```
 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                             3       COPY  LOG7AF9                ** MAP EC HISTORY **
                             4 ************************************************************************
                             5 *                                                                      *
                             6 *                     ***       PREREQUISITES        ***               *
                             7 *                                                                      *
                             8 *                                  NONE                                *
                             9 *                                                                      *
                            10 ************************************************************************
                            11 *                                                                      *
                            12 *                     ***       MODIFICATIONS        ***               *
                            13 *                                                                      *
                            14 *                                  NONE                                *
                            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 10JAN79  DATE          DATE          DATE                *
                            33 *        E.C. 375222   E.C.          E.C.          E.C.                *
                            34 *                                                                      *
                            35 ************************************************************************
 002500                     37 I7AF9    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
 000000                     69 PID      EQU   *-X'0D000'         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 TUMSGWTR EQU   PID+X'00BA'        ADDRESS OF --> TO COMMON MSG WRITER
 0018BE                     93 TUUA     EQU   PID+X'00BE'        ADDRESS OF UNIT ADDRESS IN EBC
 0018C0                     94 TUDA     EQU   PID+X'00C0'        ADDRESS OF DEVICE ADDRESS IN EBC
 0018C2                     95 TUBUFF   EQU   PID+X'00C2'        ADDRESS OF LAST USED WORD IN MAP
 0018C4                     96 TULAST   EQU   PID+X'00C4'        ADDRESS OF LAST ADDRESSABLE WORD
 0018C6                     97 TURESULN EQU   PID+X'00C6'        ADDRESS OF LENGTH OF TU RESULTS
 0018C8                     98 TURESUL  EQU   PID+X'00C8'        ADDRESS OF TU RESULTS FIELD
 0018FC                     99 MAPNAME  EQU   PID+X'00FC'        ADDRESS OF MAP NAME FIELD IN HEX
 001948                    100 TUINPT   EQU   PID+X'0148'        ADDRESS OF $INPT DATA
 00196E                    101 PARMARA  EQU   PID+X'016E'        ADDRESS OF $INPT INPUT AREA
 0019B8                    102 @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 2570               198         DC    A(ENTPT)           POINT TO MAP ENTRY POINT TABLE
                           199 ************************************************************************
                           200 ************************************************************************
                           201 **                                                                    **
                           202 **   THE FOLLOWING TABLES ARE USED BY THE MDI SUPERVISOR (D3C00)      **
                           203 **   TO LOCATE THE CORRECT RULE TO INVOKE, TO OBTAIN THE PROPER       **
                           204 **   PARAMETERS TO PASS TO THE TU'S AND TO PASS TO THE OPERATOR       **
                           205 **   THE INDICATED MESSAGE(S). THERE ARE FOUR TABLES USED FOR THIS    **
                           206 **   PURPOSE THEY ARE:                                               **
                           207 **                                                                    **
                           208 **   STEP AND RULE ADDRESS TABLE                                     **
                           209 **        THIS TABLE GIVES THE ADDRESS OF THE RULE TO INVOKE AND     **
                           210 **        THE ASSOCIATED STEP DECIMAL STEP NUMBER OF THAT RULE.      **
                           211 **        ENTRIES ARE AS FOLLOWES                                    **
                           212 **                  A)  AN ADDRESS OF THE RULE DC START AREA         **
                           213 **                  B)  THE STEP NUMBER IN DECIMAL                   **
                           214 **                  C)  AN EQUATE FOR THE STEP NUMBER                **
                           215 **                                                                    **
                           216 **   RULE INFORMATION TABLE                                          **
                           217 **        THIS TABLE CONTAINES THE REQUIRED INFORMATION TO EXECUTE   **
                           218 **        THE APPROPRIATE RULE UNDER MDI. EACH RULE HAS ITS OWN      **
                           219 **        UNIQUELY DEFINED AREA INDICATED BELOW. END OF TABLE IS     **
                           220 **        INDICATED WITH A X'0000' FOR THE RULE EQUATE.              **
                           221 **                                                                    **
                           222 **        $QUES                                                       **
                           223 **              A) RULE EQUATE X'0100'                                **
                           224 **              B) ADDRESS OF THE YES LEG RULE                        **
                           225 **                                                                    **
                           226 **        $FIXT                                                       **
                           227 **              A) RULE EQUATE X'0101'                                **
                           228 **              B) ADDRESS OF MESSAGE TO PRINT                        **
                           229 **                                                                    **
                           230 **        $STOP                                                       **
                           231 **              A) RULE EQUATE X'0102'                                **
                           232 **              B) ADDRESS OF MESSAGE                                 **
                           233 **                                                                    **
                           234 **        $GOTO                                                       **
                           235 **              A) RULE EQUATE X'0200'                                **
                           236 **              B) ADDRESS OF MESSAGE                                 **
                           237 **              C) NAME OF MAP TO GO TO                               **
                           238 **              D) ENTRY POINT WITHIN GO TO MAP TO USE                **
                           239 **              E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE       **
                           241 **                                                                    **
                           242 **        $CALL                                                       **
                           243 **              A) RULE EQUATE X'0201'                                **
                           244 **              B) ADDRESS OF MESSAGE                                 **
                           245 **              C) NAME OF MAP TO CALL                                **
                           246 **              D) ENTRY POINT WITHIN CALLED MAP TO USE               **
                           247 **              E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE       **
                           248 **                                                                    **
                           249 **        $INPT                                                       **
                           250 **              A) RULE EQUATE X'0300'                                **
                           251 **              B) INPUT TYPE (EBCDIC OR HEX)                         **
                           252 **              C) ADDRESS OF YES LEG RULE                            **
                           253 **              D) DESTINATION LOCATION OF INPUT DATA                 **
                           254 **              E) LENGTH OF INPUT DATA                               **
                           255 **              F) LOWER LIMIT OF GOOD DATA                           **
                           256 **              G) HIGHER LIMIT OF GOOD DATA                          **
                           257 **                                                                    **
                           258 **        $QUXX                                                       **
                           259 **              A) RULE EQUATE X'0400'                                **
                           260 **              B) ADDRESS OF YES LEG RULE                            **
                           261 **              C) TU BRANCH TO ADDRESS (INITIAL)                     **
                           262 **              D) TU BRANCH TO ADDRESS (SECONDARY)                   **
                           263 **              E) LENGTH OF PARAMETER IN BYTES                       **
                           264 **              F) PARAMETER TO PASS TO TU                            **
                           265 **              G) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER       **
                           266 **                                                                    **
                           267 **        $TUXX                                                       **
                           268 **              A) RULE EQUATE X'0500'                                **
                           269 **              B) ADDRESS OF YES LEG RULE                            **
                           270 **              C) TU BRANCH TO ADDRESS                               **
                           271 **              D) TYPE OF COMPARE TO MAKE ON RESULTS                 **
                           272 **              E) LENGTH OF COMPARED RESULTS                         **
                           273 **              F) MASK FIELD FOR COMPARE                             **
                           274 **              G) LENGTH OF PARAMETER IN BYTES                       **
                           275 **              H) PARAMETER TO PASS TO THE TU                        **
                           276 **              I) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER       **
                           277 **                                                                    **
                           278 **        $NVLD                                                       **
                           279 **              A) RULE EQUATE X'0600'                                **
                           281 **                                                                    **
                           282 **   ENTRY POINT TABLE                                               **
                           283 **        THIS TABLE CONTAINS THE ENTRY POINTS WITHIN THE MAP THAT    **
                           284 **        THE MAP CAN BE ENTERED FROM THESE ENTRY POINTS ARE          **
                           285 **        REFERENCED BY NAME AND ADDRESS. ENTRIES ARE AS FOLLOWES:    **
                           286 **                                                                    **
                           287 **           A) NAME OF ENTRY POINT                                   **
                           288 **           B) ADDRESS OF ENTRY POINT RULE TABLE                     **
                           289 **                                                                    **
                           290 **        THE ENTRY POINT TABLE END IS INDICATED BY A X'0000'         **
                           291 **                                                                    **
                           292 **   MESSAGE TABLE                                                   **
                           293 **        THIS TABLE CONTAINES THE MESSAGE PASSED TO THE OPERATOR     **
                           294 **        VIA THE MDI SUPERVISOR. THE TABLE IS AS FOLLOWES:           **
                           295 **                                                                    **
                           296 **           A) EQUATE FOR START OF MESSAGE BLOCK                     **
                           297 **           B) NUMBER OF LINES OF MESSAGE                            **
                           298 **           C) LENGTH OF FOLLOWING LINE                              **
                           299 **           D) FIRST LINE OF MESSAGE                                 **
                           300 **           E) LENGTH OF FOLLOWING LINE                              **
                           301 **           F) SECOND LINE OF MESSAGE                                **
                           302 **           G) ETC.                                                  **
                           303 **                                                                    **
                           304 ************************************************************************
                           305 ************************************************************************
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
                           308 ********************************************************************************
                           309 ********************************************************************************
                           310 **                                                                            **
                           311 **                        STEP AND RULE ADDRESS TABLE                         **
                           312 **                                                                            **
                           313 ********************************************************************************
                           314 ********************************************************************************
002502  2520               315          DC    AL2(N00001)
002504  0001               316          DC    XL2'0001'
000001                     317 EQN00001 EQU         0001
002506  2524               318          DC    AL2(N00002)
002508  0002               319          DC    XL2'0002'
000002                     320 EQN00002 EQU         0002
00250A  2528               321          DC    AL2(N00003)
00250C  0003               322          DC    XL2'0003'
000003                     323 EQN00003 EQU         0003
00250E  2542               324          DC    AL2(N00004)
002510  0004               325          DC    XL2'0004'
000004                     326 EQN00004 EQU         0004
002512  254E               327          DC    AL2(N00005)
002514  0005               328          DC    XL2'0005'
000005                     329 EQN00005 EQU         0005
002516  2560               330          DC    AL2(N00006)
002518  0006               331          DC    XL2'0006'
000006                     332 EQN00006 EQU         0006
00251A  2562               333          DC    AL2(N00007)
00251C  0007               334          DC    XL2'0007'
000007                     335 EQN00007 EQU         0007
00251E  0000               336          DC    AL2(DUMMY)
                           337 ********************************************************************************
                           338 ********************************************************************************
                           339 **                                                                            **
                           340 **                          RULE INFORMATION TABLE                            **
                           341 **                                                                            **
                           342 ********************************************************************************
                           343 ********************************************************************************
                           344 N00001   $QUES QT=(Q00015),YES=N00003,CT=(C00014)
002520  0100               345+N00001   DC    A(@QUES)
002522  2528               346+         DC    AL2(N00003)
                           347 N00002   $STOP FT=(F00021)
002524  0102               348+N00002   DC    A(@STOP)
002526  257A               349+         DC    A(F00021)
                           350 N00003   $INPT DATA=HEX,FIELD=PARM,LNG=08,LOW=0000000000000000,HIGH=FFFX
002528  0300               351+N00003   DC    A(@INPT)
00252A  0001               352+         DC    AL2(HEX)
00252C  254E               353+         DC    AL2(N00005)
00252E  0000               354+         DC    AL2(PARM)
002530  0008               355+         DC    AL2(08)
002532  0000000000000000   356+         DC    X'0000000000000000'
                           357+         ALIGN WORD
00253A  FFFFFFFFFFFFFFFF   358+         DC    X'FFFFFFFFFFFFFFFF'
                           359+         ALIGN WORD
                           360 N00004   $GOTO TYPE=INTRNL,EP=B,FT=(F00545),GTO=(N00003)
002542  0200               361+N00004   DC    A(@GOTO)
002544  258A               362+         DC    A(F00545)
002546  F3C3F0F0           363+         DC    CL4'3C00'
00254A  C240               364+         DC    CL2'B'
00254C  0000               365+         DC    AL2(INTRNL)
                           366 N00005   $TUXX T7AAA,2,0000,EQ,QT=(Q00547),YES=N00007,CT=(C00548)
00254E  0500               367+N00005   DC    A(@TUXX)
002550  2562               368+         DC    AL2(N00007)
002552  2B6C               369+         DC    A(T7AAA)
002554  0000               370+         DC    AL2(EQ)
002556  0002               371+         DC    AL2(2)
002558  0000               372+         DC    X'0000'
                           373+         ALIGN WORD
00255A  0000               374+         DC    AL2(0)
00255C  C1C1               375+         DC    C'AA'
                           376+         ALIGN WORD
00255E  196E               377+         DC    AL2(PARMARA)
                           378 N00006   $NVLD FT=(F00550),CT=(C00552),ST=(S00553)
002560  0600               379+N00006   DC    A(@NVLD)
                           380 N00007   $GOTO TYPE=INTRNL,EP=A,FT=(F00560),GTO=(N00001)
002562  0200               381+N00007   DC    A(@GOTO)
002564  25B4               382+         DC    A(F00560)
002566  F3C3F0F0           383+         DC    CL4'3C00'
00256A  C140               384+         DC    CL2'A'
00256C  0000               385+         DC    AL2(INTRNL)
00256E  0000               386+         DC    AL2(DUMMY)
002570                     387 ENTPT    EQU   *
                           388 ********************************************************************************
                           389 ********************************************************************************
                           390 **                                                                            **
                           391 **                           ENTRY POINT TABLE                                **
                           392 **                                                                            **
                           393 ********************************************************************************
                           394 ********************************************************************************
                           395          ENTPT EP=A,STEP=00001
002570  C140               396+         DC    CL2'A'
002572  2520               397+         DC    A(N00001)
                           398          ENTPT EP=B,STEP=00003
002574  C240               399+         DC    CL2'B'
002576  2528               400+         DC    A(N00003)
002578  0000               401          ALL2(DUMMY)
                           402 ********************************************************************************
                           403 ********************************************************************************
                           404 **                                                                            **
                           405 **                             MESSAGE TABLE                                  **
                           406 **                                                                            **
                           407 ********************************************************************************
                           408 ********************************************************************************
                           409 F00021   EQU   *
00257A                     410          DC    AL2(0001)
00257A  0001               411          DC    A(0012)
00257C  000C               412          DC    CL0012'END OF TEST '
00257E  C5D5C440D6C640E3C  413 F00545   EQU   *
00258A                     414          DC    AL2(0001)
00258A  0001               415          DC    A(0018)
00258C  0012               416          DC    CL0018'NOT VALID RESPONSE'
00258E  D5D6E340E5C1D3C9C  417 F00550   EQU   *
0025A0                     418          DC    AL2(0001)
0025A0  0001               419          DC    A(0016)
0025A2  0010               420          DC    CL0016'NO LEG NOT VALID'
0025A4  D5D640D3C5C740D5D  421 F00560   EQU   *
0025B4
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
0025B4  0001               422          DC    AL2(0001)
0025B6  001C               423          DC    A(0028)
0025B8  E6D9C9E3C540C4C1E  424          DC    CL0028'WRITE DATA OR FORMAT CORRECT'
                           425          PDIT  00
0025D4  0000               427+OPTN1    DC    X'0000'                 PROGRAM OPTION CONTROL WORD 1
                           428+*
0025D6  0000               429+OPTN2    DC    X'0000'                 PROGRAM OPTION CONTROL WORD 2
                           430+*                      BIT    HEX
000010                     431+B48      EQU   16     0      8         PROBLEM PROGRAM CONTROL BITS
000011                     432+B49      EQU   17     1      4         *
000012                     433+B50      EQU   18     2      2         * THESE BITS ARE USED WITH THE
000013                     434+B51      EQU   19     3      1         * SECOND OPTION WD   AND ARE TO
000014                     435+B52      EQU   20     4      8         * BE ASSIGNED BY EACH PROGRAMMER
000015                     436+B53      EQU   21     5      4         *
000016                     437+B54      EQU   22     6      2         *
000017                     438+B55      EQU   23     7      1         *
000018                     439+B56      EQU   24     8      8         *
000019                     440+B57      EQU   25     9      4         *
00001A                     441+B58      EQU   26     10     2         *
00001B                     442+B59      EQU   27     11     1         *
00001C                     443+B60      EQU   28     12     8         *
00001D                     444+B61      EQU   29     13     4         *
00001E                     445+B62      EQU   30     14     2         *
00001F                     446+B63      EQU   31     15     1         *
00001E                     447+CH       EQU   30     14     2         CHARACTER SUPPLIED
00001F                     448+CMP      EQU   31     15     1         COMPARE OPERATION
0025D8  0000               450+OPTN3    DC    X'0000'                 PROGRAM OPTION CONTROL WORD 3
                           451+*
                           452+*  0  MYSTERY INTERRUPT     MI        8  CS STATUS IN PROGRESS    CS
                           453+*  1  ERROR INTERRUPT       ER        9  CS AVAILABLE             CSA
                           454+*  2  EXPECTED INTERRUPT    XI       10  CS STATUS INTERRUPT ERR  CE
                           455+*  3  INTERRUPT RECEIVED    IN       11  ISB BITS ON (1-7)        ISBON
                           456+*
                           457+*  4  EXPECTED ERR/ATTENT   XE       12  TEST UNIT RESULTS VOID   NG
                           458+*  5  HARD ERROR FOUND      HE       13  OIO CC ERROR             IOCC
                           459+*  6  WRONG INTR LEVEL      $LE      14  NO INTERRUPT             NOIN
                           460+*  7  NO INTR EXPECTED      NI       15  INTERRUPT CC ERROR       INCC
                           461+*                      BIT    HEX
000020                     462+MI       EQU   32     0      8         MYSTERY INTERRUPT HAPPENED
000021                     463+ER       EQU   33     1      4         ERROR RECEIVED ON INTERRUPT
000022                     464+XI       EQU   34     2      2         EXPECTED INTERRUPT CONTROL BIT
000023                     465+IN       EQU   35     3      1         INTERRUPT RECEIVED CONTROL BIT
000024                     466+XE       EQU   36     4      8         EXPECTED ERROR RESPONSE
000025                     467+HE       EQU   37     5      4         HARD ERROR, 8 RETRIES
000026                     468+$LE      EQU   38     6      2         INTERRUPT ON WRONG LEVEL ERROR
000027                     469+NI       EQU   39     7      1         NO INTERRUPT EXPECTED E
000028                     470+CS       EQU   40     8      8         CYCLE STATUS IN PROGRESS
000029                     471+CSA      EQU   41     9      4         CYCLE STEAL AVAILABLE
00002A                     472+CE       EQU   42     10     2         CYCLE STEAL STATUS INERRRUPT ERROR
00002B                     473+ISBON    EQU   43     11     1         ISB BITS ON (1-7)
00002C                     474+NG       EQU   44     12     8         TEST UNIT RESULTS NO GOOD
00002D                     475+IOCC     EQU   45     13     4         OIO CC ERROR
00002E                     476+NOIN     EQU   46     14     2         NO INTERRUPT
00002F                     477+INCC     EQU   47     15     1         INTERRUPT CC ERROR
                           478+*
                           479+*      COMMON BUFFER FOR PRINTING DATA
                           480+*
0025DA  0000               482+$TUID    DC    A(*-*)                  TEST UNIT IDENTIFICATION
0025DC  0000               483+$IOIN    DC    A(*-*)                  I/O AND INTR CONDITION CODES
0025DE  0000               484+$ISB     DC    A(*-*)                  R7, INTR STATUS BYTE & DEV ADRS
0025E0  0000               485+LSTIO    DC    A(*-*)                  ADRS OF LAST I/O + 4 BYTES
0025E2  0000               486+DEV1     DC    A(*-*)                  DEVICE DEPENDENT DATA
0025E4  0000               487+DEV2     DC    A(*-*)                  *
0025E6  0000               488+DEV3     DC    A(*-*)                  *
0025E8  0000               489+DEV4     DC    A(*-*)                  CS STATUS ERROR ISB & INTR CC
0025E2                     490+SCTID    EQU   DEV1                    READ ID BUFFER FOR IBIS & TERN
0025EA                     491+DCBUF    EQU   *                       DCB BUFFER FOR LAST DCB USED
0025EA  0000               492+DCB1     DC    A(*-*)                  LAST DCB TABLE, CONTROL WORD
0025EC  0000               493+DCB2     DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025EE  0000               494+DCB3     DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025F0  0000               495+DCB4     DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025F2  0000               496+DCB5     DC    A(*-*)                  LAST DCB TABLE, DEV DEP WORD
0025F4  0000               497+DCB6     DC    A(*-*)                  LAST DCB TABLE, CHAIN ADRS
0025F6  0000               498+DCB7     DC    A(*-*)                  LAST DCB TABLE, BYTE COUNT
0025F8  0000               499+DCB8     DC    A(*-*)                  LAST DCB TABLE, BUFFER ADDRESS
                           500+*
0025FA                     501+CSBUF    EQU   *                       CYCLE STEAL DATA BUFFER
0025FA  0000               502+CSTL1    DC    A(*-*)                  CS STATUS WD 0, RESIDUAL ADDRESS
0025FC  0000               503+CSTL2    DC    A(*-*)                  CS STATUS WD 1, RESIDUAL COUNT
0025FE  0000               504+CSTL3    DC    A(*-*)                  CS STATUS WD 2, RETRY CNT WD 1
002600  0000               505+CSTL4    DC    A(*-*)                  CS STATUS WD 3, RETRY CNT WD 2
002602  0000               506+CSTL5    DC    A(*-*)                  CS STATUS WD 4, ERROR STATUS WD 1
002604  0000               507+CSTL6    DC    A(*-*)                  CS STATUS WD 5, ERROR STATUS WD 2
002606  0000               508+CSTL7    DC    A(*-*)                  CS STATUS WD 6, LAST DCB ADDRESS
002608  0000               509+CSTL8    DC    A(*-*)                  CS STATUS WD 7, PREVIOUS HD/CYL
00260A  0000               510+CSTL9    DC    A(*-*)                  CS STATUS WD 8, CURRENT HD/CYL
00260C  0000               511+CSTL10   DC    A(*-*)                  CS STATUS WD 9, FLAG/SECTOR
00260E  0000               512+CSTL11   DC    A(*-*)                  CS STATUS WD 10, HEAD/CYLINDER
002610  0000               513+CSTL12   DC    A(*-*)                  CS STATUS WD 11, DIAG BYTES 1, 2,
002612  0000               514+CSTL13   DC    A(*-*)                  CS STATUS WD 12, AND 3 + WRAP BYTE
                           515+*
002614  0000               516+$SUBN    DC    A(*-*)                  LAST SUBROUTINE ADDRESS USED
002616  00000000           517+$DATA    DC    2A(*-*)                 OPTIONAL DATA
00261A  0021               518+$INTL    DC    X'0021'                 INTERRUPT LEVEL REQUESTED
00261C  0000               519+TURTN    DC    A(*-*)                  TEST UNIT RETURN ADRS TO MDI
00261E  00                 520+$DVID    DC    X'00'                   DEVICE ID
002620  19D0               521+SVCAL    DC    A(DEVADD)               ADRS OF DEVICE ADDRESS
002622  0000               522+         DC    A(*-*)                  IBIS CYLINDER ADDRESS
                           523+*
                           524+*      THIS TEST UNIT WILL RETURN TO MDI WITHOUT DOING ANY PROGRAM
                           525+*      FUNCTION. THE RESULTS THAT WERE SET UP IN THE RESULTS AREA ARE
                           526+*      STILL VALID BUT A DIFFERENT TEST IS TO BE PERFORMED.
