           1699+**      DISCONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
                           1700+**      SET THE 'NO GOOD' CONTROL BIT, THEN LOG THE DATA THAT HAS
                           1701+**      BEEN FOUND TO HELP THE OPERATOR DEFINE THE ERROR CONDITION.
                           1702+**
                           1703+** CALLING SEQUENCE
                           1704+**
                           1705+**      THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
                           1706+**
                           1707+** --> B      $ERP$                 SET 'NG' BIT AND CONVERT DATA TO LOG
                           1708+** --> B      $CONX                 RETURN TO MDI SUPERVISOR TO TEST STS
                           1709+**
                           1710+** RETURN CONTROL
                           1711+**
                           1712+**      B      TURTN*                RETURN TO MDI
                           1713+** OR  B      (R6)*                 IF THE DEVICE COULD NOT BE CONNECTED
                           1714+**
                           1715+*********************************************************************
002D0A  4020 1818 8000     1716+$ERR$  MVWI   X'8000',TUSTATUS      SET ON 'NO GOOD' STATUS BIT
002D10  4724 2E74          1717+       MVA    HEBLK,R7              GET ADRS OF CONTROL BLOCK
002D14  601A               1718+       SVC    HTOE                  CONVERT HEX TO EBC VIS DCP
002D16  0D03               1719+$PRNT  MVBI   3,R5
002D18  4324 181A          1720+       MVA    TUWORK,R3             SET UP BUFFER STORAGE
002D1C  6B0D 2E6C          1721+       MVW    R3,BUFPT
002D20  4124 2D9C          1722+       MVA    LINE1,R1
002D24  0F04               1723+       MVBI   4,R7
002D26  0E08               1724+       MVBI   8,R6
002D28  2B24               1725+MVBUF  MVFN   (R3),(R1)
002D2A  0F04               1726+       MVBI   4,R7
002D2C  0A40               1727+       MVBI   X'40',R2
002D2E  C258               1728+       MVB    R2,(R1)+
002D30  BEFB               1729+       JCT    MVBUF,R6
002D32  0E08               1730+       MVBI   8,R6
002D34  7921 002C          1731+       AWI    44,R1
002D38  BDF7               1732+       JCT    MVBUF,R5
002D3A  4020 1802 F1F0     1733+       MVWI   PIDMSG10,PID+2
002D40  4020 19B8 2E72     1734+       MVA    FAKETU,@DCADD1
002D46  4020 19BA 2E6E     1735+       MVA    DC2PT,@DCADD2
002D4C  402C 19C4 0080     1736+       OWI    BIT0080,SUPSTAT
002D52  4324 25BE          1737+       MVA    $TUID,R3              SET UP BUFFER STORAGE
002D56  6F13 18BA          1738+       BAL    TUMSGWTR*,R7          GO TO MESSAGE WRITER
                           1739+**
002D5A                     1740+$CONX  EQU    *
002D5A  C720 19D0          1741+       MVE    DEVADD,R7             GET DEVICE ADDRESS FROM MDI
002D5E  6013               1742+       SVC    PICB                  RELEASE INTERFUPT CONTPOL BLOCK
002D60  6812 25F6          1743+       B      TUFTN*                RETURN TO MDI SUPEFVISOR
                           1744+*
002D64  0007               1745+BEGIN  DC     A(0007)               NUMBEP OF LINES TO PRINT
002D66  0008               1746+       DC     A(0008)               LINE LENGTH = 8 CHAP
002D68  5C5C40C1C2D6D9E3   1747+       DC     C'** ABORT'
002D70  0028               1748+       DC     A(0040)               LINE LENGTH = 40 CHAR
002D72  E3E4C9C440C9D6C9D  1749+       DC     C'TUID IOIN ISB  INST DEV1 DEV2 DEV3 DEV4 '
002D9A  0028               1750+       DC     A(0040)               LINE LENGTH = 40 CHAR