                           527+*
002624  4020 25DA 7A02     528+T7A02    MVWI  X'7A02',$TUID           SET UP TEST UNIT ID
00262A  5700               529+         BXS   (R7)                    RETURN TO MDI SUPVR
                           531          COPY  COMEQU
                           532 ********************************************************************************
                           533 *                                                                              *
                           534 *                 EQUATED NAMES FOR SUPPORTED SVC'S                            *
                           535 *                                                                              *
                           536 ********************************************************************************
000000                     537 OUT      EQU   0                       OUT SVC
000001                     538 OUTIN    EQU   1                       OUTIN SVC
000002                     539 IDLE     EQU   2                       IDLE SVC
```

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 LOCTR  OBJECT TEXT          STMT SOURCE STATEMENT                                COPYRIGHT IBM CORP 1976
000003                        540 IDLE5 EQU   3                       IDLE SVC - INDEPENDENT OF CPU TYPE
000004                        541 CHNGE EQU   4                       CHANGE LEVEL SVC
000005                        542 PGMCK EQU   5                       ALLOW RETURN ON PROGRAM CHECK SVC
000006                        543 EXIT  EQU   6                       EXIT SVC
000007                        544 TERM  EQU   7                       TERMINATE SVC
000008                        545 RESET EQU   8                       RESET DEVICE SVC
000009                        546 RID   EQU   9                       READ ID SVC
00000A                        547 START EQU   10                      START CYCLE STEAL SVC
00000B                        548 STCSS EQU   11                      START CYCLE STEAL STATUS SVC
00000C                        549 PREP  EQU   12                      PREPARE DEVICE SVC
00000D                        550 READ0 EQU   13                      READ WITH FUNCTION BIT 3 OFF SVC
00000E                        551 READ1 EQU   14                      READ WITH FUNCTION BIT 3 ON SVC
00000F                        552 RSTAT EQU   15                      READ STATUS SVC
000010                        553 WRIT0 EQU   16                      WRITE WITH FUNCTION BIT 3 OFF SVC
000011                        554 WRIT1 EQU   17                      WRITE WITH FUNCTION BIT 3 ON SVC
000012                        555 CTRL  EQU   18                      CONTROL SVC
000013                        556 RICB  EQU   19                      RELEASE INTERUPT CONTROL BLOCK SVC
000014                        557 CICB  EQU   20                      CONNECT INTERUPT CONTROL BLOCK SVC
000015                        558 HIO   EQU   21                      HALT ALL I/O
000016                        559 REQSD EQU   22                      REQUEST USE OF DCP DISK SVC
000017                        560 RELSD EQU   23                      RELEASE USE OF DCP DISK SVC
000018                        561 HALT  EQU   24                      HALT SVC
000019                        562 ETOH  EQU   25                      EBCDIC TO HEX SVC (STRING)
00001A                        563 HTOE  EQU   26                      HEX TO EBCDIC SVC (STRING)
00001B                        564 ATOH  EQU   27                      ASCII TO HEX SVC (STRING)
00001C                        565 HTOA  EQU   28                      HEX TO ASCII SVC (STRING)
00001D                        566 ETOA  EQU   29                      EBCDIC TO ASCII SVC (STRING)
00001E                        567 ATOE  EQU   30                      ASCII TO EBCDIC SVC (STRING)
00001F                        568 READI EQU   31                      READ DATA SETS FOR MDI/UTIL
000020                        569 WRITI EQU   32                      WRITE DATA SETS FOR UTIL
                              571 *****************************************************************
                              572 *                                                               *
                              573 *                   EQUATES USED BY TU'S AS CONSTANTS           *
                              574 *                                                               *
                              575 *****************************************************************
00004E                        576 PLUS  EQU   C'+'                    PLUS CHAR
000060                        577 MINUS EQU   C'-'                    MINUS CHAR
000000                        579 ZERO  EQU   0
000001                        580 ONE   EQU   1
000002                        581 TWO   EQU   2
000003                        582 THREE EQU   3
000004                        583 FOUR  EQU   4
000005                        584 FIVE  EQU   5
000006                        585 SIX   EQU   6
000007                        586 SEVEN EQU   7
000008                        587 EIGHT EQU   8
000009                        588 NINE  EQU   9
00000A                        589 TEN   EQU   10
00000B                        590 ELEVN EQU   11                           11
00000C                        591 TWELV EQU   12                           12
00000D                        592 THRTN EQU   13                           13
00000F                        593 FIVTN EQU   15                           15
000010                        594 SIXTN EQU   16                           16
000020                        595 THRY2 EQU   32                           32
000040                        596 SIXT4 EQU   64                           64
000080                        597 ONE28 EQU   128                          128
000100                        598 TWO56 EQU   256                          256
000400                        599 ONEK  EQU   1024                         1024
000800                        600 TWOK  EQU   2048                         2048
000C00                        601 THREK EQU   3072                         3072
001000                        602 FOURK EQU   4096                         4096
FFFFFF                        604 M1    EQU   -1                           -1
FFFFFE                        605 M2    EQU   -2                           -2
FFFFFD                        606 M3    EQU   -3                           -3
FFFFFC                        607 M4    EQU   -4                           -4
                              609 *****************************************************************
                              610 *                                                               *
                              611 *     THE FOLLOWING ARE EQUATES FOR BIT DISPLACEMENTS FROM THE  *
                              612 *     BEGINNING OF THE BYTE TO EACH BIT IN THE WORD OF SWITCHES. *
                              613 *                                                               *
                              614 *****************************************************************
000000                        615 BS0   EQU   0
000001                        616 BS1   EQU   1
000002                        617 BS2   EQU   2
000003                        618 BS3   EQU   3
000004                        619 BS4   EQU   4
000005                        620 BS5   EQU   5
000006                        621 BS6   EQU   6
000007                        622 BS7   EQU   7
000008                        623 BS8   EQU   8
000009                        624 BS9   EQU   9
00000A                        625 BS10  EQU   10
00000B                        626 BS11  EQU   11
00000C                        627 BS12  EQU   12
00000D                        628 BS13  EQU   13
00000E                        629 BS14  EQU   14
00000F                        630 BS15  EQU   15
                              632       COPY  T7A69DCB                15NOV77
                              633 **
                              634 *
                              635 *************************************************9/11/78**********
                              636 *
                              637 *     DCB TABLES AND DC'S
                              638 *
                              639 *****************************************************************
                              640 *
                              641 ***** DIAGNOSTIC DCB   ********
                              642 *
00262C  2016                  643 DGDCB DC    X'2016'                 DIAGNOSTIC DCB
00262E  0000                  644       DC    X'0000'                 FG/SEC
002630  0000                  645       DC    A(*-*)                  HD/CYL
002632  0000                  646       DC    X'0000'                 NOT USED
002634  26FE                  647       DC    A(RSBA)                 RSB ADDR.
002636  0000                  648       DC    A(*-*)                  CHAINING ADDRESS
002638  0100                  649       DC    X'0100'                 BYTE COUNT
00263A  0000                  650       DC    A(*-*)                  DATA ADDRESS
                              651 *
                              652 ***** RECALIBRATE DCB  ********
                              653 *
00263C  0001                  654 CLDCB DC    X'0001'                 RECALIBRATE DCB
00263E  0000000000000000      655       DC    7A(*-*)
                              656 *
                              657 ***** WRITE SECTOR ID  **
                              658 *
```



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 LOCTR  OBJECT TEXT          STMT SOURCE STATEMENT                                COPYRIGHT IBM CORP 1976
00264C  082D                  659 WSDCB DC    X'082D'                 WRITE SECTOR ID CNTL WORD-SE ON
00264E  0000                  660       DC    X'0000'                 FG/SEC
002650  0000                  661       DC    A(*-*)                  HD/CYL
002652  0000                  662       DC    A(*-*)                  NOT USED
002654  26FE                  663       DC    A(RSBA)                 RSB ADDRESS
002656  0000                  664       DC    A(*-*)                  CHAIN ADDRESS
002658  0004                  665       DC    X'0004'                 BYTE COUNT
00265A  26FA                  666       DC    A(WRSID)                ADDR OF SECTOR ID DATA
                              667 *
                              668 ***** READ SECTOR ID DCB  *******
                              669 *
00265C  2014                  670 RSDCB DC    X'2014'                 READ SECTOR ID - AUTO SEEK-SE ON
00265E  0000                  671       DC    X'0000'                 FG/SEC
002660  0000                  672       DC    X'0000'                 HD/CYL
002662  0000                  673       DC    X'0000'                 NOT USED
002664  26FE                  674       DC    A(RSBA)                 RSB ADDRESS
002666  0000                  675       DC    X'0000'                 CHAIN ADDRESS
002668  0004                  676       DC    X'0004'                 BYTE COUNT FOR READ SECTOR ID
00266A  25E2                  677       DC    A(SCTID)                SECTOR ID DATA ADDRESS
                              678 *
                              679 ***** SEEK DCB  ********
                              680 *
00266C  0000                  681 SKDCB DC    X'0000'                 SEEK DCB
00266E  0000                  682       DC    X'0000'                 FG/SEC
002670  0000                  683       DC    F'0'                    HD/CYL
002672  0000                  684       DC    F'0'
002674  26FE                  685       DC    A(RSBA)                 RSB ADDRESS
002676  0000                  686       DC    A(*-*)                  CHAIN ADDRESS
002678  0000                  687       DC    F'0'                    NOT USED
00267A  0000                  688       DC    F'0'                    NOT USED
                              689 *
                              690 ***** CYCLE STEAL STATUS DCB  ********
                              691 *
00267C  2000                  692 CSDCB DC    X'2000'                 CONTROL WORD
00267E  0000                  693       DC    F'0'                    NOT USED
002680  0000                  694       DC    F'0'                    NOT USED
002682  0000                  695       DC    F'0'                    NOT USED
002684  0000                  696       DC    F'0'                    NOT USED
002686  0000                  697       DC    F'0'                    NOT USED
002688  001A                  698       DC    X'001A'                 13 WORDS OF STATUS
00268A  25FA                  699       DC    A(CSBUF)                ADDRESS OF CYCLE STEAL STATUS DATA
                              700 *
                              701 ***** WRITE DCB  **********
                              702 *
00268C  0021                  703 WRDCB DC    X'0021'                 WRITE/VERIFY CNTL WORD- AUTO SEEK
00268E  0000                  704       DC    F'0'                    FG/SEC
002690  0000                  705       DC    X'0000'                 HD/CYL
002692  0000                  706       DC    X'0000'
002694  26FE                  707       DC    A(RSBA)                 RSB ADDRESS
002696  0000                  708       DC    A(*-*)                  CHAIN ADDRESS
002698  0100                  709       DC    X'0100'                 BYTE COUNT
00269A  0000                  710       DC    A(*-*)                  WRITE DATA ADDRESS
                              711 *
                              712 ***** VERIFY DCB   *******
                              713 *
00269C  0011                  714 VRDCB DC    X'0011'                 CONTROL WORD
00269E  0000                  715       DC    F'0'                    FG/SEC
0026A0  0000                  716       DC    X'0000'                 HD/CYL
0026A2  0000                  717       DC    X'0000'
0026A4  26FE                  718       DC    A(RSBA)                 RSB ADDRESS
0026A6  0000                  719       DC    A(*-*)                  CHAIN ADDRESS
0026A8  0000                  720       DC    F'0'                    BYTE COUNT
0026AA  0000                  721       DC    A(*-*)                 VERIFY DATA ADDRESS
                              722 *
                              723 ***** READ DCB   *******
                              724 *
0026AC  2010                  725 RDDCB DC    X'2010'                 READ DCB CONTROL WORD - AUTO SEEK
0026AE  0000                  726       DC    F'0'                    FG/SEC
0026B0  0000                  727       DC    X'0000'                 HD/CYL
0026B2  0000                  728       DC    X'0000'
0026B4  26FE                  729       DC    A(RSBA)                 RSB ADDRESS
0026B6  0000                  730       DC    A(*-*)                  CHAIN ADDRESS
0026B8  0100                  731       DC    X'0100'                 BYTE COUNT
0026BA  0000                  732       DC    A(*-*)                  READ DATA ADDRESS
                              733 *
                              734 ****  WRITE SECTOR ID SKEWED    ****
                              735 *
0026BC  082F                  736 WKDCB DC    X'082F'                 CONTROL WORD - SE ON
0026BE  0000                  737       DC    X'0000'                 FG/SEC
0026C0  0000                  738       DC    A(*-*)                  HD/CYL
0026C2  0000                  739       DC    A(*-*)                  NOT USED
0026C4  26FE                  740       DC    A(RSBA)                 RSB ADDRESS
0026C6  0000                  741       DC    A(*-*)                  CHAIN ADDRESS
0026C8  0004                  742       DC    X'0004'                 BYTE COUNT
0026CA  26FA                  743       DC    A(WRSID)                ADDR OF SECTOR ID DATA
                              744 *
                              745 ****  READ SECTOR ID SKEWED     ****
                              746 *
0026CC  2015                  747 RKDCB DC    X'2015'                 CONTROL WORD- AUTO SEEK - SE ON
0026CE  0000                  748       DC    X'0000'                 FG/SEC
0026D0  0000                  749       DC    X'0000'                 HD/CYL
0026D2  0000                  750       DC    X'0000'                 NOT USED
0026D4  26FE                  751       DC    A(RSBA)                 RSB ADDRESS
0026D6  0000                  752       DC    A(*-*)                  CHAIN ADDRESS
0026D8  0004                  753       DC    X'0004'                 BYTE COUNT FOR READ SECTOR ID
0026DA  25E2                  754       DC    A(SCTID)                SECTOR ID DATA ADDRESS
                              755 *
                              756 ****  READ MULTIPLE SECTOR IDS    ****
                              757 *
0026DC  2014                  758 RMDCB DC    X'2014'                 CONTROL WORD- AUTO SEEK - SE ON
0026DE  0000                  759       DC    F'0'                    FLAG/SECTOR
0026E0  0000                  760       DC    X'0000'                 HEAD/CYLINDER
0026E2  0000                  761       DC    X'0000'                 SCAN COUNT
0026E4  26FE                  762       DC    A(RSBA)                 RSB ADDRESS
0026E6  0000                  763       DC    A(*-*)                  CHAIN ADDRESS
0026E8  0084                  764       DC    X'0084'                 BYTE COUNT
0026EA  3F14                  765       DC    A(ID00)                 DATA AREA ADDRESS
                              766 *
                              767 *     CONSTANTS AND DEFINED STORAGE  LOCATIONS
0026EC  0000                  768 ZERO0 DC    X'0000'                 CONSTANT ZERO
0026EE  0001                  769 ONE1  DC    X'0001'                 CONSTANT ONE
0026F0  0000                  770 RAY   DC    A(*-*)                  WRITE PARAMETER POINTER
0026F2  EB6D                  771 WDATA DC    X'EB6D'                 WRITE DATA
0026F4  6BDB                  772       DC    X'6BDB'                 *
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

0026F6  0000                773 LGSEC DC    X'0000'                  LOGICAL SECTOR #
0026F8  0000                774 PHYSC DC    X'0000'                  CONVERTED PHYSICAL SEC #
0026FA  0000                775 WRSID DC    X'0000'                  FLAG,SECTOR   (WRT SECTOR ID DATA)
0026FC  0000                776       DC    X'0000'                  HEAD,CYLINDER
0026FE  00000000000000000   777 RSBA  DC    6A(*-*)                  RESIDUAL STATUS BLOCK
                            778 *
                            779 *************************************************************************
                            780 *
                            781 *     CALLING SEQUENCE
                            782 *
                            783 *          BAL  CONVT,R7
                            784 *
                            785 *     RETURN
                            786 *
                            787 *          B    (TT304+2)
                            788 *
                            789 *************************************************************************
                            790 *
00270A  6F0D 27AC           791 CONVT MVW   R7,CNVT8+2               SETUP RETURN ADDR
00270E  690D 27B6           792       MVW   R1,SAVE1                 SAVE CONTAINS OF R1
002712  C120 26F7           793       MVB   LGSEC+1,R1               GET THE SECTOR NUMBER
002716  310A                794       SRL   1,R1                     ALIGN IT
002718  C128 26F9           795       MVB   R1,PHYSC+1               PLACE IT INTO PHYSICAL #
00271C  402B 3466 4000      796       TWI   X'4000',HDCYL            CHECK FIXED HEADS
002722  123A                797       JON   CNVT6                    HEAD NUMBER SAME AS PHYSICAL
002724  6908 3466           798       MVW   HDCYL,R1                GET THE HEAD
002728  3121                799       SLL   4,R1                     SHIFT OUT EXCESS
00272A  3172                800       SRL   14,R1                    ALIGN THE HEAD
00272C  1035                801       JZ    CNVT6                    LOGICAL =S PHYSICAL
00272E  7922 0001           802       SWI   1,R1                     CHECK HEADS 1,5,9
002732  1023                803       JZ    CNVT4                    GO SET THE SECTOR
002734  7922 0001           804       SWI   1,R1                     CHECK HEADS 2,6,10
002738  1010                805       JZ    CNVT2                    GO SET SECTOR
00273A  802B 26F9 27B4      806       CB    PHYSC+1,CB40             CHECK SECTOR 32
002740  1032                807       JE    CNVT9                    YES THE SAME LOCATION
002742  802B 26F9 27AE      808       CB    PHYSC+1,CB07             SECTOR LESS THAN 7
002748  1F04                809       JLGE  CNVT1                    LESS THAN OR EQUAL
00274A  402E 26F8 0008      810       SWI   8,PHYSC                  OFFSET OF 8
002750  5023                811       J     CNVT6                    GO SAVE
002752  4029 26F8 0018      812 CNVT1 AWI   24,PHYSC                 OFFSET OF 24
002758  501F                813       J     CNVT6
00275A  802B 26F9 27B4      814 CNVT2 CB    PHYSC+1,CB40             CHECK SECTOR 32
002760  1022                815       JE    CNVT9                    YES THE SAME LOCATION
002762  802B 26F9 27B0      816       CB    PHYSC+1,CB15             SECTOR LESS THAN 15
002768  1F04                817       JLGE  CNVT3
00276A  402E 26F8 0010      818       SWI   16,PHYSC                 OFFSET OF 16
002770  5013                819       J     CNVT6
002772  4029 26F8 0010      820 CNVT3 AWI   16,PHYSC                 OFFSET OF 16
002778  500F                821       J     CNVT6
00277A  802B 26F9 27B4      822 CNVT4 CB    PHYSC+1,CB40             CHECK SECTOR 32
002780  1012                823       JE    CNVT9                    YES THE SAME LOCATION
002782  802B 26F9 27B2      824       CB    PHYSC+1,CB23             SECTOR LESS THAN 23
002788  1F04                825       JLGE  CNVT5
00278A  402E 26F8 0018      826       SWI   24,PHYSC                 OFFSET OF 24
002790  5003                827       J     CNVT6                    SAVE IT
002792  4029 26F8 0008      828 CNVT5 AWI   8,PHYSC                  OFFSET OF 8
002798  402B 26F6 0800      829 CNVT6 TWI   X'0800',LGSEC            CHECK DISPLACED FLAG
00279E  1003                830       JOFF  CNVT9                    NO EXIT
0027A0  4029 26F8 0001      831       AWI   1,PHYSC                  ADD ONE FOR DISPLACED
0027A6  6908 27B6           832 CNVT9 MVW   SAVE1,R1                 RESTORE R1
0027AA  6802 0000           833 CNVT8 B     *-*                      RETURN
                            834 *
0027AE  0700                835 CB07  DC    X'0700'                  SECTOR  7 MASK
0027B0  0F00                836 CB15  DC    X'0F00'                  SECTOR 15 MASK
0027B2  1700                837 CB23  DC    X'1700'                  SECTOR 23 MASK
0027B4  2000                838 CB40  DC    X'2000'                  SECTOR 32 MASK
0027B6  0000                839 SAVE1 DC    X'0000'                  SAVE CONTAINS OF R1
                            840 *
                            841 *
                            842 *
                            843 *     EXECUTE INPUT & OUTPUT COMMANDS
                            844 *     TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
                            845 *     EACH OF THESE ENTRIES SET R7 WITH THE ADRS OF ITS PARAMETER
                            846 *     LIST AND ANY SPECIAL SWITCHES BEFORE BRANCHING TO THE
                            847 *     SUPVR CALL.
                            848 *
                            849 *     THIS SUBROUTINE WILL CHECK FOF THE FOLLOWING:
                            850 *
                            851 *     1. LOST INTERRUPTS BY TIMING OUT A COUNTING LOOP
                            852 *     2. ERROR INTERRUPTS RECEIVED FROM SUPVR
                            853 *
                            854 *     THIS ROUTINE HAS THE FOLLOWING ENTRIES:
                            855 *          .
                            856 * 1        BAL   $RKEW,R6                 READ SECTOR ID SKEWED
                            857 *          .
                            858 * 2        BAL   $WKEW,R6                 WRITE SECTOR ID SKEWED
                            859 *          .
                            860 * 3        BAL   $WSEC,R6                 WRITE SECTOR ID
                            861 *          .
                            862 * 4        BAL   $DIAG,R6                 DIAGNOSTIC
                            863 *          .
                            864 * 5        BAL   XIOCS,R6                 CYCLE STEAL STATUS
                            865 *          .
                            866 * 6        BAL   $SEEK,R6                 SEEK
                            867 *          .
                            868 * 7        BAL   $RECL,R6                 RECALIBRATE
                            869 *          .
                            870 * 8        BAL   $RDID,R6                 READ SECTOR ID
                            871 *          .
                            872 * 9        BAL   $RD,R6                   READ
                            873 *          .
                            874 * 10       BAL   $RDVY,R6                 READ VERIFY
                            875 *          .
                            876 * 11       BAL   $WRT,R6                  WRITE
                            877 *          .
                            878 * 12       BAL   $RDIM,R6                 READ MULTI SECTOR IDS
                            879 *          .
                            880 * 13       BAL   $WRTO,R6                 WRITE DPC COMMANDS
                            881 *
0027B8  4020 2952 266C      882 $SEEK MVA   SKDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
0027BE  5040                883       J     XIO
                            884 *
0027C0  4020 2952 263C      885 $RECL MVA   CLDCB,IODCB              SET UP BLOCK FOR SVC CALL
0027C6  503C                886       J     XIO
                            887 *
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

0027C8  4020 2952 265C      888 $RDID MVA   RSDCB,IODCB              SET UP BLOCK FOR SVC CALL
0027CE  0BFF                889       MVBI  X'FF',R3                 SET BUFFER TO F'S
0027D0  4524 25E2           890       MVA   SCTID,R5                 SETUP READ SECTOR ID BUFFER ADRS
0027D4  4724 0004           891       MVWI  4,R7                     SETUP BUFFER LENGTH
0027D8  2BAC                892       FFN   R3,(R5)                  INIT READ SECTOR ID BUFFER
0027DA  5032                893       J     XIO
                            894 *
0027DC  4020 2952 26DC      895 $RDIM MVA   RMDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
0027E2  4724 0084           896       MVWI  132,R7                   SET BUFFER LENGTH
0027E6  4524 3F14           897       MVA   ID00,R5                  SET BUFFER ADDRESS
0027EA  0BFF                898       MVBI  X'FF',R3                 SET CLEAR CHARACTERS
0027EC  2BAC                899       FFN   R3,(R5)                  CLEAR THE BUFFER
0027EE  5028                900       J     XIO
                            901 *
0027F0  0BFF                902 $RD   MVBI  X'FF',R3                 SETRD BUFFER TO ALL F'S
0027F2  6D08 26BA           903       MVW   RDDCB+14,R5              SET UP READ BUFFER ADRS
0027F6  4724 0100           904       MVWI  X'0100',R7               SET UP BUFFER LENGTH
0027FA  2BAC                905       FFN   R3,(R5)                  CLEAR READ BUFFER
0027FC  4020 2952 26AC      906 $RD$  MVA   RDDCB,IODCB              SET UP BLOCK FOR SVC CALL
002802  501E                907       J     XIO
                            908 *
002804  4020 2952 269C      909 $RDVY MVA   VRDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
00280A  501A                910       J     XIO
                            911 *
00280C  4020 2952 268C      912 $WRT  MVA   WRDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
002812  5016                913       J     XIO
                            914 *
002814  4020 2952 26CC      915 $RKEW MVA   RKDCB,IODCB               SET UP CONTROL BLOCK FOR SVC CALL
00281A  5012                916       J     XIO
                            917 *
00281C  4020 2952 26BC      918 $WKEW MVA   WKDCB,IODCB               SET UP CONTROL BLOCK FOR SVC CALL
002822  500E                919       J     XIO
                            920 *
002824  4020 2952 264C      921 $WSEC MVA   WSDCB,IODCB               SET UP CONTROL BLOCK FOR SVC CALL
00282A  500A                922       J     XIO
                            923 *
00282C  4020 2952 262C      924 $DIAG MVA   DGDCB,IODCB              SET UP CONTROL BLOCK FOR SVC CALL
002832  0BFF                925       MVBI  X'FF',R3                 SETRD BUFFER TO ALL F'S
002834  6D08 263A           926       MVW   DGDCB+14,R5              SET UP READ BUFFER ADRS
002838  4724 0100           927       MVWI  X'0100',R7               SET UP BUFFER LENGTH
00283C  2BAC                928       FFN   R3,(R5)                  CLEAR READ BUFFER
00283E  5000                929       J     XIO
                            930 *
                            932       COPY  T7AXEQ                   09MAR78
                            933       PRINT OFF
                           1497       T7AXEQ
                           1498+*************************************************************29JUL76**
                           1499+*
                           1500+* SUB-ROUTINE
                           1501+*
                           1502+*     EXECUTE INPUT AND OUTPUT COMMANDS
                           1503+*
                           1504+* PURPOSE
                           1505+*
                           1506+*     TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
                           1507+*     THIS SUBROUTINE WILL DO THE FOLLOWING FUNCTIONS:
                           1508+*
                           1509+*       1. SAVE THE ADDRESS THAT POINTS TO THE INSTRUCTION THAT STARTED
                           1510+*          THE I/O COMMAND.
                           1511+*       2. SAVES THE DCB BLOCK USED UNLESS IT IS A START CYCLE STATUS
                           1512+*          ISSUED BY THIS SUBROUTINE.
                           1513+*       3. CLEAR OUT THE CYCLE STEAL STATUS STORAGE UNLESS THE
                           1514+*          START CYCLE STATUS WAS ISSUED BY THIS SUBROUTINE.
                           1515+*       4. RESETS THE INTERRUPT INDICATOR AND CHECKS FOR ANY INTERRUPT
                           1516+*          SINCE THE LAST EXPECTED INTERRUPT. IF AN INTERRUPT IS FOUND,
                           1517+*          MYSTERY INTERRUPT (MI)  CONTROL BIT IS SET.
                           1518+*       5. MOVES THE ADDRESS OF THE I/O CONTROL BLOCK IN R7, SET THE
                           1519+*          EXPECTED INTERRUPT CONTROL BIT AND ISSUE THE 'SVC  START'.
                           1520+*       6. WHEN THE SUPVR RETURNS AFTER ISSUING THE I/O COMMAND, TIMING
                           1521+*          STARTS TO DETERMINE A LOST INTERRUPT.
                           1522+*       7. EXCEPT THE INTERRUPT AND GATHER INFORMATION TO DETERMINE IF IT
                           1523+*          WAS AN ERROR OR OKAY AND EXIT OFF THE INTERRUPT LEVEL.
                           1524+*       8. CHECK IF THERE WAS A WRONG INTERRUPT LEVEL.
                           1525+*       9. CHECK IF AN ERROR WAS EXPECTED AND IF THERE WAS RETURN.
                           1526+*      10. CHECK IF THERE WAS AN ERROR CONDITION, IF NOT RETURN.
                           1527+*      11. CHECK TO SEE IF THE EXERCISER IS TO BE TERMINATED.
                           1528+*      12. CHECK IF A CYCLE STEAL OPERATION WAS IN PROGRESS THAT WAS
                           1529+*          ISSUED BY THIS SUBROUTINE.
                           1530+*      13. CHECK THE ISB BITS THAT ARE ON. IF BIT 0 IS ON, ISSUE A
                           1531+*          CYCLE STEAL STATUS COMMAND. CHECK FOR ANY OTHER BIT BEING ON,
                           1532+*          COUNT IT AND SET UP THE PROPER ERROR MESSAGE TO BE PRINTED.
                           1533+*
                           1534+* CALLING SEQUENCE
                           1535+*
                           1536+*     THIS ROUTINE HAS THE FOLLOWING ENTRIES:
                           1537+*
                           1538+* --> BAL   XIO        OR          XEQ ANY CYCLE STEAL COMMAND, MOD=0
                           1539+* --> BAL   XIO1                   MOD PARM PRELOADED IN 'IOMOD'
                           1540+* --> BAL   XIOCS,R6   OR          XEQ START CYCLE STEAL STATUS, MOD=F
                           1541+* --> BAL   XIOCS-4,R6             AUTO CS STATUS (FOLLOWING OTHER XIO
                           1542+*     .                           AND DOES NOT POST INTERRUPT STATUS)
                           1543+*
                           1544+* RETURN CONTROL
                           1545+*
                           1546+*     BXS   (R6,2)                RETURN TO USER NO ERROR
                           1547+* OR  B     (R6)*                 RETURN AND RETRY ON ERROR
                           1548+*************************************************************************
002840  CB25 2954          1550+XIO   MVWZ  IOMOD,R3               SET MOF OF 0 FOR CYCLE STEAL OP
002844  500E               1551+      J     XIO1                   CS I/O'S ARE NOT RETRIED
                           1552+*
002846  4020 2954 000D     1553+XIODG MVWI  X'000D',IOMOD           SET MODIFIER FOR DIAGNOSTIC OPS
00284C  500A               1554+      J     XIO1                   GO TO CS OPS
                           1555+*
00284E  4CAA               1556+      TBTR  (R4,CE)                RESET CS STATUS INTER ERROR INDICAT.
002850  4C68               1557+      TBTS  (R4,CS)                SET 'CYCLE STEAL STATUS' IN PROGRESS
002852  4020 2952 267C     1558+XIOCS MVA   CSDCB,IODCB            SET UP CONTROL BLOCK FOR SVC CALL
002858  4020 2954 000F     1559+      MVWI  X'000F',IOMOD           SET CYCLE STEAL MODIFIER
00285E  4C28               1560+      TBT   (R4,CS)                IS CS IN PROGRESS, ERROR CONDITION
002860  1213               1561+      JON   XIO2                   * YES, BYPASS SAVING I/O ADRS
002862  6E0D 25E0          1562+XIO1  MVW   R6,LSTIO               SAVE IAR FOR RETRY IF REQUESTED
002866  4324 25EA          1563+      MVA   DCBUF,R3               SET UP TO ADRS TO MOVE DCB TABLE
00286A  6D08 2952          1564+      MVW   IODCB,R5               * AND THE FROM ADRS, ALONG WITH
00286E  0F1A               1565+      MVBI  26,R7                  * THE NUMBER OF MOVES
002870  2D64               1566+      MVFN  (R5),(R3)              MOVE 1 STATUS WORD AND ADJUST
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002872  0BFF              1567+       MVBI  255,R3                  CLEAR CYCLE STATUS BUFFER
002874  4524 25FA         1568+       MVA   CSBUF,R5                *  TO ALL ONES  *
002878  0F1A              1569+       MVBI  26,R7                   *
00287A  2BAC              1570+       FFN   R3,(R5)                 *
00287C  4020 25DC 0708    1571+       MVWI  X'0708',$IOIN           OVERLAY OLD CONDITION CODES
002882  CB25 25DE         1572+       MVWZ  $ISB,R3                 ZERO OUT OLD ISB VALUE
                          1573+*
002886  4CA1              1574+       TBTR  (R4,ER)                 RESET ANY ERROR BEFORE I/O COMMAND
002888  4CA3              1575+XIO2   TBTR  (R4,IN)                 CLEAR INTERRUPT RECEIVED CNTL BIT
00288A  4724 294E         1576+       MVA   IOBLK,R7                SET UP CONTROL BLOCK FOR SUPVR
00288E  4CA6              1577+       TBTF  (R4,$LE)                RESET LEVEL ERROR INDICATOR
002890  4C62              1578+       TBTS  (R4,XI)                 SET EXPECTED INTR CONTROL BIT
002892  600A              1579+       SVC   START                   CALL SUPVR FOR I/O COMMAND
                          1580+*
002894  4CA7              1581+       TBTR  (R4,NI)                 IS AN INTR EXPECTED
002896  6AC0 0002         1582+       BN    (R6,2)                  * NO, RETURN TO USER
                          1583+*
                          1584+*           THE INTR SHOULD OCCUR WHILE SPINNING IN THE NEXT SECTION
                          1585+*
00289A  4524 0000         1586+       MVWI  0,R5                    SET UP WORK REG FOR 'LOST INTR'
00289E  4CA3              1587+XIO8   TBTR  (R4,IN)                 HAS INTERRUPT BEEN RECEIVED
0028A0  1239              1588+       JON   XIOCK                   * YES, CHECK IF ALL WAS SATISFACTORY
0028A2  6002              1589+       SVC   IDLE                    ALLOW ANOTHER PROGRAM A CHANCE TO RUN
                          1590+*                                    SUPVR WILL RETURN HERE
0028A4  6002              1591+       SVC   IDLE                    ALLOW ANOTHER PROGRAM A CHANCE TO RUN
                          1592+*                                    SUPVR WILL RETURN HERE
0028A6  7DA1 0001         1593+       AWI   1,R5                    ADVANCE TIME OUT COUNT
0028AA  18F9              1594+       JNZ   XIO8                    BCH IF TIME OUT NOT REACHED
0028AC  4C61              1595+       TBTS  (R4,ER)                 SET ON ERROR CONTROL BIT
0028AE  68D2 0000         1596+       B     (R6)*                   ERR 'NO INTERRUPT'
                          1598+*************************************************************03FEB76**
                          1599+*
                          1600+* SUBROUTINE
                          1601+*
                          1602+*      I/O EXECUTE ERROR HANDLING ROUTINE
                          1603+*
                          1604+* PURPOSE
                          1605+*
                          1606+*      THIS ROUTINE WILL COLLECT INFORMATION TO HELP DETERMINE THE
                          1607+*      PROBLEM THAT WAS FOUND WHEN THE I/O COMMAND WAS ISSUED BY THE
                          1608+*      SUPERVISOR AND IT WAS NOT ACCEPTED.
                          1609+*
                          1610+* CALLING SEQUENCE
                          1611+*
                          1612+*      SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O COMMAND
                          1613+*
                          1614+* RETURN CONTROL
                          1615+*
                          1616+*      B     (R6)*                   RETURN TO USERS ERROR HANDLER
                          1617+*
                          1618+*************************************************************************
                          1619+*
                          1620+* CC         0= DEVICE NOT ATTACHED
                          1621+* FOR        1= DEVICE BUSY
                          1622+* I/O        2= DEVICE BUSY AFTER RESET
                          1623+*            3= COMMAND REJECT
                          1624+*            4= INTERVENTION REQUIRED
                          1625+*            5= INTERFACE DATA CHECK
                          1626+*            6= CONTROLLER BUSY
                          1627+*            7= I/O COMMAND EXCEPTED
                          1628+*
0028B2  706E              1629+XIOER  CPLSR R3                      COPY STATUS ANY LEVEL INTO R3
0028B4  336A              1630+       SRL   13,R3                   POSITION CC CODE TO BITS 13-15
0028B6  C328 25DC         1631+       MVB   R3,$IOIN                * PUT IN LOG OUT AREA
0028BA  68D2 0000         1632+       B     (R6)*                   RETURN TO USER ERROR HANDLER
                          1634+*************************************************************14APR76**
                          1635+*                                                                    IL
                          1636+* SUB-ROUTINE                                                       IL
                          1637+*                                                                    IL
                          1638+*      ERROR INTERRUPT             RUNS ON INTERRUPT LEVEL '$INTL'   IL
                          1639+*                                                                    IL
                          1640+* PURPOSE                                                          IL
                          1641+*                                                                    IL
                          1642+*      THIS ROUTINE WILL BE ENTERED WHEN THE SUPVR DETECTS AN ERROR  IL
                          1643+*      OR THE INTERRUPTING CONDITION CODE DOES NOT AGREE WITH THE    IL
                          1644+*      EXPECTED CODE.                                                IL
                          1645+*                                                                    IL
                          1646+* CALLING SEQUENCE                                                  IL
                          1647+*                                                                    IL
                          1648+*      SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O INTERRUPT     IL
                          1649+*                                                                    IL
                          1650+* RETURN CONTROL                                                    IL
                          1651+*                                                                    IL
                          1652+*      SVC   EXIT                  RETURN TO USER VIA SUPVR          IL
                          1653+*                                                                    IL
                          1654+************************************************************************IL
                          1655+*                                                                    IL
                          1656+* CC         0= CONTROLLER END              ISB   0= ADD STATUS     IL
                          1657+* FOR        1= PROGRAM CONTROL INTERRUPT   BITS  1= COMD REJECT    IL
                          1658+* INTR       2= EXCEPTION INTERRUPT         FOR   2= INCOR LENGTH   IL
                          1659+*            3= DEVICE END INTERRUPT        INTR  3= DCB SPEC CK    IL
                          1660+*            4= ATTENTION INTERRUPT                4= STG DATA CK    IL
                          1661+*            5= ATTENTION / PROGRAM CNTL INTR      5= INV STG ADRS   IL
                          1662+*            6= ATTENTION / EXCEPTION INTR         6= PROTRCT CK     IL
                          1663+*            7= ATTENTION / DEVICE END INTR        7= I-FACE DATA    IL
                          1664+*                                                                    IL
0028BE  706E              1665+INTER  CPLSR R3                      COPY STATUS ANY LEVEL INTO R3   IL
0028C0  336A              1666+       SRL   13,R3                   POSITION INDICATORS IN R3       IL
0028C2  4424 25D4         1667+       MVA   OPTN1,R4                SET UP BASE ADRS                IL
0028C6  4C28              1668+       TBT   (R4,CS)                 IS CS IN PROGRESS               IL
0028C8  1006              1669+       JOFF  INTES                   * NO                            IL
0028CA  4C6A              1670+       TBTS  (R4,CE)                 TURN ON CYCLE STEAL INTER ERROR IL
0028CC  6F0D 25E8         1671+       MVW   R7,DEV4                 SAVE CS ERR ISB VALUE, BITS 0-7 IL
0028D0  C328 25E9         1672+       MVB   R3,DEV4+1               * AND THE COND CODE             IL
0028D4  500A              1673+       J     INTR1                                                   IL
0028D6  4C24              1674+INTES  TBT   (R4,XE)                 TEST  EXPECTED ATTEN / ERROR IND IL
0028D8  1002              1675+       JOFF  INTET                   BCH IF NOT EXPECTED             IL
0028DA  F304              1676+       CBI   4,R3                    IS THIS AN 'ATTENTION' INTR     IL
0028DC  1006              1677+       JE    INTR1                   * YES, BCH TO END INTR SEQUENCE IL
0028DE  4C61              1678+INTET  TBTS  (R4,ER)                 SET ERROR ON I/O COMMAND CNTL BIT IL
0028E0  5004              1679+       J     INTR1                                                   IL
                          1680+*                                    THE ERROR INTERRUPT USES THE SAME IL
                          1681+*                                    ENDING SEQUENCE AS THE NORMAL INTR IL
                          1683+*************************************************************14APR76IL
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                          1684+**                                                                   IL
                          1685+** SOUBROUTINE                                                       IL
                          1686+**                                                                   IL
                          1687+**      OKAY  INTERRUPT             RUNS ON INTERRUPT LEVEL '$INTL'  IL
                          1688+**                                                                   IL
                          1689+** PURPOSE                                                          IL
                          1690+**                                                                   IL
                          1691+**      TO CHECK THE INTERRUPT AND CONTINUE THE TEST                 IL
                          1692+**                                                                   IL
                          1693+** CALLING SEQUENCE                                                 IL
                          1694+**                                                                   IL
                          1695+**      SUPERVISOR WILL ENTER HERE  IF INTR CC IS AS REQUESTED       IL
                          1696+**      THE ERROR INTERRUPT HANDLER WILL BRANCH TO THIS ROUTINE      IL
                          1697+**      AFTER THE SPECIAL PART HAS BEEN COMPLETED  AND THE           IL
                          1698+**      COMMON SECTION IS HANDLED HERE.                              IL
                          1699+**                                                                   IL
                          1700+** RETURN CONTROL                                                   IL
                          1701+**                                                                   IL
                          1702+**      SVC   EXIT                  RETURN TO USER VIA SUPVR         IL
                          1703+**                                                                   IL
                          1704+************************************************************************IL
0028E2  706E              1705+INTOK CPLSR R3                       COPY STATUS ANY LEVEL INTO R3   IL
0028E4  336A              1706+      SRL   13,R3                    POSITION INDICATORS IN R3       IL
0028E6  4424 25D4         1707+      MVA   OPTN1,R4                 SET UP BASE ADRS                IL
0028EA  4C63              1708+INTR1 TBTS  (R4,IN)                  SET  INTERRUPT RECEIVED         IL
0028EC  4C28              1709+      TBT   (R4,CS)                  IS 'CS IN PROGRESS' ON          IL
0028EE  1204              1710+      JON   INTR2                    * YES, BCH AROUND UPDATE        IL
0028F0  C328 25DD         1711+      MVB   R3,$IOIN+1               SAVE INTERRUPTING CC CODE       IL
0028F4  6F0D 25DE         1712+      MVW   R7,$ISB                  SAVE INTR STATUS AND DEV ADRS   IL
0028F8                    1713+INTR2 EQU   *                                                       IL
                          1714+*     CPCL  R5                       CURRENT LEVEL COPIED BY DCP     IL
0028F8  3521              1715+      SLL   4,R5                     POSITION INTR LEVEL AND PUT     IL
0028FA  0501              1716+      ABI   1,R5                     * IN 'I' BIT                    IL
0028FC  CD24 261A         1717+      CW    $INTL,R5                 IS THIS THE CORRECT INTR LEVEL  IL
002900  1002              1718+      JE    INTR3                    * YES, GO EXIT THIS LEVEL       IL
002902  4C66              1719+      TBTS  (R4,$LE)                 SET INTR LEVEL ERROR CONTROL BIT IL
002904  4C61              1720+      TBTS  (R4,ER)                  SET ERROR ON I/O COMMAND CNTL BIT IL
002906  4CA2              1721+INTR3 TBTR  (R4,XI)                  WAS INTERRUPT EXPECTED          IL
002908  1204              1722+      JON   INTRX                    * YES, EXIT OFF THIS INTR LEVEL IL
00290A  4C60              1723+      TBTS  (R4,MI)                  * NO, SET MYSTERY INTR CONTROL BIT IL
00290C  F304              1724+      CBI   4,R3                     ATTENTION INTERRUPT?            IL
00290E  1001              1725+      JE    INTRX                    YES                             IL
002910  4C6C              1726+      TBTS  (R4,NG)                  ERROR,UNEXPECTED INTERRUPT      IL
002912  6006              1727+INTRX SVC   EXIT                     EXIT THIS LEVEL VIA SUPVR TO PGM IL
                          1729+*************************************************************03FEB76**
                          1730+*
                          1731+*      THIS IS THE CONTINUATION OF EXECUTE I/O AFTER THE INTERRUPT
                          1732+*      HAS BEEN SERVICED. THE EXERCISER FINDS AN INTERRUPT HAS BEEN
                          1733+*      RECEIVED AND BRANCHES HERE TO CHECK FOR ANY ERROR CONDITIONS.
                          1734+*
                          1735+*
0028E2  706E              1736+XIOCK TBTR  (R4,XE)                  WAS AN ERROR EXPECTED           IL
002916  6AC0 0002         1737+      BN    (R6,2)                   * YES, EXIT THIS ROUTINE        IL
00291A  4CA8              1738+      TBTR  (R4,CS)                  WAS AUTO CS IN PROGRESS         IL
00291C  1006              1739+      JOFF  XIOCV                    * NO, CONTINUE CHECKING         IL
00291E  4C2A              1740+      TBT   (R4,CE)                  IS CS IN AN ERR CONDITION       IL
002920  1002              1741+      JOFF  XIOCO                    * NO, BCH                       IL
002922  68D2 0000         1742+      B     (R6)*                    CS ERROR                        IL
002926  4C69              1743+XIOCO TBTS  (R4,CSA)                 TURN ON CS STATS AVAIL FLAG     IL
002928  5601              1744+      BXS   (R6,2)                   GO TO USER                      IL
00292A  4C21              1745+XIOCV TBT   (R4,ER)                  WAS ERROR INTR CONTROL BIT ON   IL
00292C  100D              1746+      JOFF  XIOCX                    * NO, EXIT THIS ROUTINE         IL
                          1747+*
00292E  C520 25DD         1748+      MVB   $IOIN+1,R5               GET LAST INTR CC CODE           IL
002932  F502              1749+      CBI   2,R5                     IS THIS CC=2                    IL
002934  1003              1750+      JE    XIOCQ                    YES                             IL
002936  F506              1751+      CBI   6,R5                     IS THIS CC=6                    IL
002938  68D1 0000         1752+      BNE   (R6)*                    * NO, BCH TO ERROR HANDLER      IL
00293C  C520 25DE         1753+XIOCQ MVB   $ISB,R5                  GET LAST ISB DATA BYTE AND IF CS IL
002940  6A00 284E         1754+      BN    XIOCS-4                  * AVAILABLE, GO AND GET IT      IL
002944  68D2 0000         1755+      B     (R6)*                    ERROR                           IL
002948  CB25 25D8         1756+XIOCX MVWZ  OPTN3,R3                 CLEAR OUT OPTION 3 CNTL BITS    IL
00294C  5601              1757+      BXS   (R6,2)                   RETURN TO USER VIA REG 6        IL
                          1758+*
                          1759+*           I/O   PARAMETER LIST                                     IL
                          1760+*
00294E  19D0              1761+IOBLK DC    A(DEVADD)                ADRS OF DEVICE ADRS             IL
002950  28B2              1762+      DC    A(XIOER)                 ERROR ROUTINE ADRS              IL
002952  0000              1763+IODCB DC    A(*-*)                   DCB ADRS OR LEVEL & INTR        IL
002954  0000              1764+IOMOD DC    A(*-*)                   MODIFIER                        IL
002956  0000              1765+      DC    A(*-*)                   ADRS OF LAST SVC CALL           IL
002958  0000              1766+IORSP DC    A(*-*)                   SECOND WORD OF LAST IDCB        IL
                          1767+*
                          1768+*           INTERRUPT CONTROL BLOCK FOR I/O COMMANDS                 IL
                          1769+*                                                                    IL
00295A  19D0              1770+INTBL DC    A(DEVADD)                ADRS OF DEVICE ADRS             IL
00295C  28E2              1771+      DC    A(INTOK)                 INTERRUPT OK RETURN ADRS        IL
00295E  28BE              1772+      DC    A(INTER)                 INTERRUPT ERROR ADRS            IL
002960  0003              1773+INTCC DC    X'0003'                  INTERRUPT CODE EXPECTED         IL
                          1775+*************************************************************11MAY76**
                          1776+*
                          1777+* SUBROUTINE
                          1778+*
                          1779+*      CONNECT INTERRUPT CONTROL BLOCK & PREPARE DEVICE
                          1780+*
                          1781+* PURPOSE
                          1782+*
                          1783+*      TO CONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
                          1784+*      PREPARE ON THE DESIRED INTERRUPT LEVEL AND TO ALLOW THE DEVICE
                          1785+*      TO INTERRUPT.
                          1786+*
                          1787+* CALLING SEQUENCE
                          1788+*
                          1789+*      THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
                          1790+*
                          1791+* --> BAL   $CONC,R6                 CLEAR DEV DEP STG AND CONNECT I/O BLK
                          1792+* --> BAL   $CONP,R6                 PREPARE DEVICE ONLY, ALREADY CONNECT
                          1793+*
                          1794+* RETURN CONTROL
                          1795+*
                          1796+*      BXS   (R6,2)                   RETURN TO USER VIA REG 6 IF OKAY
                          1797+* OR   B     (R6)*                    IF THE DEVICE COULD NOT BE CONNECTED
                          1798+*
                          1799+************************************************************************
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 LOCTR  OBJECT TEXT          STMT SOURCE STATEMENT                                 COPYRIGHT IBM CORP 1976

002962  0F06                 1800+$CONC MVBI  6,R7                     NUMBER OF BYTE TO CLEAR
002964  0B00                 1801+      MVBI  0,R3                     * AND THE DATA TO USE
002966  4524 25E2            1802+      MVA   DEV1,R5                  * ALONG WITH THE ADRS TO USE
00296A  2BAC                 1803+      FFN   R3,(R5)                  *
00296C  CB25 25D8            1804+      MVWZ  OPTN3,R3                 CLEAR OLD CONTROLS FOR NEW ROUTINE
002970  4724 295A            1805+      MVA   INTBL,R7                 SET R7 TO CONTROL BLOCK AND
002974  6014                 1806+      SVC   CICB                     * CONNECT IT TO THIS DEVICE
002976  6AD0 0000            1807+      BN    (R6)*                    ERROR RETURN TO USER
                             1808+*
00297A  8828 261A 2952       1809+$CONP MVW   $INTL,IODCB              PUT IN LEVEL & INTR PARAMETER
002980  4724 294E            1810+      MVA   IOBLK,R7                 SET R7 TO CONTROL BLOCK TO PREPARE
002984  4020 25DC 0708       1811+      MVWI  X'0708',$IOIN            INITIALIZE CONDITION CODE STORAGE
00298A  CB25 25DE            1812+      MVWZ  $ISB,R3                  * AND CLEAR OLD ISB VALUE
00298E  6E0D 25E0            1813+      MVW   R6,LSTIO                 SET UP ADDRESS THAT STARTED LAST I/O
002992  600C                 1814+      SVC   PREP                     * AND CALL ON SUPVR
002994  5601                 1815+      BXS   (R6,2)                   RETURN TO USER
                             1817+**********************************************************06APR76**
                             1818+*
                             1819+* SUBROUTINE
                             1820+*
                             1821+*      DISCONNECT THE INTERRUPT CONTROL BLOCK AND LOG ERRORS
                             1822+*
                             1823+* PURPOSE
                             1824+*
                             1825+*      DISCONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
                             1826+*      SET THE 'NO GOOD' CONTROL BIT, THEN LOG THE DATA THAT HAS
                             1827+*      BEEN FOUND TO HELP THE OPERATOR DEFINE THE ERROR CONDITION.