002D9C  4040404040404040   1751+LINE1  DC     C'                    '
002DC4  0028               1752+       DC     A(0040)               LINE LENGTH = 40 CHAR
002DC6  C3D5E3D340C4C3C2F  1753+       DC     C'CNTL DCB2 DCB3 DCB4 DCB5 CHAD BYCT ADRS '
002DEE  0028               1754+       DC     A(0040)               LINE LENGTH = 40 CHAR
002DF0  4040404040404040   1755+LINE2  DC     C'                    '
002E18  0028               1756+       DC     A(0040)               LINE LENGTH = 40 CHAR
002E1A  D9E2C9C440C3E260F  1757+       DC     C'PSID CS-2 CS-3 CS-4 CS-5 CS-6 CS-7 CS-8 '
002E42  0028               1758+       DC     A(0040)               LINE LENGTH = 40 CHAR
002E44  4040404040404040   1759+LINE3  DC     C'                    '
                           1760+*
002E6C  0000               1761+BUFPT  DC     A(*-*)
002E6E  2D64               1762+DC2PT  DC     A(BEGIN)
002E70  0101               1763+FIXTU  DC     X'0101'
002E72  0101               1764+FAKETU    DC  X'0101'
00F1F0                     1765+PIDMSG10  EQU   X'F1F0'
000080                     1766+BIT0080   EQU   X'0080'
                           1767+*
                           1768+*       DATA CONTROL BLOCK FOP CONVFRTING HEX TO EBCDIC
                           1769+*
002E74  0030               1770+HEBLK  DC     A(48)                 NUMBEP OF PYTES TO CONVEPT
002E76  25BE               1771+       DC     A($TUID)              FROM ADRS
002E78  181A               1772+       DC     A(TUWORK)             AND THE TO ADRS
000000                     1773        END
```


CROSS-REFERENCE LISTING COPYRIGHT IBM CORP 1976

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
       0  .R0.      ABSOLUTE. HEX VALUE(00000000)
                    670   671   672   673   718   719   720   721   725
                    728   731   734   737   740  1230  1231  1232  1233
                   1237  1238  1239  1240
       0  .R1.      ABSOLUTE. HEX VALUE(00000001)
                    717   719   726   727   732   734   738   740  1722
                   1725  1728  1731
       0  .R2.      ABSOLUTE. HEX VALUE(00000002)
                    667   668   669   747   749   791   797   798   804
                    810   811   832   836   840   842   844   845   848
                   1727  1728
       0  .R3.      ABSOLUTE. HEX VALUE(00000003)
                    815   816  1136  1137  1178  1182  1184  1263  1265
                   1321  1324  1328  1331  1342  1345  1358  1361  1431
                   1441  1444  1445  1448  1450  1506  1507  1542  1548
                   1552  1582  1587  1600  1630  1675  1677  1678  1686
                   1720  1721  1725  1737
       0  .R4.      ABSOLUTE. HEX VALUE(00000004)
                    661   676   683   691   705   762   776   789   792
                    802   805   821   826  1434  1435  1438  1452  1453
                   1455  1456  1459  1465  1471  1543  1544  1546  1550
                   1554  1583  1584  1585  1595  1596  1597  1599  1602
                   1612  1614  1616  1619  1621
       0  .R5.      ABSOLUTE. HEX VALUE(00000005)
                    794   795   807   808   814   815   816  1179  1183
                   1184  1264  1265  1322  1324  1329  1331  1343  1345
                   1359  1361  1442  1444  1446  1448  1464  1469  1591
                   1592  1593  1624  1625  1627  1676  1677  1719  1732
       0  .R6.      ABSOLUTE. HEX VALUE(00000006)
                    662   674   681   687   689   703   724   730   736
                    742   760   774   786   787   800   819   824  1104
                   1108  1110  1114  1116  1120  1123  1127  1129  1133