                             1828+*
                             1829+* CALLING SEQUENCE
                             1830+*
                             1831+*      THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
                             1832+*
                             1833+* --> B      $ERR$                     SET 'NG' BIT AND CONVERT DATA TO LOG
                             1834+* --> B      $CONX                     RETURN TO MDI SUPERVISOR TO TEST STS
                             1835+*
                             1836+* RETURN CONTROL
                             1837+*
                             1838+*     B      TURTN*                    RETURN TO MDI
                             1839+* OR  B      (R6)*                     IF THE DEVICE COULD NOT BE CONNECTED
                             1840+*
                             1841+******************************************************************
002996  4020 1818 8000       1842+$ERR$  MVWI  X'8000',TUSTATUS        SET ON 'NO GOOD' STATUS BIT
00299C  4724 2B66            1843+       MVA   HEBLK,R7                GET ADRS OF CONTROL BLOCK
0029A0  601A                 1844+       SVC   HTOE                    CONVERT HEX TO EBC VIS DCP
0029A2  4020 188E 4040       1845+       MVWI  X'4040',TUWOPK+116
0029A8  4020 1890 4040       1846+       MVWI  X'4040',TUWORK+118
0029AE  4020 1892 4040       1847+       MVWI  X'4040',TUWORK+120
0029B4  0D04                 1848+$PRNT  MVBI  4,R5
0029B6  4324 181A            1849+       MVA   TUWORK,R3               SET UP BUFFER STORAGE
0029BA  6B0D 2B5E            1850+       MVW   R3,BUFPT
0029BE  4124 2A3A            1851+       MVA   LINE1,R1
0029C2  0F04                 1852+       MVBI  4,R7
0029C4  0E08                 1853+       MVBI  8,R6
0029C6  2B24                 1854+MVBUF  MVFN  (R3),(R1)
0029C8  0F04                 1855+       MVBI  4,R7
0029CA  0A40                 1856+       MVBI  X'40',R2
0029CC  C258                 1857+       MVB   R2,(R1)+
0029CE  BEFB                 1858+       JCT   MVBUF,R6
0029D0  0E08                 1859+       MVBI  8,R6
0029D2  7921 002C            1860+       AWI   44,R1
0029D6  BDF7                 1861+       JCT   MVBUF,R5
0029D8  4020 1802 F1F0       1862+       MVWI  PIDMSG10,PID+2
0029DE  4020 19B8 2B64       1863+       MVA   FAKETU,@DCADD1
0029E4  4020 19BA 2B60       1864+       MVA   DC2PT,@DCADD2
0029EA  402C 19C4 0080       1865+       OWI   BIT0080,SUPSTAT
0029F0  4324 25DA            1866+       MVA   $TUID,R3                SET UP BUFFER STORAGE
0029F4  6F13 18BA            1867+       BAL   TUMSGWTR*,R7            GO TO MESSAGE WRITER
                             1868+*
0029F8                       1869+$CONX  EQU    *
0029F8  C720 19D0            1870+       MVB    DEVADD,R7              GET DEVICE ADDRESS FROM MDI
0029FC  6013                 1871+       SVC    RICB                   RELEASE INTERRUPT CONTROL BLOCK
0029FE  6812 261C            1872+       B      TURTN*                 RETURN TO MDI SUPERVISOR
                             1873+*
002A02  0009                 1874+BEGIN  DC     A(0009)                NUMBER OF LINES TO PRINT
002A04  0008                 1875+       DC     A(0008)                LINE LENGTH = 8 CHAR
002A06  5C5C40C1C2D6D9E3     1876+       DC     C'** ABORT'
002A0E  0028                 1877+       DC     A(0040)                LINE LENGTH = 40 CHAR
002A10  E3E4C9C440C9D6C9D    1878+       DC     C'TUID IOIN ISB  INST SECT  ID  DATA CSCC '
002A38  0028                 1879+       DC     A(0040)                LINE LENGTH = 40 CHAR
002A3A  4040404040404040     1880+LINE1  DC     C'                                        '
002A62  0028                 1881+       DC     A(0040)                LINE LENGTH = 40 CHAR
002A64  C3D5E3D340C4C3C2F    1882+       DC     C'CNTL DCB1 DCB2 DCB3 DCB4 CHAD BYCT ADRS '
002A8C  0028                 1883+       DC     A(0040)                LINE LENGTH = 40 CHAR
002A8E  4040404040404040     1884+LINE2  DC     C'                                        '
002AB6  0028                 1885+       DC     A(0040)                LINE LENGTH = 40 CHAR
002AB8  C3E260F040C3E260F    1886+       DC     C'CS-0 CS-1 CS-2 CS-3 CS-4 CS-5 CS-6 CS-7 '
002AE0  0028                 1887+       DC     A(0040)                LINE LENGTH = 40 CHAR
002AE2  4040404040404040     1888+LINE3  DC     C'                                        '
002B0A  0028                 1889+       DC     A(0040)                LINE LENGTH = 40 CHAR
002B0C  C3E260F840C3E260F    1890+       DC     C'CS-8 CS-9 CS-A CS-B CS-C                '
002B34  0028                 1891+       DC     A(0040)                LINE LENGTH = 40 CHAR
002B36  4040404040404040     1892+LINE4  DC     C'                                        '
                             1893+*
002B5E  0000                 1894+BUFPT  DC     A(*-*)
002B60  2A02                 1895+DC2PT  DC     A(BEGIN)
002B62  0101                 1896+FIXTU  DC     X'0101'
002B64  0101                 1897+FAKETU    DC  X'0101'
00F1F0                       1898+PIDMSG10 EQU    X'F1F0'
000080                       1899+BIT0080  EQU    X'0080'
                             1900+*
                             1901+*      DATA CONTROL BLOCK FOR CONVERTING HEX TO EBCDIC
                             1902+*
002B66  003A                 1903+HEBLK  DC     A(58)                  NUMBER OF BYTES TO CONVERT
002B68  25DA                 1904+       DC     A($TUID)               FROM ADRS
002B6A  181A                 1905+       DC     A(TUWORK)              AND THE TO ADRS
                             1906        COPY  T7AAA                 14OCT77
                             1907 ****************************************************************
                             1908 *  PHYSICAL   *        LOGICAL SECTOR AND RECORD NUMBERS          *
                             1909 * SECTOR# AS  *      (SEE NOTE 2 BELOW FOR EXPLANATION OF COLS)   *
                             1910 * CODED IN    *                                                   *
                             1911 * WRITE/READ  ************** MOVEABLE HEADS **************** FIXED ***
                             1912 *  ID DCBS    *          *          *          *          * HEADS  *
                             1913 *   (HEX)     *  0,4,8   *  1,5,9   *  2,6,A   *  3,7     *  0 - 7 *
                             1914 ****************************************************************
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 LOCTR  OBJECT TEXT          STMT SOURCE STATEMENT                                 COPYRIGHT IBM CORP 1976

                             1915 *      20     * 40   (1)  * 40   (1)  * 40   (1)  * 40   (1)  * 40   (1)  *
                             1916 *    INDEX    *  INDEX    *  INDEX    *  INDEX    *  INDEX    *  INDEX    *
                             1917 *      00     * 00 00 20  * 30 18 38  * 20 10 30  * 10 08 28  * 00 00 20  *
                             1918 *      01     * 02 01 21  * 32 19 39  * 22 11 31  * 12 09 29  * 02 01 21  *
                             1919 *      02     * 04 02 22  * 34 1A 3A  * 24 12 32  * 14 0A 2A  * 04 02 22  *
                             1920 *      03     * 06 03 23  * 36 1B 3B  * 26 13 33  * 16 0B 2B  * 06 03 23  *
                             1921 *      04     * 08 04 24  * 38 1C 3C  * 28 14 34  * 18 0C 2C  * 08 04 24  *
                             1922 *      05     * 0A 05 25  * 3A 1D 3D  * 2A 15 35  * 1A 0D 2D  * 0A 05 25  *
                             1923 *      06     * 0C 06 26  * 3C 1E 3E  * 2C 16 36  * 1C 0E 2E  * 0C 06 26  *
                             1924 *      07     * 0E 07 27  * 3E 1F 3F  * 2E 17 37  * 1E 0F 2F  * 0E 07 27  *
                             1925 *      08     * 10 08 28  * 00 00 20  * 30 18 38  * 20 10 30  * 10 08 28  *
                             1926 *      09     * 12 09 29  * 02 01 21  * 32 19 39  * 22 11 31  * 12 09 29  *
                             1927 *      0A     * 14 0A 2A  * 04 02 22  * 34 1A 3A  * 24 12 32  * 14 0A 2A  *
                             1928 *      0B     * 16 0B 2B  * 06 03 23  * 36 1B 3B  * 26 13 33  * 16 0B 2B  *
                             1929 *      0C     * 18 0C 2C  * 08 04 24  * 38 1C 3C  * 28 14 34  * 18 0C 2C  *
                             1930 *      0D     * 1A 0D 2D  * 0A 05 25  * 3A 1D 3D  * 2A 15 35  * 1A 0D 2D  *
                             1931 *      0E     * 1C 0E 2E  * 0C 06 26  * 3C 1E 3E  * 2C 16 36  * 1C 0E 2E  *
                             1932 *      0F     * 1E 0F 2F  * 0E 07 27  * 3E 1F 3F  * 2E 17 37  * 1E 0F 2F  *
                             1933 *      10     * 20 10 30  * 10 08 28  * 00 00 20  * 30 18 38  * 20 10 30  *
                             1934 *      11     * 22 11 31  * 12 09 29  * 02 01 21  * 32 19 39  * 22 11 31  *
                             1935 *      12     * 24 12 32  * 14 0A 2A  * 04 02 22  * 34 1A 3A  * 24 12 32  *
                             1936 *      13     * 26 13 33  * 16 0B 2B  * 06 03 23  * 36 1B 3B  * 26 13 33  *
                             1937 *      14     * 28 14 34  * 18 0C 2C  * 08 04 24  * 38 1C 3C  * 28 14 34  *
                             1938 *      15     * 2A 15 35  * 1A 0D 2D  * 0A 05 25  * 3A 1D 3D  * 2A 15 35  *
                             1939 *      16     * 2C 16 36  * 1C 0E 2E  * 0C 06 26  * 3C 1E 3E  * 2C 16 36  *
                             1940 *      17     * 2E 17 37  * 1E 0F 2F  * 0E 07 27  * 3E 1F 3F  * 2E 17 37  *
                             1941 *      18     * 30 18 38  * 20 10 30  * 10 08 28  * 00 00 20  * 30 18 38  *
                             1942 *      19     * 32 19 39  * 22 11 31  * 12 09 29  * 02 01 21  * 32 19 39  *
                             1943 *      1A     * 34 1A 3A  * 24 12 32  * 14 0A 2A  * 04 02 22  * 34 1A 3A  *
                             1944 *      1B     * 36 1B 3B  * 26 13 33  * 16 0B 2B  * 06 03 23  * 36 1B 3B  *
                             1945 *      1C     * 38 1C 3C  * 28 14 34  * 18 0C 2C  * 08 04 24  * 38 1C 3C  *
                             1946 *      1D     * 3A 1D 3D  * 2A 15 35  * 1A 0D 2D  * 0A 05 25  * 3A 1D 3D  *
                             1947 *      1E     * 3C 1E 3E  * 2C 16 36  * 1C 0E 2E  * 0C 06 26  * 3C 1E 3E  *
                             1948 *      1F     * 3E 1F 3F  * 2E 17 37  * 1E 0F 2F  * 0E 07 27  * 3E 1F 3F  *
                             1949 *      20     * 40   (1)  * 40   (1)  * 40   (1)  * 40   (1)  * 40   (1)  *
                             1950 *    INDEX    *  INDEX    *  INDEX    *  INDEX    *  INDEX    *  INDEX    *
                             1951 *******************************************************************
                             1952 * NOTE (1) - SECTOR 32 (/40) IS RESERVED AS AN ALTERNATE SECTOR AND IS*
                             1953 * ALWAYS THE SECTOR BEFORE INDEX.                                    *
                             1954 * NOTE 2 - COL 1 = LOGICAL SECTOR# OF SECTOR AS WRITTEN ON THE FILE  *
                             1955 *          COL 2 = RECORD# 1 AS CODED IN DCB FOR WRITE/READ/SCAN OPS *
                             1956 *          COL 3 = RECORD# 2 AS CODED IN DCB FOR WRITE/READ/SCAN OPS *
                             1957 *                                                                    *
                             1958 *  SECTOR ID FORMAT AS WRITTEN ON FILE (2 WORDS)                     *
                             1959 *          WORD0                          WORD1                      *
                             1960 *   (FLAG)      (SECTOR#)         (HEAD#)      (CYLINDER#)          *
                             1961 *  01234567   89101112131415     01234567   89101112131415           *
                             1962 *  FFFFFFFF   0S S S S S S 0     0HHHHH0C   CC C C C C C C           *
                             1963 *                                                                    *
                             1964 *                                                                    *
                             1965 *********************************************************************
                             1966 *
                             1967 T7AAA TUIT $ERR$
                             1968+******************************************************06FEB76**
                             1969+*
                             1970+* TEST UNIT
                             1971+*
                             1972+*     MANUAL ROUTINE                                        12/04/78
                             1973+*
                             1974+* PURPOSE
                             1975+*
                             1976+*     THIS ROUTINE WILL FORMAT, ASSIGN ALTERNATES,LIST TRACK ID'S,
                             1977+*     DATA RECORD ONE OR TWO, TEST (WR/RD) SELECTED SECT-HD-CYL.
                             1978+*     USING THE PARMETERS (CYL,HEAD,SECTOR) SUPPLIED BY 'TUINPT'.
                             1979+*
                             1980+* CALLING SEQUENCE
                             1981+*
                             1982+*     'TUINPT' FORMAT IS AS FOLLOWS:
                             1983+*  BYTE(0)-MODE                BYTE(1)-SINGLE OR MULTI SECTORS
                             1984+*     00-TEST                          00-NO
                             1985+*     01-FORMAT                        01-YES
                             1986+*     02-ALTERNATE ASSIGNMENT
                             1987+*     03-LIST TRACK IDS
                             1988+*     04-LIST DATA RECORD ONE OR TWO
                             1989+*     .
                             1990+*     IN MULTI-SECTOR MODE,TEST OR FORMAT WILL START WITH THE SELECTED
                             1991+*     LOGICAL SECTOR AND CONTINUE TO THE END OF LOGICAL TRACK.
                             1992+*     .
                             1993+*  BYTE(2)-FLAG BYTE                      BYTE(3)-SECTOR# (LOGICAL)
                             1994+* BIT 0-DEFECTIVE DATA FIELD TWO           00 - LOGICAL SECTOR 0
                             1995+*     1-DEFECTIVE DATA FIELD ONE           40 - LOGICAL SECTOR 32
                             1996+*     2-USER ASSIGNED DEFECT               (THIS NUMBER MUST BE EVEN - SEE
                             1997+*     3-WRITE PROTECTED DATA AREA           CHART ABOVE FOR PROPER LOGICAL
                             1998+*     4-SECTOR DISPLACED                    SECTOR NUMBERS)
                             1999+*     5-SECTOR REASSIGNED TO ALTERNATE CYL
                             2000+*     6-DEFECTIVE,FACTORY ASSIGNED
                             2001+*     7-ASSIGNED ALTERNATE SECTOR
                             2002+*     .
                             2003+*  BYTE(4/5)-HEAD/CYLINDER-   HEAD# (BITS 1-5), CYLINDER# (BITS 7-15)
                             2004+*     00-HEAD ZERO                        0000-CYLINDER ZERO
                             2005+*     01-HEAD ONE                         0401-CYLINDER ONE
                             2006+*     ETC                                  ETC
                             2007+*     0A-HEAD 10                          2967-CE CYLINDER  (359)
                             2008+*     10-FIXED HEAD 0                     41FF-FIXED HEAD CYL# (511)
                             2009+*     ETC                                  ETC
                             2010+*     17-FIXED HEAD 7                     5DFF-FIXED HEAD CYL# (511)
                             2011+*     .
                             2012+*  BYTE(6)-                              BYTE(7)-SE BIT  ON/OFF
                             2013+*     . MODE 00-DD= DATA PATTERN FOR TEST      00=OFF,01=ON
                             2014+*     . MODE 01-00= ID TO BE WRITTEN NORMAL      NOT USED
                             2015+*     . MODE 01-01= ID TO BE WRITTEN SKEWED      NOT USED
                             2016+*     . MODE 04-00= LIST DATA RECORD ONE       00=OFF,01=ON
                             2017+*     . MODE 04-01= LIST DATA RECORD TWO       00=OFF,01=ON
                             2018+*     .
                             2019+*     PROGRAM PASSES STATUS OF TEST OR FORMAT TO MDI AS FOLLOWS:
                             2020+*     .     NO STATUS RETURNED
                             2021+*
                             2022+* RETURN CONTROL
                             2023+*
                             2024+*      B     TURTN*                      RETURN TO MDI SUPERVISOR
                             2025+*
                             2026+*****************************************************************
002B6C  6F0D 261C            2027+T7AAA  MVW   R7,TURTN                SAVE RETURN ADDRESS
002B70  4020 25DA 7AAA       2028+       MVWI  X'7AAA',$TUID           SAVE TU ID FOR DISPLAY
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 LOCTR  OBJECT TEXT          STMT SOURCE STATEMENT                                COPYRIGHT IBM CORP 1976

002B76  4424 25D4            2029+         MVA    OPTN1,R4                        SET UP POINTER ADRS IN R4
002B7A  6E03 2962            2030+         BAL    $CONC,R6                        CLEAR DEV DEP STG AND CONNECT I/O BL
002B7E  2996                 2031+         DC     A($ERR$)                        ERROR ADRS FOR INVALID PREP
                             2032+*
00001C                       2033 PINC     EQU    B60                            PLUS INCREMENT CYL
000019                       2034 MINC     EQU    B57                            MINUS INCREMENT CYL
000018                       2035 FXD      EQU    B56                            FIXED HEADS INSTALLED
000011                       2036 FD       EQU    B49                            FIXED HEAD SPECIFIED
000016                       2037 INC      EQU    B54                            INCREMENT CYL
00001E                       2038 RASN     EQU    CH                             REASSIGN SECTOR
002B80  4C9C                 2039          TBTR   (R4,PINC)                      PLUS INC FLAG
002B82  4C99                 2040          TBTR   (R4,MINC)                      MINUS INC FLAG
002B84  4C96                 2041          TBTR   (R4,INC)                       INC FLAG
002B86  4C98                 2042          TBTR   (R4,FXD)                       FIXED HEAD FLAG
002B88  4C91                 2043          TBTR   (R4,FD)                        FIXED HEAD FLAG
002B8A  4C9E                 2044          TBTR   (R4,RASN)                      REASSIGN FLAG
002B8C  4C90                 2045          TBTR   (R4,B48)
002B8E  4C91                 2046          TBTR   (R4,B49)
002B90  4C92                 2047          TBTR   (R4,B50)
002B92  4C93                 2048          TBTR   (R4,B51)
002B94  4C94                 2049          TBTR   (R4,B52)
002B96  4C95                 2050          TBTR   (R4,B53)
002B98  4C97                 2051          TBTR   (R4,B55)
002B9A  4C9D                 2052          TBTR   (R4,B61)
002B9C  4C9E                 2053          TBTR   (R4,B62)
002B9E  4C9A                 2054          TBTR   (R4,B58)                       DISP FLAG IND
002BA0  4C9B                 2055          TBTR   (R4,B59)                       SKEWED INDICATION
002BA2  4020 3464 0000       2056          MVWI   0,HEADS                        CLEAR HEADS
002BA8  4020 266A 25E2       2057          MVA    SCTID,RSDCB+14                 LOAD BUFFER ADDRESS IN RD SECT ID DCB
002BAE  4020 26DA 25E2       2058          MVA    SCTID,RKDCB+14                 LOAD BUFFER ADDRESS IN RD SECT ID DCB
002BB4  4020 269A 3914       2059          MVA    WRBUF,WRDCB+14                 LOAD BUFFER ADDRESS IN WRT DCB
002BBA  4020 26BA 3B14       2060          MVA    RDBUF,RDDCB+14                 LOAD BUFFER ADDRESS IN READ DCB
002BC0  9028 194A 266E       2061          MVD    TUINPT+2,SKDCB+2               GET HEAD AND CYLINDER
002BC6  402B 194C 4000       2062          TWI    X'4000',TUINPT+4               FIXED HFAD SPECIFIED?
002BCC  1001                 2063          JOFF   NOFD                           NO
002BCE  4C51                 2064          TBTS   (R4,FD)                        TURN ON FIXED HEAD SPECIFIED
002BD0  6E03 27B8            2065 NOFD     BAL    $SEEK,R6                       SEEK
002BD4  2996                 2066          DC     A($ERR$)                       ERROR
002BD6  4CA1                 2067          TBTR   (R4,ER)                        INTERRUPT ERROR?
002BD8  6A00 2996            2068          BON    $ERR$                          YES-LOGOUT ERROR
002BDC  8828 194C 3466       2069          MVW    TUINPT+4,HDCYL                 LOAD HEAD AND CYL
002BE2  8028 194B 26F7       2070          MVB    TUINPT+3,LGSEC+1               LOAD LOGICAL SECTOR# FOR CONVERT
002BE8  6E03 2852            2071          BAL    XIOCS,R6                       *
002BEC  2996                 2072          DC     A($ERR$)
002BEE  402B 2602 0100       2073          TWI    X'0100',CSTL5                  LARGE FILE ? (DETERMINE MAX HD #)
002BF4  1003                 2074          JOFF   SMLF1                          NO
002BF6  4020 3464 0006       2075          MVWI   6,HEADS                        SET NUMBER OF HEADS
002BFC  4029 3464 0004       2076 SMLF1    AWI    4,HEADS                        SET NUMBER OF HEADS
002C02  402B 2602 0400       2077          TWI    X'0400',CSTL5                  FIXED HEADS INSTALLED?
002C08  1001                 2078          JOFF   NOFXD                          NO
002C0A  4C58                 2079          TBTS   (R4,FXD)                       TURN ON FXD HEAD INSTALLED IND
002C0C  802B 2C3E 1948       2080 NOFXD    CB     FMSK,TUINPT                    (01) FORMAT MODE ?
002C12  1026                 2081          JE     RT416                          YES
002C14  802B 2C40 1948       2082          CB     AMSK,TUINPT                    (02) ALT. SECT. ASSIGN MODE?
002C1A  6800 2CFA            2083          BE     ASM01                          YES
002C1E  802B 2C42 1948       2084          CB     DMSK,TUINPT                    (03) LIST IDS ?
002C24  6800 35E8            2085          BE     RDID1                          YES
002C28  802B 2C43 1948       2086          CB     DMSK+1,TUINPT                  (04) LIST DATA RECORD ONE OR TWO?
002C2E  6800 372E            2087          BE     RDDF1                          YES
002C32  802B 2C3F 1948       2088          CB     FMSK+1,TUINPT                  (00) TEST MODE?
002C38  1005                 2089          JE     RT405                          YES
002C3A  6802 29F8            2090 EXIT2    B      $CONX                          INVALID MODE
                             2091 *
002C3E  0100                 2092 FMSK     DC     X'0100'                        FORMAT MASK
002C40  0200                 2093 AMSK     DC     X'0200'                        ASSIGN MASK
002C42  0304                 2094 DMSK     DC     X'0304'                        DUMP MASK
                             2095 *
                             2096 *   (00)        TEST MODE
                             2097 *
002C44  6E03 37A0            2098 RT405    BAL    WRRD,R6                        WRITE/VERIFY/READ
002C48  402B 1948 0001       2099          TWI    X'0001',TUINPT                 MULTI-SECT MODE?
002C4E  10F5                 2100          JOFF   EXIT2
002C50  802B 2CF8 194B       2101          CB     SEC31,TUINPT+3                 END OF LOGICAL TRACK REACHED?
002C56  10F1                 2102          JE     EXIT2                          YES-
002C58  4029 194A 0002       2103          AWI    2,TUINPT+2                     INCREMENT SECTOR NUMBER
002C5E  50F2                 2104          J      RT405                          TEST NEXT SECTOR
                             2105 *
                             2106 *    (01)         FORMAT MODE
                             2107 *
002C60  8828 194A 26FA       2108 RT416    MVW    TUINPT+2,WRSID                 LOAD FLAG AND SECTOR
002C66  8828 2670 26FC       2109          MVW    SKDCB+4,WRSID+2                HD/CYL FROM USER
002C6C  6F03 270A            2110 RT500    BAL    CONVT,R7                       CONVERT TO PHY SECT#
002C70  402B 194A 0800       2111          TWI    X'0800',TUINPT+2               IS ID TO BE WRITTEN DISPLACED?
002C76  1003                 2112          JOFF   RT501                          NO
002C78  4029 26F8 0001       2113          AWI    1,PHYSC                        ADJ PHYSICAL SECTOR NUMBER
002C7E  8028 26F9 264F       2114 RT501    MVB    PHYSC+1,WSDCB+3                LOAD WR SECT DCB WITH PHY SECT#
002C84  8828 3466 2650       2115          MVW    HDCYL,WSDCB+4                  AND HEAD/CYLINDER
002C8A  4020 2658 0004       2116          MVWI   X'0004',WSDCB+12               SET ID LENGTH TO 4
002C90  4020 265A 26FA       2117          MVA    WRSID,WSDCB+14                 DATA ADDR
002C96  402B 194E 0100       2118          TWI    X'0100',TUINPT+6               ID TO BE WRITTEN SKEWED?
002C9C  1207                 2119          JON    RT420                          YES
002C9E  6E03 2824            2120 RT417    BAL    $WSEC,R6                       WRITE SECTOR ID
002CA2  2996                 2121          DC     A($ERR$)                       RETRY
002CA4  4CA1                 2122          TBTR   (R4,ER)                        INTERRUPT ERROR
002CA6  6A00 350E            2123          BON    T99K                           YES
002CAA  5014                 2124          J      T99C
002CAC  402B 194A 2200       2125 RT420    TWI    X'2200',TUINPT+2               DEFECTIVE BIT IN FLAG?
002CB2  6800 3520            2126          BOFF   ASMM4                          NO
002CB6  8028 26F9 26BF       2127          MVB    PHYSC+1,WKDCB+3                 LOAD PHY SECT# IN SKEW DCB
002CBC  8828 3466 26C0       2128          MVW    HDCYL,WKDCB+4                  SET THE HEAD AND CYLINDER
002CC2  4020 26CA 26FA       2129          MVA    WRSID,WKDCB+14                 DATA ADDR
002CC8  6E03 281C            2130 T99M     BAL    $WKEW,R6                       WRITE SECTOR ID SKEWED
002CCC  2996                 2131          DC     A($ERR$)                       RETRY
002CCE  4CA1                 2132          TBTR   (R4,ER)                        INTERRUPT ERROR
002CD0  6A00 350E            2133          BON    T99K                           YES
002CD4  402B 1948 0001       2134 T99C     TWI    X'0001',TUINPT                 MULTI-SECT MODE?
002CDA  6800 29F8            2135          BOFF   $CONX
002CDE  4029 26F6 0002       2136          AWI    2,LGSEC                        INCREMENT SECTOR NUMBER
002CE4  402F 26F6 0042       2137          CWI    66,LGSEC                       END OF LOGICAL TRACK REACHED?
002CEA  6800 29F8            2138          BE     $CONX                          YES-EXIT
002CEE  4029 26FA 0002       2139          AWI    X'0002',WRSID                  UPDATE SECT# IN WR SECT DATA BUFFER
002CF4  6802 2C6C            2140          B      RT500                          WRITE NEXT SECTOR ID
                             2141 *
002CF8  3E00                 2142 SEC31    DC     X'3E00'                        SECTOR 32 MASK
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 LOCTR  OBJECT TEXT          STMT SOURCE STATEMENT                                COPYRIGHT IBM CORP 1976

                             2143 *
                             2144 *   (02)         ALT ASSIGNMENT MODE-- FIND AVAILABLE ALTERNATE SECTOR
                             2145 *
002CFA  8828 2670 2660       2146 ASM01    MVW    SKDCB+4,RSDCB+4                SET FLAG/SECTOR IN DCB
002D00  4020 2668 0004       2147          MVWI   X'0004',RSDCB+12               BYTE COUNT FOR ONE ID FIELD
002D06  4020 26D8 0004       2148          MVWI   X'0004',RKDCB+12               BYTE COUNT FOR ONE ID FIELD
002D0C  6F03 270A            2149          BAL    CONVT,R7                       CONVERT TO PHYSICAL
002D10  8028 26F9 265F       2150          MVB    PHYSC+1,RSDCB+3                PUT THE SECTOR IN THE DCB
002D16  9028 265E 26CE       2151          MVD    RSDCB+2,RKDCB+2                SET READ SKEWED DCB
002D1C  6E03 27C8            2152          BAL    $RDID,R6                       READ THE ID FIELD
002D20  2996                 2153          DC     A($ERR$)                       *
002D22  4CA1                 2154          TBTR   (R4,ER)                        ANY ERROR?
002D24  101E                 2155          JOFF   ASM02                          NO GO CHECK FLAG
002D26  402B 2604 8000       2156          TWI    X'8000',CSTL6                  CHECK CRC ERROR
002D2C  6800 2996            2157          BOFF   $ERR$                          NO ERROR
002D30  6E03 2814            2158          BAL    $RKEW,R6                       READ ID SKEWED
002D34  2996                 2159          DC     A($ERR$)                       *
002D36  4CA1                 2160          TBTR   (R4,ER)                        ANY ERROR?
002D38  6A00 3526            2161          BON    ASMM5                          YES TELL USER
002D3C  402B 25E2 0800       2162          TWI    X'0800',SCTID                  CHECKIF ID IS DISP
002D42  100A                 2163          JOFF   ASM24                          NO
002D44  4C5A                 2164 ASM26    TBTS   (R4,B58)                       SET ID DISPLACED IND
002D46  4029 26CE 0001       2165          AWI    1,RKDCB+2                      INCREMENT PHYSICAL SECT#
002D4C  6E03 2814            2166          BAL    $RKEW,R6                       READ THE ID FIELD
002D50  2996                 2167          DC     A($ERR$)                       *
002D52  4CA1                 2168          TBTR   (R4,ER)                        ANY ERROR?
002D54  6A00 3526            2169          BON    ASMM5                          YES TELL USER
002D58  4C5B                 2170 ASM24    TBTS   (R4,B59)                       SET SKEWED INDICATION
002D5A  8828 265E 350A       2171          MVW    RSDCP+2,SKEW                   SAVE PHY SCT # OF SKEWED ID
002D60  5013                 2172          J      ASM22
002D62  402B 25E2 0800       2173 ASM02    TWI    X'0800',SCTID                  CHECKIF ID IS DISP
002D68  100F                 2174          JOFF   ASM22                          NO
002D6A  4C5A                 2175          TBTS   (R4,B58)                       SET ID DISPLACED IND
002D6C  4029 265E 0001       2176          AWI    1,RSDCB+2                      INCREMENT PHYSICAL SECT#
002D72  6E03 27C8            2177          BAL    $RDID,R6                       READ THE ID FIELD
002D76  2996                 2178          DC     A($ERR$)                       *
002D78  4CA1                 2179          TBTR   (R4,ER)                        ANY ERROR?
002D7A  1006                 2180          JOFF   ASM22                          NO GO CHECK FLAG
002D7C  402B 2604 8000       2181          TWI    X'8000',CSTL6                  CHECK CRC ERROR
002D82  6800 2996            2182          BOFF   $ERR$                          NO ERROR
002D86  50DE                 2183          J      ASM26
002D88  8028 25E2 194A       2184 ASM22    MVB    SCTID,TUINPT+2                 GET ORGINAL FLAGS
002D8E  402B 194A 0200       2185          TWI    X'0200',TUINPT+2               FACTORY DEFECT FLAG?
002D94  1001                 2186          JOFF   ASM23                          NO
002D96  4C52                 2187          TBTS   (R4,B50)                       TURN ON FACTORY DEFECT FLAG IND
002D98  402D 194A EF00       2188 ASM23    RBTWI  X'EF00',TUINPT+2               RESET ALL FLAGS EXCEPT WRT PRT
002D9E  402B 25E2 0400       2189          TWI    X'0400',SCTID                  CHECK IF ASSIGNED
002DA4  1030                 2190          JOFF   ASM03                          NO GO READ IDS
002DA6  9028 265E 269E       2191          MVD    RSDCB+2,VRDCB+2                SETUP DCB TO VERIFY DATA IN THE
002DAC  C625 269F            2192          MVBZ   VRDCB+3,R6                     ASSIGNED ALT SECTOR
002DB0  C620 194B            2193          MVB    TUINPT+3,R6                    *
002DB4  360A                 2194          SRL    1,R6                           *
002DB6  C628 269F            2195          MVB    R6,VRDCB+3                     *
002DBA  4020 26A8 0100       2196          MVWI   X'0100',VRDCB+12               *
002DC0  4020 269C 0811       2197          MVWI   X'0811',VRDCB                  TURN ON SE BIT FOR READ VERIFY
002DC6  6E03 2804            2198          BAL    $RDVY,R6                       SEE IF ALT ASSIGNMENT HAS BEEN MADE
002DCA  2996                 2199          DC     A($ERR$)                       * READ VERIFY
002DCC  4020 269C 0011       2200          MVWI   X'0011',VRDCB                  TURN OFF SE BIT FOR RD VRY
002DD2  4CA1                 2201          TBTR   (R4,ER)                        ANY ERROR?
002DD4  6800 2DE4            2202          BOFF   ASM13                          NO-VERIFY DATA RECORD 2
002DD8  402B 2604 0800       2203          TWI    X'0800',CSTL6                  NO RECORD FOUND?
002DDE  1213                 2204          JON    ASM03                          YES - ASSIGNMENT NOT FOUND
002DE0  6802 3514            2205          B      ASMM1                          ASSIGNMENT ALREADY MADE-DATA ERROR
002DE4  4029 269E 0020       2206 ASM13    AWI    32,VRDCB+2                     FORCE DATA RECORD 2
002DEA  4020 269C 0811       2207          MVWI   X'0811',VRDCB                  TURN ON SE BIT FOR READ VERIFY
002DF0  6E03 2804            2208          BAL    $RDVY,R6                       SEE IF ALT ASSIGNMENT HAS BEEN MADE
002DF4  2996                 2209          DC     A($ERR$)                       * READ VERIFY
002DF6  4020 269C 0011       2210          MVWI   X'0011',VRDCB                  TURN OFF SE BIT FOR RD VRY
002DFC  4CA1                 2211          TBTR   (R4,ER)                        ANY ERROR?
002DFE  6800 351A            2212          BOFF   ASMM3                          NO-ASSIGNMENT ALREADY MADE-DATA OK
002E02  6802 3514            2213          B      ASMM1                          ASSIGNMENT ALREADY MADE-DATA ERROR
002E06  4020 26F6 0000       2214 ASM03    MVWI   0,LGSEC                        INT LOGICAL SECTOR NUM
002E0C  4020 3468 0000       2215          MVWI   0,FGSEC                        SET SECT. ZERO
002E12  4020 26DE 0000       2216          MVWI   0,RMDCB+2                      SET SECTOR ZERO
002E18  4020 26E8 0084       2217          MVWI   X'0084',RMDCB+12               BYTE COUNT
002E1E  4020 26EA 3F14       2218          MVA    ID00,RMDCB+14                  DATA ADDRESS
002E24  8828 3466 26E0       2219          MVW    HDCYL,RMDCB+4                  INSERT THE HEAD/CYLINDER FROM USER
002E2A  6E03 27DC            2220          BAL    $RDIM,R6                       READ SECTOR IDS
002E2E  2996                 2221          DC     A($ERR$)                       *
002E30  4CA1                 2222          TBTR   (R4,ER)                        INTERRUPT ERROR?
002E32  1005                 2223          JOFF   ASM04                          NO
002E34  6E03 2FF2            2224          BAL    ASMD1,R6                       CK IF SKEWED SECTOR READ
002E38  4C94                 2225          TBTR   (R4,B52)                       ID UNREADABLE?
002E3A  6A00 3526            2226          BON    ASMM5                          YES
002E3E  402B 3F94 2F80       2227 ASM04    TWI    X'2F80',ID20                   32 DISP, DEFECT,AN ALT OR SKEWED?
002E44  6800 3066            2228          BOFF   ASM5                           NO-ASSIGN ALT ON THIS TRACK
002E48  882B 3466 3F96       2229          CW     HDCYL,ID20+2                   DOES PRI ALT BELONG ON THIS TRACK?
002E4E  6800 310C            2230          BE     T701                           YES
002E52  402B 3F94 2200       2231          TWI    X'2200',ID20                   DEF FLAG OFF
002E58  1002                 2232          JOFF   ASM05                          YES
002E5A  6802 310C            2233          B      T701
002E5E  9028 3F94 390C       2234 ASM05    MVD    ID20,SAVID                     SAVE ID OF ALT SECTOR TO BE MOVED
002E64  402B 3F96 4000       2235          TWI    X'4000',ID20+2                 FIXED HEAD TO BE MOVED?
002E6A  1001                 2236          JOFF   ASM06                          NO
002E6C  4C51                 2237          TBTS   (R4,FD)                        TURN ON FIXED HEAD SPECIFIED IND
002E6E  4020 26F6 0040       2238 ASM06    MVWI   X'0040',LGSEC                  SET UP LOG SECT 40 FOR CONVERT
002E74  9028 194C 2630       2239          MVD    TUINPT+4,DGDCB+4               SET HD/CYL
002E7A  6E03 2EDC            2240          BAL    ASRD1,R6                       SAVE DATA
002E7E  4C5E                 2241          TBTS   (R4,RASN)                      TURN ON REASSIGN MARK
002E80  4020 3F94 0040       2242          MVWI   X'0040',ID20                   FORCE SECTOR 32 TO LOOK NORMAL
002E86  8828 3466 3F96       2243          MVW    HDCYL,ID20+2                   *
002E8C  6802 3066            2244          B      ASM5                           ASSIGN ALT ON SAME TRACK
                             2245 *
                             2246 *
                             2247 *
                             2248 *               RECOVER DATA IF POSSIBLE
                             2249 *
002E90  6E0D 2EDA            2250 ASMRD    MVW    R6,ASMRX+2                     SET UP RETURN
002E94  6F03 270A            2251          BAL    CONVT,R7                       CONVERT LOG TO PHYSICAL
002E98  8028 26F9 262F       2252          MVB    PHYSC+1,DGDCB+3                LOAD DCB TO RECOVER DATA
002E9E  4C1A                 2253          TBT    (R4,B58)                       FLAG DISPLACED?
002EA0  1003                 2254          JOFF   ASMR2                          NO
002EA2  4029 262E 0001       2255          AWI    1,DGDCB+2                      ADJ SECTOR #
002EA8  4020 263A 3B14       2256 ASMR2    MVA    RDBUF,DGDCB+14                 *
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002EAE  4020 262C 2016   2257        MVWI  X'2016',DGDCB        SET CNTL TO READ 1ST RECORD-AUTO SK
002EB4  6E03 282C        2258        BAL   $DIAG,R6             READ DATA DIAGNOSTIC 1
002EB8  2996             2259        DC    A($ERR$)            *
002EBA  4CA1             2260        TBTR  (R4,ER)             ANY ERROR
002EBC  1001             2261        JOFF  ASMR1
002EBE  4C5D             2262        TBTS  (R4,B61)            SET DATA 1 UNRECOVERABLE
002EC0  4020 262C 2017   2263 ASMR1  MVWI  X'2017',DGDCB        SET CNTL TO READ 2ND RECORD
002EC6  4020 263A 3C14   2264        MVA   RDBUF1,DGDCB+14     SET SECOND DATA ADDR.
002ECC  6E03 282C        2265        BAL   $DIAG,R6            READ DATA DIAGNOSTIC 2
002ED0  2996             2266        DC    A($ERR$)            *
002ED2  4CA1             2267        TBTR  (R4,ER)             ANY ERROR
002ED4  1001             2268        JOFF  ASMRX               NO-DATA RECOVERED
002ED6  4C5E             2269        TBTS  (R4,B62)            SET DATA 2 UNRECOVERABLE
002ED8  6802 0000        2270 ASMRX  B     *-*                 RETURN
                         2271 *
002EDC  6E0D 2F26        2272 ASRD1  MVW   R6,ASRRX+2          SET UP RETURN
002EE0  6F03 270A        2273        BAL   CONVT,R7            CONVERT LOG TO PHYSICAL
002EE4  8028 26F9 262F   2274        MVB   PHYSC+1,DGDCB+3     LOAD DCB TO RECOVER DATA
002EEA  4C1A             2275        TBT   (R4,B58)            FLAG DISPLACED?
002EEC  1003             2276        JOFF  ASRR2               NO
002EEE  4029 262E 0001   2277        AWI   1,DGDCB+2           ADJ SECTOR #
002EF4  4020 263A 3D14   2278 ASRR2  MVA   RDBUF2,DGDCB+14     *
002EFA  4020 262C 2016   2279        MVWI  X'2016',DGDCB       SET CNTL TO READ 1ST RECORD-AUTO SK
002F00  6E03 282C        2280        BAL   $DIAG,R6            READ DATA DIAGNOSTIC 1
002F04  2996             2281        DC    A($ERR$)            *
002F06  4CA1             2282        TBTR  (R4,ER)             ANY ERROR
002F08  1001             2283        JOFF  ASRR1
002F0A  4C5D             2284        TBTS  (R4,B61)            SET DATA 1 UNRECOVERABLE
002F0C  4020 262C 2017   2285 ASRR1  MVWI  X'2017',DGDCB       SET CNTL TO READ 2ND RECORD
002F12  4020 263A 3E14   2286        MVA   RDBUF3,DGDCB+14     SET SECOND DATA ADDR.
002F18  6E03 282C        2287        BAL   $DIAG,R6            READ DATA DIAGNOSTIC 2
002F1C  2996             2288        DC    A($ERR$)            *
002F1E  4CA1             2289        TBTR  (R4,ER)             ANY ERROR
002F20  1001             2290        JOFF  ASRRX               NO-DATA RECOVERED
002F22  4C5E             2291        TBTS  (R4,B62)            SET DATA 2 UNRECOVERABLE
002F24  6802 0000        2292 ASRRX  B     *-*                 RETURN
                         2293 *
                         2294 *  WRITE THE DATA RECORDS       - AUTO SEEK
                         2295 *
002F28  6E0D 2F5E        2296 ASMWR  MVW   R6,ASMWX+2          SAVE RETURN ADDRESS
002F2C  4020 269A 3B14   2297        MVA   RDBUF,WRDCB+14      SET DATA ADDR.
002F32  4020 2698 0100   2298        MVWI  X'0100',WRDCB+12    BYTE COUNT FOR ONE SECTOR
002F38  6E03 280C        2299        BAL   $WRT,R6             WRITE RECOVERED DATA IN ALT SECT
002F3C  2996             2300        DC    A($ERR$)            *
002F3E  4CA1             2301        TBTR  (R4,ER)             INTERRUPT ERROR?
002F40  6A00 2996        2302        BON   $ERR$               YES-LOGOUT ERROR
002F44  4029 268E 0020   2303        AWI   32,WRDCB+2          WRITE THE SECOND PECORD
002F4A  4020 269A 3C14   2304        MVA   RDBUF1,WRDCB+14     SET DATA ADDR.
002F50  6E03 280C        2305        BAL   $WRT,R6             WRITE RECOVERED DATA IN ALT SECT
002F54  2996             2306        DC    A($ERR$)            *
002F56  4CA1             2307        TBTR  (R4,ER)             INTERRUPT ERROR?
002F58  6A00 2996        2308        BON   $ERR$               YES-LOGOUT ERROR
002F5C  6802 0000        2309 ASMWX  B     *-*                 RETURN
                         2310 *
002F60  6E0D 2F90        2311 RDDTA  MVW   R6,RDDTX+2          SET UP RETURN
002F64  4020 26BA 3914   2312        MVA   WRBUF,RDDCB+14      *
002F6A  6E03 27F0        2313        BAL   $RD,R6              READ DATA 1 -AUTO SEEK
002F6E  2996             2314        DC    A($ERR$)            *
002F70  4CA1             2315        TBTR  (R4,ER)             ANY ERROR
002F72  1001             2316        JOFF  RDDTB
002F74  4C5D             2317        TBTS  (R4,B61)            SET DATA 1 UNRECOVERABLE
002F76  4020 26BA 3A14   2318 RDDTB  MVA   WRBUF1,RDDCB+14     SET SECOND DATA ADDR.
002F7C  4029 26AE 0020   2319        AWI   32,RDDCB+2          SET DATA RECORD 2
002F82  6E03 27F0        2320        BAL   $RD,R6              READ DATA 2  - AUTO SEEK
002F86  2996             2321        DC    A($ERR$)            *
002F88  4CA1             2322        TBTR  (R4,ER)             ANY ERROR
002F8A  1001             2323        JOFF  RDDTX               NO-DATA RECOVERED
002F8C  4C5E             2324        TBTS  (R4,B62)            SET DATA 2 UNRECOVERABLE
002F8E  6802 0000        2325 RDDTX  B     *-*                 RETURN
                         2326 *
002F92  6E0D 2FBC        2327 RDDT1  MVW   R6,RDDAX+2          SET UP RETURN
002F96  4020 26BA 3B14   2328        MVA   RDBUF,RDDCB+14      *
002F9C  6E03 27F0        2329        BAL   $RD,R6              READ DATA 1
002FA0  2996             2330        DC    A($ERR$)            *
002FA2  4CA1             2331        TBTR  (R4,ER)             ANY ERROR
002FA4  1001             2332        JOFF  RDDT2
002FA6  4C5D             2333        TBTS  (R4,B61)            SET DATA 1 UNRECOVERABLE
002FA8  4020 26BA 3C14   2334 RDDT2  MVA   RDBUF1,RDDCB+14     SET SECOND DATA ADDR.
002FAE  6E03 27F0        2335        BAL   $RD,R6              READ DATA 2
002FB2  2996             2336        DC    A($ERR$)            *
002FB4  4CA1             2337        TBTR  (R4,ER)             ANY ERROR
002FB6  1001             2338        JOFF  RDDAX               NO-DATA RECOVERED
002FB8  4C5E             2339        TBTS  (R4,B62)            SET DATA 2 UNRECOVERABLE
002FBA  6802 0000        2340 RDDAX  B     *-*                 RETURN
                         2341 *  WRITE THE DATA RECORDS
                         2342 *
002FBE  6E0D 2FF0        2343 WRTW2  MVW   R6,WRTWX+2          SAVE RETURN ADDRESS
002FC2  4020 269A 3914   2344        MVA   WRBUF,WRDCB+14      SET DATA ADDR.
002FC8  4020 2698 0100   2345        MVWI  X'0100',WRDCB+12    BYTE COUNT FOR ONE SECTOR
002FCE  6E03 280C        2346        BAL   $WRT,R6             WRITE RECOVERED DATA IN ALT SECT
002FD2  2996             2347        DC    A($ERR$)            *
002FD4  4CA1             2348        TBTR  (R4,ER)             INTERRUPT ERROR?
002FD6  1245             2349        JON   ER22                YES-LOGOUT ERROR
002FD8  4029 268E 0020   2350        AWI   32,WRDCB+2          WRITE THE SECOND RECORD
002FDE  4020 269A 3A14   2351        MVA   WRBUF1,WRDCB+14     SET DATA ADDR.
002FE4  6E03 280C        2352        BAL   $WRT,R6             WRITE RECOVERED DATA IN ALT SECT
002FE8  2996             2353        DC    A($ERR$)            *
002FEA  4CA1             2354        TBTR  (R4,ER)             INTERRUPT ERROR?
002FEC  123A             2355        JON   ER22                YES-LOGOUT ERROR
002FEE  6802 0000        2356 WRTWX  B     *-*                 RETURN
                         2357 *
                         2358 *      DETERMINE HOW SPECIFIED SECTOR ID IS WRITTEN (NORMAL OR SKEWED)
                         2359 *      THEN WRITE ID WITH ALTERNATE SECTOR ID.
                         2360 *
002FF2  6E0D 3060        2361 ASMD1  MVW   R6,ASMDD+2          SAVE THE RETURN
002FF6  6E03 2852        2362        BAL   XIOCS,R6            GET CYCLE STEAL STATUS
002FFA  2996             2363        DC    A($ERR$)            *
002FFC  402B 2604 8000   2364        TWI   X'8000',CSTL6       CK CRC ERROR
003002  102F             2365        JOFF  ER22                NO-ID UNREADABLE
003004  4224 0022        2366        MVWI  X'0022',R2          INIT COUNT
003008  4020 26F0 3F14   2367        MVA   ID00,RAY            SET ADDR. OF SECTOR IDS
00300E  4524 0021        2368 ASMD2  MVWI  X'0021',R5          INIT COUNT
003012  7A42 0001        2369        SWI   1,R2                TEST MAX OF 33 SECTORS
003016  1020             2370        JZ    ASMD9               YES  RETURN
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
003018  403F 26F0 FFFF   2371        CWI   X'FFFF',RAY*        CHECK FLAG OF 'FFFF'
00301E  1004             2372        JE    ASMD3               YES
003020  4029 26F0 0004   2373 ASMD4  AWI   4,RAY               INCREMENT LOGICAL SECTOR LOC.
003026  50F3             2374        J     ASMD2               GO TEST NEXT SECTOR
003028  72AA             2375 ASMD3  SW    R2,R5               FIND THE FAILING PHYSICAL SECTOR#
00302A  C528 26CF        2376        MVB   R5,RKDCB+3          PLACE PHYSICAL IN DCB
00302E  C528 26BF        2377        MVB   R5,WKDCB+3          *
003032  8828 26F0 26DA   2378        MVW   RAY,RKDCB+14        FAILING DATA ADDP
003038  4020 2952 26CC   2379        MVA   RKDCB,IODCB         ADDR OF DCB
00303E  8828 26E0 26D0   2380        MVW   RMDCB+4,RKDCB+4     HEAD AND CYL
003044  6E03 2814        2381        BAL   $RKEW,R6            READ ID SKEWED
003048  2996             2382        DC    A($ERR$)            *
00304A  4CA1             2383        TBTR  (R4,ER)             ANY ERROR?
00304C  1004             2384        JOFF  ASMD5               NO
00304E  4C54             2385        TBTS  (R4,B52)            SET ID UNREADABLE IND
003050  403C 26F0 0080   2386 ASMD5  OWI   X'0080',RAY*        SET SKEWED BIT INDICA (BIT8 SCT#)
003056  50E4             2387        J     ASMD4               CONTINUE CHECKING ID'S
003058  4020 26DA 25E2   2388 ASMD9  MVA   SCTID,RKDCB+14
00305E  6802 0000        2389 ASMDD  B     *-*                 RETURN
003062  6802 2996        2390 ER22   B     $ERR$
                         2391 *
                         2392 *
                         2393 *    ASSIGN ALT SAME TRACK
                         2394 *
003066                   2395 ASM5   EQU   *
003066  802B 346A 194B   2396        CB    SEC64,TUINPT+3      IS SECT 32 SPECIFIED AS THE BAD SCT?
00306C  1016             2397        JE    ASM54               YES
00306E  8028 194B 3507   2398        MVB   TUINPT+3,BADID+1    SAVE THE SPECIFIED SECT.
003074  1C1B             2399        TBT   (R4,B59)            IS ID SKEWED?
003076  1003             2400        JOFF  ASM57               NO
003078  402C 3506 0080   2401        OWI   X'0080',BADID       TURN ON SKEWED ID INDICATION
00307E  4224 0021        2402 ASM57  MVWI  X'0021',R2          INIT COUNT
003082  4124 3F14        2403        MVA   ID00,R1             SET ADDR. OF SECTOR IDS
003086  7A42 0001        2404 ASM51  SWI   1,R2                TEST MAX OF 33 SECTORS
00308A  10EB             2405        JZ    ER22                YES - UNABLE TO FIND SPEC SECT
00308C  C61B 3507 0001   2406        CB    BADID+1,(R1,1)      CHECK FOR SUPPLIED ID
003092  1005             2407        JE    ASM52               YES
003094  7921 0004        2408        AWI   4,R1                INCREMENT LOGICAL SECTOR LOC.
003098  50F6             2409        J     ASM51               GO TEST NEXT SECTOR
00309A  4020 3F94 2040   2410 ASM54  MVWI  X'2040',ID20        SET USER DEF FLAG IN SECT# 32
0030A0  4C92             2411        TBTR  (R4,B50)            IS FACTORY DEF FLAG TO BE USED?
0030A2  1003             2412        JOFF  ASM58               NO
0030A4  4020 3F94 0240   2413        MVWI  X'0240',ID20        SET FACTORY DEFECT FLAG
0030AA  6E03 3472        2414 ASM58  BAL   ASM68,R6           WRITE ID'S
0030AE  6802 29F8        2415        B     $CONX               EXIT
0030B2  690D 350C        2416 ASM52  MVW   R1,SADDR           SAVE ADDR OF FAILING SECTOR
0030B6  8128 0001 26F7   2417        MVB   (R1,1),LGSEC+1      SAVE THE ID
0030BC  9028 194C 2630   2418        MVD   TUINPT+4,DGDCB+4    GET HD AND CYL
0030C2  6E03 2B90        2419        BAL   ASMRD,R6            READ DIAGNOSTIC DATA  (B)
0030C6  4040 2840        2420        MVWI  X'2840',(R1)        SET DISPLACED AND SECT. 32
0030CA  4C92             2421        TBTR  (R4,B50)            FACTORY DEFECT BIT TO BE USED?
0030CC  1002             2422        JOFF  ASM56               NO
0030CE  4040 0A40        2423        MVWI  X'0A40',(R1)        SET FACTORY DEF,DISP,SECT (32) BITS
0030D2  6E03 33CA        2424 ASM56  BAL   ASM53,R6            UPDATE DCBS
0030D6  6E03 2F60        2425        BAL   RDDTA,R6            READ DATA (NEXT)       (A)
0030DA  4C17             2426        TBT   (R4,B55)            TEST LAST
0030DC  1002             2427        JOFF  ASM61               BYPASSS WRITE IDS
0030DE  6E03 3472        2428 ASM60  BAL   ASM68,R6            WRITE THE IDS
0030E2  6E03 2F28        2429 ASM61  BAL   ASMWR,R6            WRITE DATA (PREVIOUS)  (B)
0030E6  4C17             2430        TBT   (R4,B55)            TEST LAST
0030E8  120D             2431        JON   ASM67               EXIT ALL DONE
0030EA  6E03 33CA        2432        BAL   ASM53,R6            UPDATE DCBS
0030EE  6E03 2F92        2433        BAL   RDDT1,R6            READ DATA              (B)
0030F2  4C17             2434        TBT   (R4,B55)            TEST LAST
0030F4  1002             2435        JOFF  ASM65               BYPASSS WRITE IDS
0030F6  6E03 3472        2436 ASM64  BAL   ASM68,R6            WRITE THE IDS
0030FA  6E03 2FBE        2437 ASM65  BAL   WRTW2,R6            WRITE DATA             (A)
0030FE  4C17             2438        TBT   (R4,B55)            TEST LAST
003100  120D             2439        JON   ASM67               EXIT ALL DONE
003102  50E7             2440        J     ASM56               GET NEXT DATA
003104  4C9E             2441 ASM67  TBTR  (R4,RASN)           REASSIGN FLAG ON?
003106  120D             2442        JON   T702                YES - GO FIND A AVAIL ALT AND ASSIG
003108  6802 29F8        2443        B     $CONX               EXIT
00310C  9028 194C 2630   2444 T701   MVD   TUINPT+4,DGDCB+4    SET HD/CYL
003112  8028 194B 26F7   2445        MVB   TUINPT+3,LGSEC+1    GET USER SPECIFIED SECT
003118  9028 194A 390C   2446        MVD   TUINPT+2,SAVID      SAVE SECTOR ID FROM USER
00311E  6E03 2EDC        2447        BAL   ASRD1,R6            RECOVER DATA FROM ORIGINAL SECTOR
003122  6B08 390E        2448 T702   MVW   SAVID+2,R3          GET CYL NUMBER (OPG OR ALT TO BE
003126  3331             2449        SLL   6,R3                * TO ASSIGNED NEW ALT.
003128  3332             2450        SRL   6,R3                *
00312A  6B0D 3462        2451        MVW   R3,NCYLN            CYL TO NEW CYL# (NEG)
00312E  6B0D 3460        2452        MVW   R3,NCYLP            CYL TO NEW CYL# (PLUS)
003132  402F 3462 01FF   2453        CWI   X'01FF',NCYLN       FIXED HEAD CYL?
003138  1006             2454        JNE   T023                NO
00313A  4020 3462 01FF   2455        MVWI  X'01FF',NCYLN       FXD HD CYL TO NEW CYL# (NEG)
003140  4020 3460 FFFF   2456        MVWI  X'FFFF',NCYLP       FXD HD CYL TO NEW CYL# (PLUS)
003146  8828 390E 2660   2457 T023   MVW   SAVID+2,RSDCB+4     LOAD HD/CYL IN DCB
00314C  402D 2660 FE00   2458        RBTWI X'FE00',RSDCB+4     SET HEAD ZERO
003152  4020 26F6 0040   2459        MVWI  X'0040',LGSEC       SET LOG SECT 40
003158  6F03 270A        2460        BAL   CONVT,R7            CONVERT LOG TO PHY
00315C  8028 26F9 265F   2461        MVB   PHYSC+1,RSDCB+3     *
003162  4C18             2462 T703   TBT   (R4,FXD)            FIXED HEAD INSTALLED?