                   1138  1185  1186  1225  1266  1440  1460  1472  1508
                   1613  1618  1620  1626  1629  1631  1681  1687  1689
                   1724  1729  1730
       0  .R7.      ABSOLUTE. HEX VALUE(00000007)
                    495   659   665   733   739   750   752   813   818
                   1177  1181  1262  1323  1330  1344  1360  1443  1447
                   1454  1547  1588  1674  1679  1684  1717  1723  1726
                   1738  1741
    1674  $CONC     ADDRESS. HEX LOCATION(00002CD6) IN CSECT(I7814   ) LENGTH(2)
                    662
    1740  $CONX     ADDRESS. HEX LOCATION(00002D5A) IN CSECT(I7814   ) LENGTH(1)
                    783
    1716  $ERR$     ADDRESS. HEX LOCATION(00002D0A) IN CSECT(I7814   ) LENGTH(6)
                    663   675   677   682   684   690   698   704   706
                    761   775   788   793   801   806   820   825
     484  $INTL     ADDRESS. HEX LOCATION(000025F4) IN CSECT(I7814   ) LENGTH(2)
                   1593  1683
     454  $IOIN     ADDRESS. HEX LOCATION(000025C0) IN CSECT(I7814   ) LENGTH(2)
                   1137  1449  1507  1587  1624  1685
     455  $ISB      ADDRESS. HEX LOCATION(000025C2) IN CSECT(I7814   ) LENGTH(2)
                   1450  1588  1627  1686
     439  $LE       ABSOLUTE. HEX VALUE(00000026)
                   1455  1595
    1328  $RD       ADDRESS. HEX LOCATION(00002B1E) IN CSECT(I7814   ) LENGTH(2)
                    800
    1320  $PDID     ADDRESS. HEX LOCATION(00002B04) IN CSECT(I7814   ) LENGTH(6)
                    689
    1317  $RECL     ADDRESS. HEX LOCATION(00002AFC) IN CSECT(I7814   ) LENGTH(6)
                    674   819
    1314  $SEEK     ADDRESS. HEX LOCATION(00002AF4) IN CSECT(I7814   ) LENGTH(6)
                    681   703   760   774   824
     453  $TUID     ADDRESS. HEX LOCATION(000025BE) IN CSECT(I7814   ) LENGTH(2)
                    494   660  1737  1771
    1338  $WPT      ADDRESS. HEX LOCATION(00002B3A) IN CSECT(I7814   ) LENGTH(6)
                    787
     102  @DCADD1   ADDRESS. HEX LOCATION(000019B8) IN CSECT(I7814   ) LENGTH(1)
                   1734
     103  @DCADD2   ADDRESS. HEX LOCATION(000019BA) IN CSECT(I7814   ) LENGTH(1)
                   1735
      39  @FIXT     ABSOLUTE. HEX VALUE(00000101)
                    342   357   360
      38  @QUES     ABSOLUTE. HEX VALUE(00000100)
                    339
      45  @TUXX     ABSOLUTE. HEX VALUE(00000500)
                    345
    1745  BEGIN     ADDRESS. HEX LOCATION(00002D64) IN CSECT(I7814   ) LENGTH(2)
                   1762
    1766  BIT0080   ABSOLUTE. HEX VALUE(00000080)
                   1736
    1761  BUFPT     ADDRESS. HEX LOCATION(00002E6C) IN CSECT(I7814   ) LENGTH(2)
                   1721
    1005  CB29      ADDRESS. HEX LOCATION(0000298A) IN CSECT(I7814   ) LENGTH(2)
                   1228
    1135  CCERR     ADDRESS. HEX LOCATION(00002A5C) IN CSECT(I7814   ) LENGTH(2)
                   1107  1113  1119  1126  1132
     443  CE        ABSOLUTE. HEX VALUE(0000002A)
                   1434  1546  1616
     523  CICB      ABSOLUTE. HEX VALUE(00000014)
                   1680
     874  CLDCB     ADDRESS. HEX LOCATION(000028B8) IN CSECT(I7814   ) LENGTH(2)
                   1317
    1225  CONVT     ADDRESS. HEX LOCATION(00002AA2) IN CSECT(I7814   ) LENGTH(4)
                    687
     441  CS        ABSOLUTE. HEX VALUE(00000028)
                   1435  1438  1544  1585  1614
     442  CSA       ABSOLUTE. HEX VALUE(00000029)
                    792   805  1619