003164  100E             2463        JOFF  T704                NO
003166  6B08 2660        2464        MVW   RSDCB+4,R3          GET CYL NUMBER (ORG OR ALT TO BE
00316A  3331             2465        SLL   6,R3                * TO ASSIGNED NEW ALT.
00316C  3332             2466        SRL   6,R3                *
00316E  7B06 01FF        2467        CWI   X'01FF',R3          FXD HD CYL NUM?
003172  1004             2468        JE    T7033               YES
003174  402C 2660 0400   2469        OWI   X'0400',RSDCB+4     SET HEAD ONE
00317A  5003             2470        J     T704
00317C  402C 2660 4000   2471 T7033  OWI   X'4000',RSDCB+4     TURN ON FXD HEAD BIT
003182  6E03 27C8        2472 T704   BAL   $RDID,R6            READ SECTOR ID
003186  2996             2473        DC    A($ERR$)
003188  4CA1             2474        TBTR  (R4,ER)             ANY ERR?
00318A  1013             2475        JOFF  T7066               NO
00318C  6E08 2660        2476 T706   MVW   RSDCB+4,R6         GET HEAD
003190  3652             2477        SRL   10,R6               SHIFT OUT THE CYL
003192  4C11             2478        TBT   (R4,FD)             FIXED HEAD SPECIFIED OR TO BE MOVED?
003194  1005             2479        JOFF  T7044               NO
003196  4C5C             2480        TBTS  (R4,PINC)           TURN ON PLUS INDICATOR
003198  7E06 0017        2481        CWI   X'0017',R6          LAST FIXED HEAD SELECTED?
00319C  6800 3358        2482        BE    T709                YES
0031A0  CE24 3464        2483 T7044  CW    HEADS,R6            LAST HEAD SELECTED?
0031A4  6800 3358        2484        BE    T709                YES
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 LOCTR  OBJECT TEXT       STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

0031A8  4029 2660 0400    2485         AWI   X'0400',RSDCB+4      INC HEAD +1
0031AE  6802 3182         2486         B     T704                 READ NEXT SECTOR ID
                          2487 *
                          2488 *
                          2489 *
0031B2  802B 26EC 25E2    2490 T7066   CB    ZER00,SCTID          FLAG ZERO?
0031B8  18E9              2491         JNE   T706                 NO
0031BA  9028 25E2 3910    2492         MVD   SCTID,AVLID          SAVE AVAILABLE SCT ID
0031C0  9028 390C 26FA    2493         MVD   SAVID,WRSID          GET ID TO BE WRITTEN AS ALT
0031C6  9028 265E 26EE    2494         MVD   RSDCB+2,WSDCB+2      LOAD WRITE SECTOR ID DCB
0031CC  4020 2658 0004    2495         MVWI  0,WSDCB+12           SET BYTE COUNT TO ONE SECTOR
0031D2  4020 265A 26FA    2496         MVA   WRSID,WSDCB+14       DATA ADDRESS
0031D8  402D 26FA EF00    2497         RBTWI X'EF00',WRSID        RESET FLAG BITS EXCEPT WRT PROT
0031DE  402C 26FA 0500    2498         OWI   X'0500',WRSID        TURN ON ASSIGNED AND ALT FLAG BITS
0031E4  9028 264E 266E    2499         MVD   WSDCB+2,SKDCB+2      LOAD SEEK ADDR. IN THE DCB
0031EA  6E03 27B8         2500         BAL   $SEEK,R6             *
0031EE  2996              2501         DC    A($ERR$)
0031F0  4CA1              2502         TBTR  (R4,ER)              INTERRUPT ERROR?
0031F2  6A00 2996         2503         BON   $ERR$                YES-LOGOUT ERROR
0031F6  6E03 2824         2504         BAL   $WSEC,R6             WRITE ALT ASSIGNED SECTOR ID
0031FA  2996              2505         DC    A($ERR$)             *
0031FC  4CA1              2506         TBTR  (R4,ER)              ANY ERROR
0031FE  6A00 2996         2507         BON   $ERR$                YES
003202  9028 3910 26FA    2508         MVD   AVLID,WRSID          AVAIL SECTOR ID TOBE CROSS WRITTEN
003208  402C 26FA 2400    2509         OWI   X'2400',WRSID        TURN ON USER DEF FLAG BITS
00320E  4C92              2510         TBTR  (R4,B50)             FACTORY ASSIGNED BIT TO BE USED?
003210  1006              2511         JOFF  ASM11                NO
003212  402D 26FA 2000    2512         RBTWI X'2000',WRSID        RESET USER DEFECT BIT
003218  402C 26FA 0200    2513         OWI   X'0200',WRSID        SET FACTORY DEFECT BIT
00321E  4C9A              2514 ASM11   TBTR  (R4,B58)             RESET DISP BIT INDICATION
003220  8828 390E 2660    2515         MVW   SAVID+2,RSDCB+4      SET HD/CYL IN DCB
003226  8828 390E 3466    2516         MVW   SAVID+2,HDCYL        SET HD/CYL
00322C  4020 2668 0004    2517         MVWI  X'00004',RSDCB+12    BYTE COUNT FOR ONE ID FIELD
003232  4020 2608 0004    2518         MVWI  X'00004',EKDCB+12    BYTE COUNT FOR ONE ID FIELD
003238  8028 390D 26F7    2519         MVB   SAVID+1,LGSEC+1      SECTOR NUMBER
00323E  6F03 270A         2520         BAL   CONVT,R7             CONVERT TO PHYSICAL
003242  8028 26F9 265F    2521         MVB   PHYSC+1,RSDCB+3      PUT THE SECTOR IN THE DCB
003248  9028 265E 26CE    2522         MVD   RSDCB+2,RKDCB+2      SET READ SKEWED DCB
00324E  6E03 27C8         2523         BAL   $RDID,R6             READ THE ID FIELD
003252  2996              2524         DC    A($ERR$)             *
003254  4CA1              2525         TBTR  (R4,ER)              ANY ERROR?
003256  1015              2526         JOFF  ASMX2                NO GO CHECK FLAG
003258  402B 2604 8000    2527         TWI   X'8000',CSTL6        CHECK CRC ERROR
00325E  6800 2996         2528         BOFF  $ERR$                NO ERROR
003262  6E03 2814         2529         BAL   $RKEW,R6             READ ID SKEWED
003266  2996              2530         DC    A($ERR$)             *
003268  4CA1              2531         TBTR  (R4,ER)              ANY ERROR?
00326A  6A00 3526         2532         BON   ASMM5                YES TELL USER
00326E  402B 25E2 0800    2533         TWI   X'0800',SCTID       CHECKIF ID IS DISP
003274  1001              2534         JOFF  ASMX4                NO
003276  4C5A              2535         TBTS  (R4,B58)             SET ID DISPLACED IND
003278  4C5B              2536 ASMX4   TBTS  (R4,B59)             SET SKEWED INDICATION
00327A  8828 265E 350A    2537         MVW   RSDCB+2,SKEW         SAVE PHY SCT # OF SKEWED ID
003280  501D              2538         J     ASXX2
003282  402B 25E2 0800    2539 ASMX2   TWI   X'0800',SCTID       CHECKIF ID IS DISP
003288  1019              2540         JOFF  ASXX2                NO
00328A  4C5A              2541         TBTS  (R4,B58)             SET ID DISPLACED IND
00328C  4029 265E 0001    2542         AWI   1,RSDCB+2            INC PHY SECT NUM
003292  6E03 27C8         2543         BAL   $RDID,R6             READ THE ID FIELD
003296  2996              2544         DC    A($ERR$)             *
003298  4CA1              2545         TBTR  (R4,ER)              ANY ERROR?
00329A  1010              2546         JOFF  ASXX2                NO
00329C  402B 2604 8000    2547         TWI   X'8000',CSTL6        CRC CHECK?
0032A2  6800 2996         2548         BOFF  $ERR$                NO
0032A6  4C5B              2549         TBTS  (R4,B59)             SET SKEWED IND
0032A8  4029 26CE 0001    2550         AWI   1,RKDCB+2            INC PHY SECT NUM
0032AE  6E03 2814         2551         BAL   $RKEW,R6             READ THE ID FIELD
0032B2  2996              2552         DC    A($ERR$)             *
0032B4  4CA1              2553         TBTR  (R4,ER)              ANY ERROR?
0032B6  6A00 2996         2554         BON   $ERR$
0032BA  50DE              2555         J     ASMX4
0032BC  9028 265E 264E    2556 ASXX2   MVD   RSDCB+2,WSDCB+2      *
0032C2  4C9A              2557         TBTR  (R4,B58)             DISP BIT ON?
0032C4  1003              2558         JOFF  ASM12                NO
0032C6  402C 26FA 0800    2559         OWI   X'0800',WRSID        TURN ON DISP BIT
0032CC  4020 2658 0004    2560 ASM12   MVWI  4,WSDCB+12           SET BYTE COUNT TO ONE SECTOR
0032D2  4020 265A 26FA    2561         MVA   WRSID,WSDCB+14       DATA ADDR
0032D8  4C9B              2562         TBTR  (R4,B59)             SECTOR TO BE WPITTEN SKEWED?
0032DA  1011              2563         JOFF  ASME3                NO
0032DC  9028 264E 26BE    2564 TT708   MVD   WSDCB+2,WKDCB+2      WRITE SECTOR ID SKEWED
0032E2  4020 26CA 26FA    2565         MVA   WRSID,WKDCB+14       DATA ADDR IN DCB
0032E8  4020 26C8 0004    2566         MVWI  4,WKDCB+12           SET BYTE COUNT TO ONE SECTOR
0032EE  6E03 281C         2567         BAL   $WKEW,R6             WRITE ID SKEWED
0032F2  2996              2568         DC    A($ERR$)             *
0032F4  4CA1              2569         TBTR  (R4,ER)              INTEPRUPT ERROR?
0032F6  6A00 2996         2570         BON   $ERR$                YES-LOGOUT ERROR
0032FA  6802 29F8         2571         B     $CONX
0032FE  6E03 2824         2572 ASME3   BAL   $WSEC,R6             WRITE DEFECTIVE SECTOR ID
003302  2996              2573         DC    A($ERR$)             *
003304  4CA1              2574         TBTR  (R4,ER)              INTERRUPT ERROR?
003306  12EA              2575         JON   TT708                YES-GO WRITE SKEWED
003308  9028 390C 268E    2576 T708    MVD   SAVID,WRDCB+2        LOAD ORG SEARCH ARGUMENT
00330E  402D 268E FF00    2577         RBTWI X'FF00',WRDCB+2      SET FLAG TO ZERO
003314  402C 268C 0800    2578         OWI   X'0800',WRDCB        TURN ON SE BIT
00331A  C625 268F         2579         MVBZ  WRDCB+3,R6           ALIGN THE SECTOR
00331E  360A              2580         SRL   1,R6                 *
003320  C628 268F         2581         MVB   R6,WRDCB+3           *
003324  4020 269A 3D14    2582         MVA   RDBUF2,WRDCB+14      DATA ADDRESS
00332A  6E03 280C         2583         BAL   $WRT,R6              WRITE DATA RECORD ONE
00332E  2996              2584         DC    A($ERR$)             *
003330  4CA1              2585         TBTR  (R4,ER)              ANY ERROR?
003332  6A00 2996         2586         BON   $ERR$                YES
003336  4029 268E 0020    2587         AWI   32,WRDCB+2           SET DATA RECORD TWO
00333C  4020 269A 3E14    2588         MVA   RDBUF3,WRDCB+14      DATA ADDRESS FOR DATA RECORD 2
003342  6E03 280C         2589         BAL   $WRT,R6              WRITE DATA RECORD ONE
003346  2996              2590         DC    A($ERR$)             *
003348  4020 268C 0021    2591         MVWI  X'0021',WRDCB        RESET SE BIT
00334E  4CA1              2592         TBTR  (R4,ER)              ANY ERROR?
003350  6A00 2996         2593         BON   $ERR$                YES
003354  6802 29F8         2594         B     $CONX                EXIT
                          2595 *
                          2596 *
                          2597 *
003358  402F 3462 0000    2598 T709    CWI   0,NCYLN              NEW CYL NEG EQUAL ZERO?
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00335E  101B              2599         JE    T710                 YES
003360  402F 3460 0166    2600         CWI   358,NCYLP             NEW CYL PLUS EQUAL 358
003366  1019              2601         JE    T711                 YES
003368  402F 3460 0167    2602         CWI   359,NCYLP             NEW CYL PLUS EQUAL 359
00336E  1015              2603         JE    T711                 YES
003370  4C1C              2604 T712    TBT   (R4,PINC)            PLUS FLAG ON?
003372  1015              2605         JOFF  T713                 NO
003374  4029 3460 0001    2606 T714    AWI   1,NCYLP              INC NEW CYL PLUS +1
003378  4C1C              2607 T720    TBT   (R4,PINC)            PLUS FLAG ON?
00337C  1219              2608         JON   T715
00337E  4C19              2609         TBT   (R4,MINC)            MINUS FLAG ON
003380  1021              2610         JOFF  T716                 NO
003382  402F 3462 0000    2611         CWI   0,NCYLN              NEW CYL NEQ EQUAL ZERO
003388  6800 2996         2612         BE    $ERR$                YES-NO ALT SECTORS AVAIL
00338C  8828 3462 2660    2613 T717    MVW   NCYLN,RSDCB+4        UPDATED CYL NUM IN DCB
003392  6802 3162         2614         B     T703                 GO READ SECTOR ID
003396  4C5C              2615 T710    TBTS  (R4,PINC)            TURN ON PLUS FLAG
003398  50EB              2616         J     T712
00339A  4C59              2617 T711    TBTS  (R4,MINC)            TURN ON MINUS FLAG
00339C  50E9              2618         J     T712
00339E  4C19              2619 T713    TBT   (R4,MINC)            MINUS FLAG ON?
0033A0  1203              2620         JON   T718                 YES
0033A2  4C16              2621         TBT   (R4,INC)             INC FLAG ON?
0033A4  1201              2622         JON   T718                 YES
0033A6  50B6              2623         J     T714                 NO
0033A8  402E 3462 0001    2624 T718    SWI   1,NCYLN              DECREMENT CYL NUM
0033AE  50B5              2625         J     T720
0033B0  402F 3460 0166    2626 T715    CWI   358,NCYLP             NEW CYL PLUS EQUAL 357?
0033B6  6800 2996         2627         BE    $ERR$                YES-NO ALT SECTORS AVAILABLE
0033BA  8828 3460 2660    2628 T719    MVW   NCYLP,RSDCB+4        UPDATED CYL NUM IN DCB
0033C0  6802 3162         2629         B     T703                 GO READ NEXT SECTOR ID
0033C4  4C16              2630 T716    TBTV  (R4,INC)             TEST AND INVERT INC FLAG
0033C6  10F9              2631         JOFF  T715                 OFF
0033C8  50E1              2632         J     T717                 ON
                          2633 *
                          2634 *   SET DCB IDS SUBROUTINE
                          2635 *
0033CA  6E0D 345E         2636 ASM53   MVW   R6,ASM62             SAVE REGISTER 6
0033CE  4921 0004         2637         AWI   4,R1                 UPDATE TO NEXT ID
0033D2  9108 26AE         2638         MVD   (R1),RDDCB+2         SET ID IN READ DCB
0033D6  9108 268E         2639         MVD   (R1),WRDCB+2         SET WRITE ID
0033DA  C660 0001         2640         MVB   (R1,1),R6            ALIGN THE SECT.
0033DE  360A              2641         SRL   1,R6                 *
0033E0  C628 26AF         2642         MVB   R6,RDDCB+3           SAVE IN DCB
0033E4  C628 268F         2643         MVB   R6,WRDCB+3           *
0033E8  4049 0800         2644         AWI   X'0800',(R1)         SET DISPLACED BIT
0033EC  806B 38D4 0001    2645         CB    SEC00,(R1,1)         CK SECTOR ZERO
0033F2  102C              2646         JE    ASM63                YES
0033F4  806B 346A 0001    2647         CB    SEC64,(R1,1)         CHECK FOR LAST ID
0033FA  1825              2648         JNE   ASM66                GET THE NEXT DATA
0033FC  4C57              2649         TBTS  (R4,B55)             SET LAST SECT.
0033FE  7144              2650         MVW   R1,R2                GET THE ID ADDR.
003400  7A41 FFFC         2651         AWI   -4,R2                GET LAST ADDR.
003404  C6A0 0001         2652         MVB   (R2,1),R6            GET OLD SECTOP #
003408  7EC1 0002         2653         AWI   2,R6                 POINT TO NEXT SECTOR
00340C  802B 2CF8 194B    2654         CB    SEC31,TUINPT+3       SECTOR 3E SPECIFIED?
003412  1825              2655         JNE   ASM71                NO
003414  0E3E              2656         MVBI  X'3E',R6             LOAD 3E IN R6
003416  5011              2657         J     ASM70
003418  802B 346C 194B    2658 ASM71   CB    SEC0E,TUINPT+3       SECTOR 0E SPECIFIED?
00341E  1802              2659         JNE   ASM72                NO
003420  0E0E              2660         MVBI  X'0E',R6             LOAD 0E IN R6
003422  500B              2661         J     ASM70
003424  802B 346E 194B    2662 ASM72   CB    SEC1E,TUINPT+3       SECTOR 1E SPECIFIED?
00342A  1802              2663         JNE   ASM73                NO
00342C  0E1E              2664         MVBI  X'1E',R6             LOAD 1E IN R6
00342E  5005              2665         J     ASM70
003430  802B 3470 194B    2666 ASM73   CB    SEC2E,TUINPT+3       SECTOR 2E SPECIFIED?
003436  1801              2667         JNE   ASM70                NO
003438  0E2E              2668         MVBI  X'2E',R6             LOAD 2E IN R6
00343A  C668 0001         2669 ASM70   MVB   R6,(R1,1)           UPDATE THE ID
003440  C628 268F         2670         SRL   1,R6                 ALIGN THE ID
003444  5005              2671         MVB   R6,WRDCB+3           SET THE DCB
003446  404E 0002         2672         J     ASM55                GO TO RETURN
00344A  5002              2673 ASM66   SWI   X'0002',(R1)         DECREMENT SECT. #
00344C  4049 003E         2674         J     ASM55
003450  6E08 345E         2675 ASM63   AWI   X'003E',(R1)         SET SECTOR 31
003454  4C17              2676 ASM55   MVW   ASM62,R6             RELOAD R6
003456  6AC0 0004         2677         TBT   (R4,B55)             CHECK LAST
00345A  68C2 0000         2678         BON   (R6,4)               RETURN
                          2679         B     (R6)                 *
                          2680 *
00345E  0000              2681 ASM62   DC    X'0000'              R6 SAVE AREA
003460  0000              2682 NCYLP   DC    X'0000'              NEW CYL#-PLUS
003462  0000              2683 NCYLN   DC    X'0000'              NEW CYL#-NEG
003464  0000              2684 HEADS   DC    X'0000'              NUMBER OF HEADS
003466  0000              2685 HDCYL   DC    X'0000'              HEAD/CYL
003468  0000              2686 FGSEC   DC    X'0000'              FLAG/SECTOR
00346A  4000              2687 SEC64   DC    X'4000'              CONSTANT FOR SECTOR 32
00346C  0E00              2688 SEC0E   DC    X'0E00'              SECT 0E
00346E  1E00              2689 SEC1E   DC    X'1E00'              SECT 1E
003470  2E00              2690 SEC2E   DC    X'2E00'              SECT 2E
                          2691 *
                          2692 *   WRITE THE IDS
                          2693 *
003472  6E0D 34A0         2694 ASM68   MVW   R6,ASM68A+2          SAVE RETURN ADDRESS
003476  4C9B              2695         TBTR  (R4,B59)             IS ID WRITTEN SKEWED?
003478  1214              2696         JON   ASMSK                YES
00347A  8828 2670 2650    2697         MVW   SKDCB+4,WSDCB+4      SET THE WRITE LOCATION
003480  4020 264E 0000    2698         MVWI  0,WSDCB+2            SET PHYSICAL SECTOR ZERO
003486  4020 265A 3F14    2699         MVA   IDOO,WSDCB+14        SET ADDR. TO WRITE IDS
00348C  4020 2658 0084    2700         MVWI  X'84',WSDCB+12       SET COUNT FOR FULL TRACK
003492  6E03 2824         2701 AS68    BAL   $WSEC,R6             WRITE IDS
003496  2996              2702         DC    A($ERR$)
003498  4CA1              2703         TBTR  (R4,ER)
00349A  6A00 2996         2704         BON   $ERR$
00349E  6802 0000         2705 ASM68A  B     *-*                  RETURN
0034A2  8828 350A 26BE    2706 ASMSK   MVW   SKEW,WKDCB+2         PHY SECT# OF SKEWED ID
0034A8  8828 2670 26C0    2707         MVW   SKDCB+4,WKDCB+4      HD/CYL# FROM USER
0034AE  4324 0020         2708         MVWI  X'0020',R3            CONSTANT
0034B2  6B0F 350A         2709         SW    SKEW,R3              DEVELOP BYTE COUNT
0034B6  101D              2710         JZ    AMSK1                JUMP IF SECT 33 SPECIFIED
0034B8  EB25 3508         2711         MW    FOUR4,R3             *
0034BC  6B0D 2658         2712         MVW   R3,WSDCB+12          BYTE COUNT FOR NORMAL SCT'S
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0034C0  8828 350C 26CA  2713         MVW   SADDR,WKDCB+14          DATA ADDR FOR SKEWED ID
0034C6  6E03 281C       2714         BAL   $WKEW,R6               WRT ID SKEWED
0034CA  2996            2715         DC    A($ERR$)
0034CC  4CA1            2716         TBTR  (R4,ER)
0034CE  6A00 2996       2717         BON   $ERR$
0034D2  4029 350C 0004  2718         AWI   4,SADDR                DEVELOP DATA ADDR FOR REST OF ID'S
0034D8  8828 350C 265A  2719         MVW   SADDR,WSDCB+14         DATA ADDR
0034DE  4029 350A 0001  2720         AWI   1,SKEW                 INCREMENT PHY# TO NEXT ID
0034E4  8828 350A 264E  2721         MVW   SKEW,WSDCB+2           LOAD PHY# IN DCB
0034EA  8828 2670 2650  2722         MVW   SKDCB+4,WSDCB+4        HD/CYL FROM USER
0034F0  50D0            2723         J     AS68                   GO WRITE REST OF ID'S
0034F2  4020 26CA 3F94  2724 AMSK1   MVA   ID20,WKDCB+14           DATA ADDR FOR SECT 33
0034F8  6E03 281C       2725         BAL   $WKEW,R6               WRT SCT 33 SKEWED
0034FC  2996            2726         DC    A($ERR$)
0034FE  4CA1            2727         TBTR  (R4,ER)
003500  6A00 2996       2728         BON   $ERR$
003504  50CC            2729         J     ASM68A                 RETURN
                        2730 *
                        2731 *
                        2732 *
003506  0000            2733 BADID   DC    X'0000'                SAVE SECTOR #
003508  0004            2734 FOUR4   DC    X'0004'                CONSTANT
00350A  0000            2735 SKEW    DC    X'0000'                PHY SCT# OF SKEWED ID
00350C  0000            2736 SADDR   DC    X'0000'                BUFFER ADDR OF FAILING SECTOR ID
                        2737 *
                        2738 *               OUTPUT MESSAGE TO USER
                        2739 *
00350E  4724 35C8       2740 T99K    MVA   MESSE,R7               ERROR IN WRITING SECTOR ID
003512  500B            2741         J     END                    *
                        2742 *
003514  4724 3532       2743 ASMM1   MVA   MESS,R7                 DATA UNRECOVERABLE
003518  5008            2744         J     END                    *
                        2745 *
00351A  4724 3556       2746 ASMM3   MVA   MESS4,R7                ALT ASSIGNMENT ALREADY MADE
00351E  5005            2747         J     END                    *
                        2748 *
003520  4724 3574       2749 ASMM4   MVA   MESS6,R7                INVALID FLAG BYTE
003524  5002            2750         J     END                    *
                        2751 *
003526  4724 35A4       2752 ASMM5   MVA   MESS8,R7                BAD SECTOR ID
00352A  6000            2753 END     SVC   OUT                    *
00352C  6802 2996       2754         B     $ERR$                  EXIT
                        2755 *
003530  0000            2756         DC    X'0000'
003532  3534            2757 MESS    DC    A(MESS1)
003534  7BF140C1E2E2C9C7D 2758 MESS1   DC    C'#1 ASSIGNED OK, DATA CRC DETECTED'
003555  00              2759         DC    X'00'
003556  3558            2760 MESS4   DC    A(MESS5)
003558  7BF240E2C5C3E3D6D 2761 MESS5   DC    C'#2 SECTOR ALREADY ASSIGNED'
003572  00              2762         DC    X'00'
003574  3576            2763 MESS6   DC    A(MESS7)
003576  7BF340C9D5E5C1D3C 2764 MESS7   DC    C'#3 INVALID FLAG BYTE SPECIFIED FOR SKEWED ID'
0035A2  00              2765         DC    X'00'
0035A4  35A6            2766 MESS8   DC    A(MESS9)
0035A6  7BF440E2C5C3E3D6D 2767 MESS9   DC    C'#4 SECTOR ID UNREADABLE, REWRITE'
0035C6  00              2768         DC    X'00'
0035C8  35CA            2769 MESSE   DC    A(MESSF)
0035CA  7BF540C5D9D9D6D94 2770 MESSF   DC    C'#5 ERROR IN WRITING SECTOR ID'
0035E7  00              2771         DC    X'00'
                        2772 *
                        2773 ********************************************************************
                        2774 *  SUBROUTINE
                        2775 *
                        2776 *    (03)     LIST TRACKS IDS
                        2777 *
                        2778 ********************************************************************
0035E8  8828 2670 26E0  2779 RDID1   MVW   SKDCB+4,RMDCB+4          SET THE ADDRESS
0035EE  4020 26DE 0000  2780         MVWI  X'0000',RMDCB+2          SET SECTOR OF ZERO
0035F4  6E03 27DC       2781         BAL   $RDIM,R6                 READ MULTIPLE IDS
0035F8  2996            2782         DC    A($ERR$)
0035FA  4CA1            2783         TBTR  (R4,ER)                  ERROR?