     472  CSBUF     ADDRESS. HEX LOCATION(000025DE) IN CSECT(I7814   ) LENGTH(1)
                    794   807   846   931  1446
     924  CSDCB     ADDRESS. HEX LOCATION(00002908) IN CSECT(I7814   ) LENGTH(2)
                   1436
     480  CSTL8     ADDRESS. HEX LOCATION(000025EC) IN CSECT(I7814   ) LENGTH(2)
                   1547  1548
     462  DCBUF     ADDRESS. HEX LOCATION(000025CE) IN CSECT(I7814   ) LENGTH(1)
                   1441
    1762  DC2PT     ADDRESS. HEX LOCATION(00002E6E) IN CSECT(I7814   ) LENGTH(2)
                   1735
     105  DEVADD    ADDRESS. HEX LOCATION(000019D0) IN CSECT(I7814   ) LENGTH(1)
                    487  1105  1111  1117  1124  1130  1635  1644  1741
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CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
     457  DEV1        ADDRESS. HEX LOCATION(000025C6) IN CSECT(I7814   ) LENGTH(2)
                      461  1676
     862  DGDCB       ADDRESS. HEX LOCATION(000028A8) IN CSECT(I7814   ) LENGTH(2)
                      1376
      67  DUMMY       ABSOLUTE. HEX VALUE(00000000)
                      330  362  374
     363  ENTPT       ADDRESS. HEX LOCATION(0000253C) IN CSECT(I7814   ) LENGTH(1)
                      198
      47  EQ          ABSOLUTE. HEX VALUE(00000000)
                      348
     434  ER          ABSOLUTE. HEX VALUE(00000021)
                      676   683   691   705   762   776   789   802   821
                      826  1452  1471  1554  1596  1621
     509  EXIT        ABSOLUTE. HEX VALUE(00000006)
                      1603
    1764  FAKETU      ADDRESS. HEX LOCATION(00002E72) IN CSECT(I7814   ) LENGTH(2)
                      1734
    1006  FIVE9       ADDRESS. HEX LOCATION(0000298C) IN CSECT(I7814   ) LENGTH(2)
                      1235
     386  F00006      ADDRESS. HEX LOCATION(0000255A) IN CSECT(I7814   ) LENGTH(1)
                      358
     382  F00031      ADDRESS. HEX LOCATION(00002542) IN CSECT(I7814   ) LENGTH(1)
                      343
     392  F00040      ADDRESS. HEX LOCATION(00002592) IN CSECT(I7814   ) LENGTH(1)
                      361
    1770  HEBLK       ADDRESS. HEX LOCATION(00002E74) IN CSECT(I7814   ) LENGTH(2)
                      1717
     529  HTOE        ABSOLUTE. HEX VALUE(0000001A)
                      1718
    1145  IDCBCE1     ADDRESS. HEX LOCATION(00002A72) IN CSECT(I7814   ) LENGTH(2)
                      1111  1112
    1147  IDCBCE2     ADDRESS. HEX LOCATION(00002A76) IN CSECT(I7814   ) LENGTH(2)
                      1117  1118
    1149  IDCBRAP     ADDRESS. HEX LOCATION(00002A7A) IN CSECT(I7814   ) LENGTH(2)
                      1105  1106
    1141  IDCB0       ADDRESS. HEX LOCATION(00002A6A) IN CSECT(I7814   ) LENGTH(2)
                      1130  1131
    1143  IDCB1       ADDRESS. HEX LOCATION(00002A6E) IN CSECT(I7814   ) LENGTH(2)
                      1124  1125
     505  IDLE        ABSOLUTE. HEX VALUE(00000002)
                      1467
     436  IN          ABSOLUTE. HEX VALUE(00000023)
                      1453  1465  1584
    1644  INTBL       ADDRESS. HEX LOCATION(00002CCE) IN CSECT(I7814   ) LENGTH(2)
                      1679
    1541  INTER       ADDRESS. HEX LOCATION(00002C36) IN CSECT(I7814   ) LENGTH(2)
                      1646
    1550  INTES       ADDRESS. HEX LOCATION(00002C4E) IN CSECT(I7814   ) LENGTH(2)
                      1545
    1554  INTET       ADDRESS. HEX LOCATION(00002C56) IN CSECT(I7814   ) LENGTH(2)
                      1551
    1581  INTOK       ADDRESS. HEX LOCATION(00002C5A) IN CSECT(I7814   ) LENGTH(2)
                      1645
    1603  INTRX       ADDRESS. HEX LOCATION(00002C8A) IN CSECT(I7814   ) LENGTH(2)
                      1598  1601
    1584  INTR1       ADDRESS. HEX LOCATION(00002C62) IN CSECT(I7814   ) LENGTH(2)
                      1549  1553  1555
    1589  INTR2       ADDRESS. HEX LOCATION(00002C70) IN CSECT(I7814   ) LENGTH(1)
                      1586
    1597  INTR3       ADDRESS. HEX LOCATION(00002C7E) IN CSECT(I7814   ) LENGTH(2)
                      1594
    1635  IOBLK       ADDRESS. HEX LOCATION(00002CC2) IN CSECT(I7814   ) LENGTH(2)
                      665   750   752   818  1454  1684
    1637  IODCB       ADDRESS. HEX LOCATION(00002CC6) IN CSECT(I7814   ) LENGTH(2)
                      1314  1317  1320  1332  1335  1338  1341  1349  1353
                      1357  1365  1369  1372  1376  1436  1442  1683
    1638  IOMOD       ADDRESS. HEX LOCATION(00002CC8) IN CSECT(I7814   ) LENGTH(2)
                      754  1431  1437
      37  I7814       CSECT. START(00002500) LENGTH(2426) ESDID(0)
                      37
    1003  LGSEC       ADDRESS. HEX LOCATION(00002986) IN CSECT(I7814   ) LENGTH(2)
                      686   697   699   709   714  1226  1228  1231  1238
    1751  LINE1       ADDRESS. HEX LOCATION(00002D9C) IN CSECT(I7814   ) LENGTH(40)
                      1722
     456  LSTIO       ADDRESS. HEX LOCATION(000025C4) IN CSECT(I7814   ) LENGTH(2)
                      1104  1110  1116  1123  1129  1440  1687
     433  MI          ABSOLUTE. HEX VALUE(00000020)
                      1599
    1725  MVBUF       ADDRESS. HEX LOCATION(00002D28) IN CSECT(I7814   ) LENGTH(2)
                      1729  1732
     445  NG          ABSOLUTE. HEX VALUE(0000002C)
                      1602
     440  NI          ABSOLUTE. HEX VALUE(00000027)
                      1459
     339  N00001      ADDRESS. HEX LOCATION(00002518) IN CSECT(I7814   ) LENGTH(2)
                      315   373
     342  N00002      ADDRESS. HEX LOCATION(0000251C) IN CSECT(I7814   ) LENGTH(2)
                      318
     345  N00003      ADDRESS. HEX LOCATION(00002520) IN CSECT(I7814   ) LENGTH(2)
                      321   340
     357  N00004      ADDRESS. HEX LOCATION(00002532) IN CSECT(I7814   ) LENGTH(2)
                      324
     360  N00005      ADDRESS. HEX LOCATION(00002536) IN CSECT(I7814   ) LENGTH(2)
                      327   346
     990  ONE1        ADDRESS. HEX LOCATION(0000296A) IN CSECT(I7814   ) LENGTH(2)
                      764   765
     398  OPTN1       ADDRESS. HEX LOCATION(000025B8) IN CSECT(I7814   ) LENGTH(2)
                      661  1543  1583
     421  OPTN3       ADDRESS. HEX LOCATION(000025BC) IN CSECT(I7814   ) LENGTH(2)
                      1630  1678
     101  PARMARA     ADDRESS. HEX LOCATION(0000196E) IN CSECT(I7814   ) LENGTH(1)
                      355
    1057  PATTR       ADDRESS. HEX LOCATION(000029F2) IN CSECT(I7814   ) LENGTH(2)
                      723   729   735   741   830   834   838
    1004  PHYSC       ADDRESS. HEX LOCATION(00002988) IN CSECT(I7814   ) LENGTH(2)
                      688  1233  1235  1240
      69  PID         ADDRESS. HEX LOCATION(00001800) IN CSECT(I7814   ) 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
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CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
                      107   108   109   110   111   112  1733
    1765  PIDMSG10    ABSOLUTE. HEX VALUE(0000F1F0)
                      1733
     515  PREP        ABSOLUTE. HEX VALUE(0000000C)
                      1688
     957  RDDCB       ADDRESS. HEX LOCATION(00002938) IN CSECT(I7814   ) LENGTH(2)