0035FC  1002            2784         JOFF  RDID2                    NO
0035FE  6E03 2FF2       2785         BAL   ASMD1,R6                 DETERMINE IF ID IS WRITTEN SKEWED
003602  4020 36EE 3F14  2786 RDID2   MVA   ID00,BLK+2               SET ADDRESS
003608  4324 3F14       2787         MVA   ID00,R3                  SET OP CONSOLE ADDRESS
00360C  4424 0021       2788         MVWI  33,R4                    SET OP CONSOLE ADDRESS
003610  4724 3682       2789         MVA   HDR1,R7                  SET HEADER ADDRESS
003614  6000            2790         SVC   OUT                      LIST IT
003616  4724 36C6       2791         MVA   HDR2,R7                  SET HEADER 2 ADDRESS
00361A  6000            2792         SVC   OUT                      LIST IT
00361C  4024 0010       2793         MVWI  16,R0                    SET COUNT OF IDS
003620  9028 36FE 371E  2794 TD69T   MVD   FILL+6,FILL+38           LOAD BLANKS IN 5TH FIELD
003626  4020 36F0 36FA  2795 TD69R   MVA   FILL+2,BLK+4             SET OUTPUT ADDRESS
00362C  0904            2796         MVBI  4,R1                     NUMBER OF WORDS TO CONVERT
00362E  4724 36EC       2797 TD69S   MVA   BLK,R7                   SET PARM ADDRESS
003632  601A            2798         SVC   HTOE
003634  4029 36EE 0002  2799         AWI   2,BLK+2                  INCREMENT FROM ADDRESS
00363A  4029 36F0 0009  2800         AWI   9,BLK+4                  INCREMENT TO ADDRESS
003640  B9F6            2801         JCT   TD69S,R1                 LOOP
003642  4724 36F4       2802         MVA   DATAA,R7                 PRINT IDS
003646  6000            2803         SVC   OUT
003648  B8EE            2804         JCT   TD69R,R0                 LOOP
00364A  4C95            2805         TBTR  (R4,B53)                 LISTING DATA?
00364C  1217            2806         JON   TD69Y                    YES
00364E  4524 370C       2807         MVA   FILL+20,R5               LOAD BLANKS IN 4TH FIELD
003652  0A40            2808         MVBI  X'40',R2                 *
003654  4724 000D       2809         MVWI  13,R7                    *
003658  2AAC            2810         FFN   R2,(R5)                  *
00365A  4020 36F0 36FA  2811         MVA   FILL+2,BLK+4             SET OUTPUT ADDRESS
003660  0902            2812         MVBI  2,R1                     NUMBER OF WORDS TO CONVERT
003662  4724 36EC       2813 TD69X   MVA   BLK,R7                   SET PARM ADDRESS
003666  601A            2814         SVC   HTOE
003668  4029 36EE 0002  2815         AWI   2,BLK+2                  INCREMENT FROM ADDRESS
00366E  4029 36F0 0009  2816         AWI   9,BLK+4                  INCREMENT TO ADDRESS
003674  B9F6            2817         JCT   TD69X,R1                 LOOP
003676  4724 36F4       2818         MVA   DATAA,R7                 PRINT IDS
00367A  6000            2819         SVC   OUT
00367C  6802 29F8       2820 TD69Y   B     $CONX                  EXIT
                        2821 *
003680  00C0            2822         DC    X'00C0'
003682  3684            2823 HDR1    DC    A(HDR3)
003684  4040E2C5C3E3D6D94 2824 HDR3   DC    C'   SECTOR  IDS  '
003693  00C0            2825         DC    X'00C0'
003696  3698            2826 HDR5    DC    A(HDR6)
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976

003698  4040C4C1E3C140D9C 2827 HDR6    DC    C'  DATA RECORD ONE  '
0036AB  00C0            2828         DC    X'00C0'
0036AE  36B0            2829 HDR7    DC    A(HDR8)
0036B0  4040C4C1E3C140D9C 2830 HDR8    DC    C'  DATA RECORD TWO  '
0036C3  00C0            2831         DC    X'00C0'
0036C6  36C8            2832 HDR2    DC    A(HDR4)
0036C8  4040C6C761E2C5C34 2833 HDR4    DC    C' FG/SEC HD/CYL   FG/SEC   HD/CYL '
0036EA  0000            2834         DC    X'0000'                  END CHARACTER
0036EC  0002            2835 BLK     DC    X'0002'
0036EE  0000            2836         DC    A(*-*)                   'FROM'
0036F0  0000            2837         DC    A(*-*)                   'TO'
                        2838 *
0036F2  00C0            2839         DC    X'00C0'
0036F4  36F8            2840 DATAA   DC    A(FILL)
0036F6  7A6F            2841         DC    X'7A6F'                  INDICATION FOR OP CONSOLE
0036F8  4040404040404040404 2842 FILL  DC    C'                   '
00372B  00              2843         DC    X'00'                    END OF PRINT CHARACTER
00372C  0000            2844         DC    X'0000'
                        2845 ********************************************************************
                        2846 * SUBROUTINE
                        2847 *
                        2848 *     (04)      LIST DATA RECORD ONE OR TWO
                        2849 *
                        2850 ********************************************************************
00372E  9028 194A 26AE  2851 RDDF1   MVD   TUINPT+2,RDDCB+2          SET THE FLAG, SECT,HD,CYL
003734  402B 194E 0001  2852         TWI   X'0001',TUINPT+6         TEST FOR SE BIT
00373A  1004            2853         JOFF  RDDF2                    NOT ON
00373C  4029 26AC 0800  2854         AWI   X'0800',RDDCB            TURN ON SE BIT
003742  5003            2855         J     RDD2
003744  4020 26AC 2010  2856 RDDF2   MVWI  X'2010',RDDCB            TURN OFF SE BIT
00374A  4020 26BA 3B14  2857 RDD2    MVA   RDBUF,RDDCB+14           SET THE BUFFER ADDRESS
003750  C625 26AF       2858         MVBZ  RDDCB+3,R6               ALIGN THE SECTOR
003754  360A            2859         SRL   1,R6                     *
003756  C628 26AF       2860         MVB   R6,RDDCB+3               *
00375A  402B 194E 0100  2861         TWI   X'0100',TUINPT+6         TEST FOR DATA FIELD TWO
003760  1004            2862         JOFF  RDDF3                    NOT ON - LIST DATA FIELD ONE
003762  402C 26AE 0020  2863         OWI   X'0020',RDDCB+2          SELECT DATA RECORD TWO
003768  4C73            2864         TBTS  (R4,B51)                 SET DATA RECORD TWO INDICATION
00376A  6E03 27F0       2865 RDDF3   BAL   $RD,R6                   READ 1ST RECORD ONLY
00376E  2996            2866         DC    A($ERR$)                 ABORT IF ERROR
003770  4020 26AC 2010  2867         MVWI  X'2010',RDDCB            TURN OFF SE BIT
003776  4CA1            2868         TBTR  (R4,ER)                  ERROR?
003778  6A00 3830       2869         BON   WRRD1                    YES
00377C  4020 36EE 3B14  2870         MVA   RDBUF,BLK+2              SET ID ADDRESS
003782  4C73            2871         TBTR  (R4,B51)                 LIST DATA RECORD TWO?
003784  1003            2872         JOFF  RDDF4                    NO
003786  4724 36AE       2873         MVA   HDR7,R7                  SET HEADER ADDRESS
00378A  5002            2874         J     RDDF5
00378C  4724 3696       2875 RDDF4   MVA   HDR5,R7                  SET HEADER ADDRESS
003790  6000            2876 RDDF5   SVC   OUT                      PRINT HEADER
003792  4024 0020       2877         MVWI  32,R0                    SET ID COUNT
003796  4C55            2878         TBTS  (R4,B53)                 SET DATA FIELD LIST INDICATION
003798  4324 3B14       2879         MVA   RDBUF,R3                 SET OP CONSOLE ADDRESS
00379C  6802 3620       2880         B     TD69T                    GO LIST IDS
                        2881 ********************************************************************
                        2882 * SUBROUTINE
                        2883 *
                        2884 *     WRITE,VERIFY,READ
                        2885 *
                        2886 *     PURPOSE - PERFORM THE FOLLOWING:
                        2887 *               1. WRITE/VERIFY SPECIFIED RECORDS.
                        2888 *               2. READ RECORD WRITTEN.
                        2889 *
                        2890 * CALLING SEQUENCE -   BAL  WRRD,R6
                        2891 *           THE FOLLOWING PARAMETERS MUST BE SETUP PRIOR TO CALLING:
                        2892 *               1. SECTOR ID SEARCH ARGUMENT (SCTID)
                        2893 *
                        2894 *     RETURN -  B  ($WRET+2)
                        2895 *
                        2896 ********************************************************************
                        2897 *
0037A0  6E0D 382E       2898 WRRD    MVW   R6,$WRET+2               SETUP RETURN ADDRESS
0037A4  402B 194E 0001  2899         TWI   X'0001',TUINPT+6         TEST FOR SE BIT ON
0037AA  1007            2900         JOFF  WRRD4                    NO
0037AC  402C 268C 0800  2901         OWI   X'0800',WRDCB            SET THE SE BIT
0037B2  402C 26AC 0800  2902         OWI   X'0800',RDDCB            SET THE SE BIT
0037B8  5006            2903         J     WRRD5
0037BA  4020 268C 0021  2904 WRRD4   MVWI  X'0021',WRDCB            TURN OFF SE BIT
0037C0  4020 26AC 2010  2905         MVWI  X'2010',RDDCB            TURN OFF SE BIT
0037C6  9028 194A 268E  2906 WRRD5   MVD   TUINPT+2,WRDCB+2         SETUP SECTOR ID
0037CC  C625 268F       2907         MVBZ  WRDCB+3,R6               ALIGN THE SECTOR
0037D0  360A            2908         SRL   1,R6                     *
0037D2  C628 268F       2909         MVB   R6,WRDCB+3               *
0037D6  4020 2698 0100  2910         MVWI  X'0100',WRDCB+12         SETUP BYTE COUNT
0037DC  9028 268E 26AE  2911         MVD   WRDCB+2,RDDCB+2          SETUP SECTOR ID IN READ DCB
0037E2  4020 26B8 0100  2912         MVWI  X'0100',RDDCB+12         SETUP BYTE COUNT
0037E8  6E03 38D8       2913         BAL   $WBUF,R6                 SET BUFFER PATTERN
0037EC  6E03 280C       2914         BAL   $WRT,R6                  WRITE
0037F0  2996            2915         DC    A($ERR$)                 ERROR
0037F2  4CA1            2916         TBTR  (R4,ER)                  INTERRUPT ERROR?
0037F4  1210            2917         JON   WRRD1                    YES
0037F6  4029 268E 0020  2918         AWI   32,WRDCB+2               WRITE SECOND RECORD
0037FC  6E03 280C       2919         BAL   $WRT,R6                  WRITE
003800  2996            2920         DC    A($ERR$)                 ERROR
003802  4CA1            2921         TBTR  (R4,ER)                  INTERRUPT ERROR?
003804  1215            2922         JON   WRRD1                    YES
003806  6E03 27F0       2923         BAL   $RD,R6                   READ
00380A  2996            2924         DC    A($ERR$)                 ERROR
00380C  4CA1            2925         TBTR  (R4,ER)                  INTERRUPT ERROR?
00380E  4210            2926         JON   WRRD1                    YES
003810  4029 26AE 0020  2927         AWI   32,RDDCB+2               READ THE SECOND RECORD
003816  6E03 27F0       2928         BAL   $RD,R6                   READ
00381A  2996            2929         DC    A($ERR$)                 ERROR
00381C  4CA1            2930         TBTR  (R4,ER)                  INTERRUPT ERROR?
00381E  1208            2931         JON   WRRD1                    YES
003820  4020 268C 0021  2932         MVWI  X'0021',WRDCB            TURN OFF SE BIT
003826  4020 26AC 2010  2933         MVWI  X'2010',RDDCB            TURN OFF SE BIT
00382C  6802 0000       2934 $WRET   B     *-*                      RETURN TO CALLER
                        2935 *
003830  4324 25DC       2936 WRRD1   MVA   $IOIN,R3                 SAVE COND CODE,ISB DCB AND CS-STATUS
003834  4524 3914       2937         MVA   WRBUF,R5                 *
003838  0F70            2938         MVBI  112,R7                   *
00383A  2BA4            2939         MVFN  (R3),(R5)                *
00383C  8028 194B 26F7  2940         MVB   TUINPT+3,LGSEC+1         GET SECTOR#
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

003842  6F03 270A         2941         BAL   CONVT,R7              CONVERT LOG TO PHY SECT #
003846  8028 26F9 265F    2942         MVB   PHYSC+1,RSDCB+3       LOAD DCB
00384C  8028 26F9 26CF    2943         MVB   PHYSC+1,RKDCB+3       *
003852  8828 3466 2660    2944         MVW   HDCYL,RSDCB+4         *
003858  8828 2660 26D0    2945         MVW   RSDCB+4,RKDCB+4       *
00385E  4020 266A 25E2    2946         MVA   SCTID,RSDCB+14
003864  4020 26DA 25E2    2947         MVA   SCTID,RKDCB+14
00386A  6E03 27C8         2948 TTSK1   BAL   $RDID,R6              READ ID
00386E  2996              2949         DC    A($ERR$)
003870  4CA1              2950         TBTR  (R4,ER)               ANY ERROR?
003872  120E              2951         JON   TTSKE                 TRY SKEWED
003874  4C90              2952         TBTR  (R4,B48)              DISP FLAG ON?
003876  1211              2953         JON   $$ERR                 YES
003878  402B 25E2 0800    2954         TWI   X'0800',SCTID         DISP FLAG ON?
00387E  100D              2955         JOFF  $$ERR                 NO
003880  4029 265E 0001    2956         AWI   1,RSDCB+2             INC PHY SECT#
003886  4029 26CE 0001    2957         AWI   1,RKDCB+2             INC PHY SECT#
00388C  4C50              2958         TBTS  (R4,B48)              TURN ON DISP IND
00388E  50ED              2959         J     TTSK1
003890  6E03 2814         2960 TTSKE   BAL   $RKEW,R6              READ ID  SKEWED
003894  2996              2961         DC    A($ERR$)
003896  4CA1              2962         TBTR  (R4,ER)               ANY ERROR
003898  100E              2963         JOFF  $ERR1                 NO ID WRITTEN SKEWED
00389A  9028 3914 25DC    2964 $$ERR   MVD   WRBUF,$IOIN           RESTORE COND CODE,ISB & LAST IO
0038A0  8828 3918 25E0    2965         MVW   WRBUF+4,LSTIO         *
0038A6  4324 25EA         2966         MVA   DCB1,R3               RESTORE ORGINAL DCB AND CSSTATUS
0038AA  4524 3922         2967         MVA   WRBUF+14,R5           *
0038AE  0F42              2968         MVBI  66,R7                 *
0038B0  2D64              2969         MVFN  (R5),(R3)             *
0038B2  6802 2996         2970         B     $ERR$                 LOG OUT
0038B6  4C90              2971 $ERR1   TBTR  (R4,B48)              DISP BIT ON?
0038B8  1209              2972         JON   $$$RR                 YES
0038BA  402B 25E2 0800    2973         TWI   X'0800',SCTID         DISP FLAG ON
0038C0  1005              2974         JOFF  $$$RR
0038C2  4029 26CE 0001    2975         AWI   1,RKDCB+2             INC PHY SECT #
0038C8  4C50              2976         TBTS  (R4,B48)              TURN ON DISP IND
0038CA  50E2              2977         J     TTSKE
0038CC  402C 25E2 0080    2978 $$$RR   OWI   X'0080',SCTID         SET SKEWED BIT
0038D2  50E3              2979         J     $$ERR
                          2980 *
0038D4  0000              2981 SEC00   DC    X'0000'               SECTOR 0
0038D6  0000              2982 HDCY    DC    X'0000'               TEMP HD CYL
000232                    2983 CPUID   EQU   X'0232'
                          2984 *
                          2986 ********************************************************************
                          2987 *
                          2988 *     SUBROUTINE
                          2989 *
                          2990 *     PURPOSE - INITIALIZE WRITE BUFFER FROM USER (TUINPT +6)
                          2991 *
                          2992 *     CALLING SEQUENCE - BAL   $WBUF,R6
                          2993 *
                          2994 *     RETURN -  BXS  (R6)
                          2995 *
                          2996 ********************************************************************
                          2997 *
0038D8                    2998 $WBUF   EQU   *
0038D8  8028 194E 26F2    2999         MVB   TUINPT+6,WDATA        GET DATA PATTERN FROM USER
0038DE  8028 194E 26F3    3000         MVB   TUINPT+6,WDATA+1      *
0038E4  8828 26F2 26F4    3001         MVW   WDATA,WDATA+2         *
0038EA  4724 0100         3002         MVWI  X'0100',R7            WRITE BUFFER SIZE
0038EE  4224 3914         3003         MVA   WRBUF,R2              WRITE BUFFER ADDR
0038F2  90A4 26F2         3004 WB2     MVD   WDATA,(R2)+           INIT BUFFER
0038F6  7FE1 FFFC         3005         AWI   -4,R7                 DECREMENT BYTE COUNT
0038FA  18FB              3006         JNZ   WB2
0038FC  8828 26F2 25E6    3007         MVW   WDATA,DEV3            DATA PATTERN FOR PRINTOUT
003902  5600              3008         BXS   (R6)                  RETURN TO CALLER
                          3009 *
                          3010 *
003904  00000000          3012 SCTIDD  DC    2A(0)                 DEFECTIVE ID
003908  00000000          3013 SCTIDA  DC    2A(0)                 ALTERNATE ID
00390C  00000000          3014 SAVID   DC    2A(0)                 SAVE ID OF SCT TO BE MOVED
003910  00000000          3015 AVLID   DC    2A(0)                 SAVE ID OF SCT OF AVAIL ID
003914  00000000000000000 3016 WRBUF   DC    128A(*-*)
003A14  00000000000000000 3017 WRBUF1  DC    128A(*-*)
003B14  00000000000000000 3018 RDBUF   DC    128A(*-*)
003C14  00000000000000000 3019 RDBUF1  DC    128A(*-*)
003D14  00000000000000000 3020 RDBUF2  DC    128A(*-*)
003E14  00000000000000000 3021 RDBUF3  DC    128A(*-*)
003F14  00000000          3022 ID00    DC    X'00000000'
003F18  00000000          3023 ID01    DC    X'00000000'
003F1C  00000000          3024 ID02    DC    X'00000000'
003F20  00000000          3025 ID03    DC    X'00000000'
003F24  00000000          3026 ID04    DC    X'00000000'
003F28  00000000          3027 ID05    DC    X'00000000'
003F2C  00000000          3028 ID06    DC    X'00000000'
003F30  00000000          3029 ID07    DC    X'00000000'
003F34  00000000          3030 ID08    DC    X'00000000'
003F38  00000000          3031 ID09    DC    X'00000000'
003F3C  00000000          3032 ID0A    DC    X'00000000'
003F40  00000000          3033 ID0B    DC    X'00000000'
003F44  00000000          3034 ID0C    DC    X'00000000'
003F48  00000000          3035 ID0D    DC    X'00000000'
003F4C  00000000          3036 ID0E    DC    X'00000000'
003F50  00000000          3037 ID0F    DC    X'00000000'
003F54  00000000          3038 ID10    DC    X'00000000'
003F58  00000000          3039 ID11    DC    X'00000000'
003F5C  00000000          3040 ID12    DC    X'00000000'
003F60  00000000          3041 ID13    DC    X'00000000'
003F64  00000000          3042 ID14    DC    X'00000000'
003F68  00000000          3043 ID15    DC    X'00000000'
003F6C  00000000          3044 ID16    DC    X'00000000'
003F70  00000000          3045 ID17    DC    X'00000000'
003F74  00000000          3046 ID18    DC    X'00000000'
003F78  00000000          3047 ID19    DC    X'00000000'
003F7C  00000000          3048 ID1A    DC    X'00000000'
003F80  00000000          3049 ID1B    DC    X'00000000'
003F84  00000000          3050 ID1C    DC    X'00000000'
003F88  00000000          3051 ID1D    DC    X'00000000'
003F8C  00000000          3052 ID1E    DC    X'00000000'
003F90  00000000          3053 ID1F    DC    X'00000000'
003F94  00000000          3054 ID20    DC    X'00000000'
003F98  00000000000000000 3055 PATCH   DC    20A(*-*)              PATCH
003FC0                    3056         DS    F'0'
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

000000                    3058         END
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CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
2978	$$$RR	ADDRESS. HEX LOCATION(000038CC) IN CSECT(I7AF9) LENGTH(6) 2972 2974
2964	$$ERR	ADDRESS. HEX LOCATION(0000389A) IN CSECT(I7AF9) LENGTH(6) 2953 2955 2979