                      673   707   708   709   710   715   764   778  1329
                      1332
     511  RESET       ABSOLUTE. HEX VALUE(00000008)
                      666   751
     522  RTCB        ABSOLUTE. HEX VALUE(00000013)
                      1742
     512  RID         ABSOLUTE. HEX VALUE(00000009)
                      753
     979  RKDCB       ADDRESS. HEX LOCATION(00002958) IN CSECT(I7814   ) LENGTH(2)
                      1341  1346  1353  1354
     889  RSDCB       ADDRESS. HEX LOCATION(000028D8) IN CSECT(I7814   ) LENGTH(2)
                      685   688  1320  1325  1357  1362
    1237  RTT01       ADDRESS. HEX LOCATION(00002AD0) IN CSECT(I7814   ) LENGTH(4)
                      1229
     461  SCTID       ADDRESS. HEX LOCATION(000025C6) IN CSECT(I7814   ) LENGTH(2)
                      693   695   896   908   986  1182  1263  1322  1325
                      1343  1346
    1014  SCTST       ADDRESS. HEX LOCATION(0000299C) IN CSECT(I7814   ) LENGTH(2)
                      1178  1354  1359  1362
     913  SKDCB       ADDRESS. HEX LOCATION(000028F8) IN CSECT(I7814   ) LENGTH(2)
                      676   679   680   701   702   745   756   758   759
                      767   769   772   773   823  1314
     513  START       ABSOLUTE. HEX VALUE(0000000A)
                      1457
     104  SUPSTAT     ADDRESS. HEX LOCATION(000019C4) IN CSECT(I7814   ) LENGTH(1)
                      1736
    1235  TT303       ADDRESS. HEX LOCATION(00002AC8) IN CSECT(I7814   ) LENGTH(6)
                      1227
    1241  TT304       ADDRESS. HEX LOCATION(00002AE0) IN CSECT(I7814   ) LENGTH(4)
                      1225  1234  1236
    1184  TT4Y        ADDRESS. HEX LOCATION(00002A98) IN CSECT(I7814   ) LENGTH(2)
                      1180
      95  TUBUFF      ADDRESS. HEX LOCATION(000018C2) IN CSECT(I7814   ) LENGTH(1)
                      670   717   726   732   738   814
      92  TUMSGWTR    ADDRESS. HEX LOCATION(000018BA) IN CSECT(I7814   ) LENGTH(1)
                      1738
      98  TURESUL     ADDRESS. HEX LOCATION(000018C8) IN CSECT(I7814   ) LENGTH(1)
                      667   668   669   743   846
     485  TURTN       ADDRESS. HEX LOCATION(000025F6) IN CSECT(I7814   ) LENGTH(2)
                      659  1743
      74  TUSTATUS    ADDRESS. HEX LOCATION(00001818) IN CSECT(I7814   ) LENGTH(1)
                      1716
      75  TUWORK      ADDRESS. HEX LOCATION(0000181A) IN CSECT(I7814   ) LENGTH(1)
                      1720  1772
     659  T7896       ADDRESS. HEX LOCATION(00002606) IN CSECT(I7814   ) LENGTH(4)
                      347
     717  T96A        ADDRESS. HEX LOCATION(000026FC) IN CSECT(I7814   ) LENGTH(4)
                      766   780
     844  T96AA       ADDRESS. HEX LOCATION(00002896) IN CSECT(I7814   ) LENGTH(2)
                      822
     719  T96B        ADDRESS. HEX LOCATION(00002704) IN CSECT(I7814   ) LENGTH(2)
                      722
     845  T96BB       ADDRESS. HEX LOCATION(00002898) IN CSECT(I7814   ) LENGTH(2)
                      799   812   849
     786  T96C        ADDRESS. HEX LOCATION(000027F2) IN CSECT(I7814   ) LENGTH(4)
                      724   730   736   742
     848  T96CC       ADDRESS. HEX LOCATION(000028A4) IN CSECT(I7814   ) LENGTH(2)
                      763   777   827
     727  T96D        ADDRESS. HEX LOCATION(00002722) IN CSECT(I7814   ) LENGTH(4)
                      728
     750  T96E        ADDRESS. HEX LOCATION(00002774) IN CSECT(I7814   ) LENGTH(4)
                      744   748
     749  T96F        ADDRESS. HEX LOCATION(00002772) IN CSECT(I7814   ) LENGTH(2)
                      746
     783  T96G        ADDRESS. HEX LOCATION(000027EE) IN CSECT(I7814   ) LENGTH(4)
                      757   771   847
     828  T96I        ADDRESS. HEX LOCATION(0000286C) IN CSECT(I7814   ) LENGTH(4)
                      796
     800  T96J        ADDRESS. HEX LOCATION(00002818) IN CSECT(I7814   ) LENGTH(4)
                      790   796
     830  T96K        ADDRESS. HEX LOCATION(00002870) IN CSECT(I7814   ) LENGTH(6)
                      817
     834  T96L        ADDRESS. HEX LOCATION(0000287C) IN CSECT(I7814   ) LENGTH(6)
                      831
     818  T96M        ADDRESS. HEX LOCATION(0000284A) IN CSECT(I7814   ) LENGTH(4)
                      833   841   843
     838  T96N        ADDRESS. HEX LOCATION(00002886) IN CSECT(I7814   ) LENGTH(6)
                      835
     842  T96P        ADDRESS. HEX LOCATION(00002892) IN CSECT(I7814   ) LENGTH(2)
                      839
     813  T96R        ADDRESS. HEX LOCATION(0000283A) IN CSECT(I7814   ) LENGTH(4)
                      803   809
     767  T96S        ADDRESS. HEX LOCATION(000027B6) IN CSECT(I7814   ) LENGTH(6)
                      755
     758  T96T        ADDRESS. HEX LOCATION(00002790) IN CSECT(I7814   ) LENGTH(6)
                      768
     772  T96U        ADDRESS. HEX LOCATION(000027C8) IN CSECT(I7814   ) LENGTH(6)
                      770
     697  T962        ADDRESS. HEX LOCATION(00002696) IN CSECT(I7814   ) LENGTH(6)
                      692   694
     701  T963        ADDRESS. HEX LOCATION(000026A8) IN CSECT(I7814   ) LENGTH(6)
                      696
     687  T964        ADDRESS. HEX LOCATION(00002672) IN CSECT(I7814   ) LENGTH(4)
                      700
     946  VRDCB       ADDRESS. HEX LOCATION(00002928) IN CSECT(I7814   ) LENGTH(2)
                      1335
     968  WKDCB       ADDRESS. HEX LOCATION(00002948) IN CSECT(I7814   ) LENGTH(2)
                      1349  1350  1365  1366
     935  WRDCB       ADDRESS. HEX LOCATION(00002918) IN CSECT(I7814   ) LENGTH(2)
                      671   711   712   713   714   716   765   779   813
                      1338
    1007  WRSID       ADDRESS. HEX LOCATION(0000298E) IN CSECT(I7814   ) LENGTH(2)
                      886   975  1183  1264  1366  1370
     879  WSDCB       ADDRESS. HEX LOCATION(000028C8) IN CSECT(I7814   ) LENGTH(2)
                      1369  1370  1372  1373
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CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
1011	WSIDT	ADDRESS. HEX LOCATION(00002996) IN CSECT(I7814) LENGTH(2) 1179 1350 1373
437	XE	ABSOLUTE. HEX VALUE(00000024) 1550 1612
435	XI	ABSOLUTE. HEX VALUE(00000022) 1456 1597
1431	XIO	ADDRESS. HEX LOCATION(00002BC4) IN CSECT(I7814) LENGTH(4) 1315 1318 1326 1333 1336 1339 1347 1351 1355 1363 1367 1371 1374 1377
1612	XIOCK	ADDRESS. HEX LOCATION(00002C8C) IN CSECT(I7814) LENGTH(2) 1466
1619	XIOCO	ADDRESS. HEX LOCATION(00002C9E) IN CSECT(I7814) LENGTH(2) 1617
1436	XIOCS	ADDRESS. HEX LOCATION(00002BCE) IN CSECT(I7814) LENGTH(6) 1628
1621	XIOCV	ADDRESS. HEX LOCATION(00002CA2) IN CSECT(I7814) LENGTH(2) 1615
1630	XIOCX	ADDRESS. HEX LOCATION(00002CBC) IN CSECT(I7814) LENGTH(4) 1622
1505	XIOER	ADDRESS. HEX LOCATION(00002C2A) IN CSECT(I7814) LENGTH(2) 1636
1440	XIO1	ADDRESS. HEX LOCATION(00002BDE) IN CSECT(I7814) LENGTH(4) 1432
1453	XIO2	ADDRESS. HEX LOCATION(00002C04) IN CSECT(I7814) LENGTH(2) 1439
1465	XIO8	ADDRESS. HEX LOCATION(00002C18) IN CSECT(I7814) LENGTH(2) 1470
989	ZERO0	ADDRESS. HEX LOCATION(00002968) IN CSECT(I7814) LENGTH(2) 693 743 745 1226

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