1800	$CONC	ADDRESS. HEX LOCATION(00002962) IN CSECT(I7AF9) LENGTH(2) 2030
1869	$CONX	ADDRESS. HEX LOCATION(000029F8) IN CSECT(I7AF9) LENGTH(1) 2090 2135 2138 2415 2443 2571 2594 2820
924	$DIAG	ADDRESS. HEX LOCATION(0000282C) IN CSECT(I7AF9) LENGTH(6) 2258 2265 2280 2287
1842	ERR	ADDRESS. HEX LOCATION(00002996) IN CSECT(I7AF9) LENGTH(6) 2031 2066 2068 2072 2121 2131 2153 2157 2159 2167 2178 2182 2199 2209 2221 2259 2266 2281 2288 2300 2302 2306 2308 2314 2321 2330 2336 2347 2353 2363 2382 2390 2473 2501 2503 2505 2507 2524 2528 2530 2544 2548 2552 2554 2568 2570 2573 2584 2586 2590 2593 2612 2627 2702 2704 2715 2717 2726 2728 2754 2782 2866 2915 2920 2924 2929 2949 2961 2970
2971	$ERR1	ADDRESS. HEX LOCATION(000038B6) IN CSECT(I7AF9) LENGTH(2) 2963
518	$INTL	ADDRESS. HEX LOCATION(0000261A) IN CSECT(I7AF9) LENGTH(2) 1717 1809
483	$IOIN	ADDRESS. HEX LOCATION(000025DC) IN CSECT(I7AF9) LENGTH(2) 1571 1631 1711 1748 1811 2936 2964
484	$ISB	ADDRESS. HEX LOCATION(000025DE) IN CSECT(I7AF9) LENGTH(2) 1572 1712 1753 1812
468	$LE	ABSOLUTE. HEX VALUE(00000026) 1577 1719
902	$RD	ADDRESS. HEX LOCATION(000027F0) IN CSECT(I7AF9) LENGTH(2) 2313 2320 2329 2335 2865 2923 2928
888	$RDID	ADDRESS. HEX LOCATION(000027C8) IN CSECT(I7AF9) LENGTH(6) 2152 2177 2472 2523 2543 2948
895	$RDIM	ADDRESS. HEX LOCATION(000027DC) IN CSECT(I7AF9) LENGTH(6) 2220 2781
909	$RDVY	ADDRESS. HEX LOCATION(00002804) IN CSECT(I7AF9) LENGTH(6) 2198 2208
915	$RKEW	ADDRESS. HEX LOCATION(00002814) IN CSECT(I7AF9) LENGTH(6) 2158 2166 2381 2529 2551 2960
882	$SEEK	ADDRESS. HEX LOCATION(000027B8) IN CSECT(I7AF9) LENGTH(6) 2065 2500
482	$TUID	ADDRESS. HEX LOCATION(000025DA) IN CSECT(I7AF9) LENGTH(2) 528 1866 1904 2028
2998	$WBUF	ADDRESS. HEX LOCATION(000038D8) IN CSECT(I7AF9) LENGTH(1) 2913
918	$WKEW	ADDRESS. HEX LOCATION(0000281C) IN CSECT(I7AF9) LENGTH(6) 2130 2567 2714 2725
2934	$WRET	ADDRESS. HEX LOCATION(0000382C) IN CSECT(I7AF9) LENGTH(4) 2898
912	$WRT	ADDRESS. HEX LOCATION(0000280C) IN CSECT(I7AF9) LENGTH(6) 2299 2305 2346 2352 2583 2589 2914 2919
921	$WSEC	ADDRESS. HEX LOCATION(00002824) IN CSECT(I7AF9) LENGTH(6) 2120 2504 2572 2701
102	@DCADD1	ADDRESS. HEX LOCATION(000019B8) IN CSECT(I7AF9) LENGTH(1) 1863
103	@DCADD2	ADDRESS. HEX LOCATION(000019BA) IN CSECT(I7AF9) LENGTH(1) 1864
41	@GOTO	ABSOLUTE. HEX VALUE(00000200) 361 381
43	@INPT	ABSOLUTE. HEX VALUE(00000300) 351
46	@NVLD	ABSOLUTE. HEX VALUE(00000600) 379
38	@QUES	ABSOLUTE. HEX VALUE(00000100) 345
40	@STOP	ABSOLUTE. HEX VALUE(00000102) 348
45	@TUXX	ABSOLUTE. HEX VALUE(00000500) 367
2093	AMSK	ADDRESS. HEX LOCATION(00002C40) IN CSECT(I7AF9) LENGTH(2) 2082
2724	AMSK1	ADDRESS. HEX LOCATION(000034F2) IN CSECT(I7AF9) LENGTH(6) 2710
2389	ASMDD	ADDRESS. HEX LOCATION(0000305E) IN CSECT(I7AF9) LENGTH(4) 2361
2361	ASMD1	ADDRESS. HEX LOCATION(00002FF2) IN CSECT(I7AF9) LENGTH(4) 2224 2785
2368	ASMD2	ADDRESS. HEX LOCATION(0000300E) IN CSECT(I7AF9) LENGTH(4) 2374
2375	ASMD3	ADDRESS. HEX LOCATION(00003028) IN CSECT(I7AF9) LENGTH(2) 2372
2373	ASMD4	ADDRESS. HEX LOCATION(00003020) IN CSECT(I7AF9) LENGTH(6) 2387
2386	ASMD5	ADDRESS. HEX LOCATION(00003050) IN CSECT(I7AF9) LENGTH(6) 2384
2388	ASMD9	ADDRESS. HEX LOCATION(00003058) IN CSECT(I7AF9) LENGTH(6) 2370
2572	ASME3	ADDRESS. HEX LOCATION(000032FE) IN CSECT(I7AF9) LENGTH(4) 2563
2743	ASMM1	ADDRESS. HEX LOCATION(00003514) IN CSECT(I7AF9) LENGTH(4) 2205 2213
2746	ASMM3	ADDRESS. HEX LOCATION(0000351A) IN CSECT(I7AF9) LENGTH(4) 2212
2749	ASMM4	ADDRESS. HEX LOCATION(00003520) IN CSECT(I7AF9) LENGTH(4) 2126
2752	ASMM5	ADDRESS. HEX LOCATION(00003526) IN CSECT(I7AF9) LENGTH(4) 2161 2169 2226 2532
2250	ASMRD	ADDRESS. HEX LOCATION(00002E90) IN CSECT(I7AF9) LENGTH(4) 2419
2270	ASMRX	ADDRESS. HEX LOCATION(00002ED8) IN CSECT(I7AF9) LENGTH(4) 2250 2268
2263	ASMR1	ADDRESS. HEX LOCATION(00002EC0) IN CSECT(I7AF9) LENGTH(6) 2261
2256	ASMR2	ADDRESS. HEX LOCATION(00002EA8) IN CSECT(I7AF9) LENGTH(6) 2254
2706	ASMSK	ADDRESS. HEX LOCATION(000034A2) IN CSECT(I7AF9) LENGTH(6) 2696
2296	ASMWR	ADDRESS. HEX LOCATION(00002F28) IN CSECT(I7AF9) LENGTH(4) 2429
2309	ASMWX	ADDRESS. HEX LOCATION(00002F5C) IN CSECT(I7AF9) LENGTH(4) 2296

CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
2539	ASMX2	ADDRESS. HEX LOCATION(00003282) IN CSECT(I7AF9) LENGTH(6) 2526
2536	ASMX4	ADDRESS. HEX LOCATION(00003278) IN CSECT(I7AF9) LENGTH(2) 2534 2555
2146	ASM01	ADDRESS. HEX LOCATION(00002CFA) IN CSECT(I7AF9) LENGTH(6) 2083
2173	ASM02	ADDRESS. HEX LOCATION(00002D62) IN CSECT(I7AF9) LENGTH(6) 2155
2214	ASM03	ADDRESS. HEX LOCATION(00002E06) IN CSECT(I7AF9) LENGTH(6) 2190 2204
2227	ASM04	ADDRESS. HEX LOCATION(00002E3E) IN CSECT(I7AF9) LENGTH(6) 2223
2234	ASM05	ADDRESS. HEX LOCATION(00002E5E) IN CSECT(I7AF9) LENGTH(6) 2232
2238	ASM06	ADDRESS. HEX LOCATION(00002E6E) IN CSECT(I7AF9) LENGTH(6) 2236
2514	ASM11	ADDRESS. HEX LOCATION(0000321E) IN CSECT(I7AF9) LENGTH(2) 2511
2560	ASM12	ADDRESS. HEX LOCATION(000032CC) IN CSECT(I7AF9) LENGTH(6) 2558
2206	ASM13	ADDRESS. HEX LOCATION(00002DE4) IN CSECT(I7AF9) LENGTH(6) 2202
2184	ASM22	ADDRESS. HEX LOCATION(00002D88) IN CSECT(I7AF9) LENGTH(6) 2172 2174 2180
2188	ASM23	ADDRESS. HEX LOCATION(00002D98) IN CSECT(I7AF9) LENGTH(6) 2186
2170	ASM24	ADDRESS. HEX LOCATION(00002D58) IN CSECT(I7AF9) LENGTH(2) 2163
2164	ASM26	ADDRESS. HEX LOCATION(00002D44) IN CSECT(I7AF9) LENGTH(2) 2183
2395	ASM5	ADDRESS. HEX LOCATION(00003066) IN CSECT(I7AF9) LENGTH(1) 2228 2244
2404	ASM51	ADDRESS. HEX LOCATION(00003086) IN CSECT(I7AF9) LENGTH(4) 2409
2416	ASM52	ADDRESS. HEX LOCATION(000030B2) IN CSECT(I7AF9) LENGTH(4) 2407
2636	ASM53	ADDRESS. HEX LOCATION(000033CA) IN CSECT(I7AF9) LENGTH(4) 2424 2432
2410	ASM54	ADDRESS. HEX LOCATION(0000309A) IN CSECT(I7AF9) LENGTH(6) 2397
2676	ASM55	ADDRESS. HEX LOCATION(00003450) IN CSECT(I7AF9) LENGTH(4) 2672 2674
2424	ASM56	ADDRESS. HEX LOCATION(000030D2) IN CSECT(I7AF9) LENGTH(4) 2422 2440
2402	ASM57	ADDRESS. HEX LOCATION(0000307E) IN CSECT(I7AF9) LENGTH(4) 2400
2414	ASM58	ADDRESS. HEX LOCATION(000030AA) IN CSECT(I7AF9) LENGTH(4) 2412
2429	ASM61	ADDRESS. HEX LOCATION(000030E2) IN CSECT(I7AF9) LENGTH(4) 2427
2681	ASM62	ADDRESS. HEX LOCATION(0000345E) IN CSECT(I7AF9) LENGTH(2) 2636 2676
2675	ASM63	ADDRESS. HEX LOCATION(0000344C) IN CSECT(I7AF9) LENGTH(4) 2646
2437	ASM65	ADDRESS. HEX LOCATION(000030FA) IN CSECT(I7AF9) LENGTH(4) 2435
2673	ASM66	ADDRESS. HEX LOCATION(00003446) IN CSECT(I7AF9) LENGTH(4) 2648
2441	ASM67	ADDRESS. HEX LOCATION(00003104) IN CSECT(I7AF9) LENGTH(2) 2431 2439
2694	ASM68	ADDRESS. HEX LOCATION(00003472) IN CSECT(I7AF9) LENGTH(4) 2414 2428 2436
2705	ASM68A	ADDRESS. HEX LOCATION(0000349E) IN CSECT(I7AF9) LENGTH(4) 2694 2729
2669	ASM70	ADDRESS. HEX LOCATION(0000343A) IN CSECT(I7AF9) LENGTH(4) 2657 2661 2665 2667
2658	ASM71	ADDRESS. HEX LOCATION(00003418) IN CSECT(I7AF9) LENGTH(6) 2655
2662	ASM72	ADDRESS. HEX LOCATION(00003424) IN CSECT(I7AF9) LENGTH(6) 2659
2666	ASM73	ADDRESS. HEX LOCATION(00003430) IN CSECT(I7AF9) LENGTH(6) 2663
2272	ASRD1	ADDRESS. HEX LOCATION(00002EDC) IN CSECT(I7AF9) LENGTH(4) 2240 2447
2292	ASRRX	ADDRESS. HEX LOCATION(00002F24) IN CSECT(I7AF9) LENGTH(4) 2272 2290
2285	ASRR1	ADDRESS. HEX LOCATION(00002F0C) IN CSECT(I7AF9) LENGTH(6) 2283
2278	ASRR2	ADDRESS. HEX LOCATION(00002EF4) IN CSECT(I7AF9) LENGTH(6) 2276
2556	ASXX2	ADDRESS. HEX LOCATION(000032BC) IN CSECT(I7AF9) LENGTH(6) 2538 2540 2546
2701	AS68	ADDRESS. HEX LOCATION(00003492) IN CSECT(I7AF9) LENGTH(4) 2723
3015	AVLID	ADDRESS. HEX LOCATION(00003910) IN CSECT(I7AF9) LENGTH(2) 2492 2508
2733	BADID	ADDRESS. HEX LOCATION(00003506) IN CSECT(I7AF9) LENGTH(2) 2398 2401 2406
1874	BEGIN	ADDRESS. HEX LOCATION(00002A02) IN CSECT(I7AF9) LENGTH(2) 1895
1899	BIT0080	ABSOLUTE. HEX VALUE(00000080) 1865
2835	BLK	ADDRESS. HEX LOCATION(000036EC) IN CSECT(I7AF9) LENGTH(2) 2786 2795 2797 2799 2800 2811 2813 2815 2816
1894	BUFPT	ADDRESS. HEX LOCATION(00002B5E) IN CSECT(I7AF9) LENGTH(2) 1850
431	B48	ABSOLUTE. HEX VALUE(00000010) 2045 2952 2958 2971 2976
432	B49	ABSOLUTE. HEX VALUE(00000011) 2036 2046
433	B50	ABSOLUTE. HEX VALUE(00000012) 2047 2187 2411 2421 2510
434	B51	ABSOLUTE. HEX VALUE(00000013) 2048 2864 2871
435	B52	ABSOLUTE. HEX VALUE(00000014) 2049 2225 2385
436	B53	ABSOLUTE. HEX VALUE(00000015) 2050 2805 2878
437	B54	ABSOLUTE. HEX VALUE(00000016) 2037

CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
438	B55	ABSOLUTE. HEX VALUE(00000017) 2051 2426 2430 2434 2438 2649 2677
439	B56	ABSOLUTE. HEX VALUE(00000018) 2035
440	B57	ABSOLUTE. HEX VALUE(00000019) 2034
441	B58	ABSOLUTE. HEX VALUE(0000001A) 2054 2164 2175 2253 2275 2514 2535 2541 2557
442	B59	ABSOLUTE. HEX VALUE(0000001B) 2055 2170 2399 2536 2549 2562 2695
443	B60	ABSOLUTE. HEX VALUE(0000001C) 2033
444	B61	ABSOLUTE. HEX VALUE(0000001D) 2052 2262 2284 2317 2333
445	B62	ABSOLUTE. HEX VALUE(0000001E) 2053 2269 2291 2324 2339
835	CB07	ADDRESS. HEX LOCATION(000027AE) IN CSECT(I7AF9) LENGTH(2) 808
836	CB15	ADDRESS. HEX LOCATION(000027B0) IN CSECT(I7AF9) LENGTH(2) 816
837	CB23	ADDRESS. HEX LOCATION(000027B2) IN CSECT(I7AF9) LENGTH(2) 824
838	CB40	ADDRESS. HEX LOCATION(000027B4) IN CSECT(I7AF9) LENGTH(2) 806 814 822
472	CE	ABSOLUTE. HEX VALUE(0000002A) 1556 1670 1740
447	CH	ABSOLUTE. HEX VALUE(0000001E) 2038
557	CICB	ABSOLUTE. HEX VALUE(00000014) 1806
654	CLDCB	ADDRESS. HEX LOCATION(0000263C) IN CSECT(I7AF9) LENGTH(2) 885
812	CNVT1	ADDRESS. HEX LOCATION(00002752) IN CSECT(I7AF9) LENGTH(6) 809
814	CNVT2	ADDRESS. HEX LOCATION(0000275A) IN CSECT(I7AF9) LENGTH(6) 805
820	CNVT3	ADDRESS. HEX LOCATION(00002772) IN CSECT(I7AF9) LENGTH(6) 817
822	CNVT4	ADDRESS. HEX LOCATION(0000277A) IN CSECT(I7AF9) LENGTH(6) 803
828	CNVT5	ADDRESS. HEX LOCATION(00002792) IN CSECT(I7AF9) LENGTH(6) 825
829	CNVT6	ADDRESS. HEX LOCATION(00002798) IN CSECT(I7AF9) LENGTH(6) 797 801 811 813 819 821 827
833	CNVT8	ADDRESS. HEX LOCATION(000027AA) IN CSECT(I7AF9) LENGTH(4) 791
832	CNVT9	ADDRESS. HEX LOCATION(000027A6) IN CSECT(I7AF9) LENGTH(4) 807 815 823 830
791	CONVT	ADDRESS. HEX LOCATION(0000270A) IN CSECT(I7AF9) LENGTH(4) 2110 2149 2251 2273 2460 2520 2941
470	CS	ABSOLUTE. HEX VALUE(00000028) 1557 1560 1668 1709 1738
471	CSA	ABSOLUTE. HEX VALUE(00000029) 1743
501	CSBUF	ADDRESS. HEX LOCATION(000025FA) IN CSECT(I7AF9) LENGTH(1) 699 1568
692	CSDCB	ADDRESS. HEX LOCATION(0000267C) IN CSECT(I7AF9) LENGTH(2) 1558
506	CSTL5	ADDRESS. HEX LOCATION(00002602) IN CSECT(I7AF9) LENGTH(2) 2073 2077
507	CSTL6	ADDRESS. HEX LOCATION(00002604) IN CSECT(I7AF9) LENGTH(2) 2156 2181 2203 2364 2527 2547
2840	DATAA	ADDRESS. HEX LOCATION(000036F4) IN CSECT(I7AF9) LENGTH(2) 2802 2818
491	DCBUF	ADDRESS. HEX LOCATION(000025EA) IN CSECT(I7AF9) LENGTH(1) 1563
492	DCB1	ADDRESS. HEX LOCATION(000025EA) IN CSECT(I7AF9) LENGTH(2) 2966
1895	DC2PT	ADDRESS. HEX LOCATION(00002B60) IN CSECT(I7AF9) LENGTH(2) 1864
105	DEVADD	ADDRESS. HEX LOCATION(000019D0) IN CSECT(I7AF9) LENGTH(1) 521 1761 1770 1870
486	DEV1	ADDRESS. HEX LOCATION(000025E2) IN CSECT(I7AF9) LENGTH(2) 490 1802
488	DEV3	ADDRESS. HEX LOCATION(000025E6) IN CSECT(I7AF9) LENGTH(2) 3007
489	DEV4	ADDRESS. HEX LOCATION(000025E8) IN CSECT(I7AF9) LENGTH(2) 1671 1672
643	DGDCB	ADDRESS. HEX LOCATION(0000262C) IN CSECT(I7AF9) LENGTH(2) 924 926 2239 2252 2255 2256 2257 2263 2264 2274 2277 2278 2279 2285 2286 2418 2444
2094	DMSK	ADDRESS. HEX LOCATION(00002C42) IN CSECT(I7AF9) LENGTH(2) 2084 2086
67	DUMMY	ABSOLUTE. HEX VALUE(00000000) 336 386 401
2753	END	ADDRESS. HEX LOCATION(0000352A) IN CSECT(I7AF9) LENGTH(2) 2741 2744 2747 2750
387	ENTPT	ADDRESS. HEX LOCATION(00002570) IN CSECT(I7AF9) LENGTH(1) 198
47	EQ	ABSOLUTE. HEX VALUE(00000000) 370
463	ER	ABSOLUTE. HEX VALUE(00000021) 1574 1595 1678 1720 1745 2067 2122 2132 2154 2160 2168 2179 2201 2211 2222 2260 2267 2282 2289 2301 2307 2315 2322 2331 2337 2348 2354 2383 2474 2502 2506 2525 2531 2545 2553 2569 2574 2585 2592 2703 2716 2727 2783 2868 2916 2921 2925 2930 2950 2962
2390	ER22	ADDRESS. HEX LOCATION(00003062) IN CSECT(I7AF9) LENGTH(4) 2349 2355 2365 2405
543	EXIT	ABSOLUTE. HEX VALUE(00000006) 1727
2090	EXIT2	ADDRESS. HEX LOCATION(00002C3A) IN CSECT(I7AF9) LENGTH(4) 2100 2102
1897	FAKETU	ADDRESS. HEX LOCATION(00002B64) IN CSECT(I7AF9) LENGTH(2) 1863
2036	FD	ABSOLUTE. HEX VALUE(00000011) 2043 2064 2237 2478
2686	FGSEC	ADDRESS. HEX LOCATION(00003468) IN CSECT(I7AF9) LENGTH(2) 2215
2842	FILL	ADDRESS. HEX LOCATION(000036F8) IN CSECT(I7AF9) LENGTH(51)

CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
		2794 2794 2795 2807 2811 2840
2092	FMSK	ADDRESS. HEX LOCATION(00002C3E) IN CSECT(I7AF9) LENGTH(2) 2080 2088
2734	FOUR4	ADDRESS. HEX LOCATION(00003508) IN CSECT(I7AF9) LENGTH(2) 2711
2035	FXD	ABSOLUTE. HEX VALUE(00000018) 2042 2079 2462
409	F00021	ADDRESS. HEX LOCATION(0000257A) IN CSECT(I7AF9) LENGTH(1) 349
413	F00545	ADDRESS. HEX LOCATION(0000258A) IN CSECT(I7AF9) LENGTH(1) 362
421	F00560	ADDRESS. HEX LOCATION(000025B4) IN CSECT(I7AF9) LENGTH(1) 382
2685	HDCYL	ADDRESS. HEX LOCATION(00003466) IN CSECT(I7AF9) LENGTH(2) 796 798 2069 2115 2128 2219 2229 2243 2516 2944
2823	HDR1	ADDRESS. HEX LOCATION(00003682) IN CSECT(I7AF9) LENGTH(2) 2789
2832	HDR2	ADDRESS. HEX LOCATION(000036C6) IN CSECT(I7AF9) LENGTH(2) 2791
2824	HDR3	ADDRESS. HEX LOCATION(00003684) IN CSECT(I7AF9) LENGTH(15) 2823
2833	HDR4	ADDRESS. HEX LOCATION(000036C8) IN CSECT(I7AF9) LENGTH(34) 2832
2826	HDR5	ADDRESS. HEX LOCATION(00003696) IN CSECT(I7AF9) LENGTH(2) 2875
2827	HDR6	ADDRESS. HEX LOCATION(00003698) IN CSECT(I7AF9) LENGTH(19) 2826
2829	HDR7	ADDRESS. HEX LOCATION(000036AE) IN CSECT(I7AF9) LENGTH(2) 2873
2830	HDR8	ADDRESS. HEX LOCATION(000036B0) IN CSECT(I7AF9) LENGTH(19) 2829
2684	HEADS	ADDRESS. HEX LOCATION(00003464) IN CSECT(I7AF9) LENGTH(2) 2056 2075 2076 2483
1903	HEBLK	ADDRESS. HEX LOCATION(00002B66) IN CSECT(I7AF9) LENGTH(2) 1843
61	HEX	ABSOLUTE. HEX VALUE(00000001) 352
563	HTOE	ABSOLUTE. HEX VALUE(0000001A) 1844 2798 2814
539	IDLE	ABSOLUTE. HEX VALUE(00000002) 1589 1591
3022	ID00	ADDRESS. HEX LOCATION(00003F14) IN CSECT(I7AF9) LENGTH(4) 765 897 2218 2367 2403 2699 2786 2787
3054	ID20	ADDRESS. HEX LOCATION(00003F94) IN CSECT(I7AF9) LENGTH(4) 2227 2229 2231 2234 2235 2242 2243 2410 2413 2724
465	IN	ABSOLUTE. HEX VALUE(00000023) 1575 1587 1708
2037	INC	ABSOLUTE. HEX VALUE(00000016) 2041 2621 2630
1770	INTBL	ADDRESS. HEX LOCATION(0000295A) IN CSECT(I7AF9) LENGTH(2) 1805
1665	INTER	ADDRESS. HEX LOCATION(000028BE) IN CSECT(I7AF9) LENGTH(2) 1772
1674	INTES	ADDRESS. HEX LOCATION(000028D6) IN CSECT(I7AF9) LENGTH(2) 1669
1678	INTET	ADDRESS. HEX LOCATION(000028DE) IN CSECT(I7AF9) LENGTH(2) 1675
1705	INTOK	ADDRESS. HEX LOCATION(000028E2) IN CSECT(I7AF9) LENGTH(2) 1771
63	INTRNL	ABSOLUTE. HEX VALUE(00000000) 365 385
1727	INTRX	ADDRESS. HEX LOCATION(00002912) IN CSECT(I7AF9) LENGTH(2) 1722 1725
1708	INTR1	ADDRESS. HEX LOCATION(000028EA) IN CSECT(I7AF9) LENGTH(2) 1673 1677 1679
1713	INTR2	ADDRESS. HEX LOCATION(000028F8) IN CSECT(I7AF9) LENGTH(1) 1710
1721	INTR3	ADDRESS. HEX LOCATION(00002906) IN CSECT(I7AF9) LENGTH(2) 1718
1761	IOBLK	ADDRESS. HEX LOCATION(0000294E) IN CSECT(I7AF9) LENGTH(2) 1576 1810
1763	IODCB	ADDRESS. HEX LOCATION(00002952) IN CSECT(I7AF9) LENGTH(2) 882 885 888 895 906 909 912 915 918 921 924 1558 1564 1809 2379
1764	IOMOD	ADDRESS. HEX LOCATION(00002954) IN CSECT(I7AF9) LENGTH(2) 1550 1553 1559
37	I7AF9	CSECT. START(00002500) LENGTH(6850) ESDID(1) 37
773	LGSEC	ADDRESS. HEX LOCATION(000026F6) IN CSECT(I7AF9) LENGTH(2) 793 829 2070 2136 2137 2214 2238 2417 2445 2459 2519 2940
1880	LINE1	ADDRESS. HEX LOCATION(00002A3A) IN CSECT(I7AF9) LENGTH(40) 1851
485	LSTIO	ADDRESS. HEX LOCATION(000025E0) IN CSECT(I7AF9) LENGTH(2) 1562 1813 2965
2757	MESS	ADDRESS. HEX LOCATION(00003532) IN CSECT(I7AF9) LENGTH(2) 2743
2769	MESSE	ADDRESS. HEX LOCATION(000035C8) IN CSECT(I7AF9) LENGTH(2) 2740
2770	MESSF	ADDRESS. HEX LOCATION(000035CA) IN CSECT(I7AF9) LENGTH(29) 2769
2758	MESS1	ADDRESS. HEX LOCATION(00003534) IN CSECT(I7AF9) LENGTH(33) 2757
2760	MESS4	ADDRESS. HEX LOCATION(00003556) IN CSECT(I7AF9) LENGTH(2) 2746
2761	MESS5	ADDRESS. HEX LOCATION(00003558) IN CSECT(I7AF9) LENGTH(26) 2760
2763	MESS6	ADDRESS. HEX LOCATION(00003574) IN CSECT(I7AF9) LENGTH(2) 2749
2764	MESS7	ADDRESS. HEX LOCATION(00003576) IN CSECT(I7AF9) LENGTH(44) 2763
2766	MESS8	ADDRESS. HEX LOCATION(000035A4) IN CSECT(I7AF9) LENGTH(2) 2752
2767	MESS9	ADDRESS. HEX LOCATION(000035A6) IN CSECT(I7AF9) LENGTH(32) 2766
462	MI	ABSOLUTE. HEX VALUE(00000020) 1723
2034	MINC	ABSOLUTE. HEX VALUE(00000019) 2040 2609 2617 2619

CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
    1854  MVBUF       ADDRESS. HEX LOCATION(000029C6) IN CSECT(I7AF9    ) LENGTH(2)
                     1858  1861
    2683  NCYLN       ADDRESS. HEX LOCATION(00003462) IN CSECT(I7AF9    ) LENGTH(2)
                     2451  2453  2455  2598  2611  2613  2624
    2682  NCYLP       ADDRESS. HEX LOCATION(00003460) IN CSECT(I7AF9    ) LENGTH(2)
                     2452  2456  2600  2602  2606  2626  2628
     474  NG          ABSOLUTE. HEX VALUE(0000002C)
                     1726
     469  NI          ABSOLUTE. HEX VALUE(00000027)
                     1581
    2065  NOFD        ADDRESS. HEX LOCATION(00002BD0) IN CSECT(I7AF9    ) LENGTH(4)
                     2063
    2080  NOFXD       ADDRESS. HEX LOCATION(00002C0C) IN CSECT(I7AF9    ) LENGTH(6)
                     2078
     345  N00001      ADDRESS. HEX LOCATION(00002520) IN CSECT(I7AF9    ) LENGTH(2)
                      315   397
     348  N00002      ADDRESS. HEX LOCATION(00002524) IN CSECT(I7AF9    ) LENGTH(2)
                      318
     351  N00003      ADDRESS. HEX LOCATION(00002528) IN CSECT(I7AF9    ) LENGTH(2)
                      321   346   400
     361  N00004      ADDRESS. HEX LOCATION(00002542) IN CSECT(I7AF9    ) LENGTH(2)
                      324
     367  N00005      ADDRESS. HEX LOCATION(0000254E) IN CSECT(I7AF9    ) LENGTH(2)
                      327   353
     379  N00006      ADDRESS. HEX LOCATION(00002560) IN CSECT(I7AF9    ) LENGTH(2)
                      330
     381  N00007      ADDRESS. HEX LOCATION(00002562) IN CSECT(I7AF9    ) LENGTH(2)
                      333   368
     427  OPTN1       ADDRESS. HEX LOCATION(000025D4) IN CSECT(I7AF9    ) LENGTH(2)
                     1667  1707  2029
     450  OPTN3       ADDRESS. HEX LOCATION(000025D8) IN CSECT(I7AF9    ) LENGTH(2)
                     1756  1804
     537  OUT         ABSOLUTE. HEX VALUE(00000000)
                     2753  2790  2792  2803  2819  2876
      64  PARM        ABSOLUTE. HEX VALUE(00000000)
                      354
     101  PARMARA     ADDRESS. HEX LOCATION(0000196E) IN CSECT(I7AF9    ) LENGTH(1)
                      377
     774  PHYSC       ADDRESS. HEX LOCATION(000026F8) IN CSECT(I7AF9    ) LENGTH(2)
                      795   806   808   810   812   814   816   818   820
                      822   824   826   828   831  2113  2114  2127  2150
                     2252  2274  2461  2521  2942  2943
      69  PID         ADDRESS. HEX LOCATION(00001800) IN CSECT(I7AF9    ) LENGTH(1)
                       71    72    73    74    75    76    77    78    79
                       80    81    82    83    84    85    86    87    88
                       89    90    91    92    93    94    95    96    97
                       98    99   100   101   102   103   104   105   106
                      107   108   109   110   111   112  1862
    1898  PIDMSG10    ABSOLUTE. HEX VALUE(0000F1F0)
                     1862
    2033  PINC        ABSOLUTE. HEX VALUE(0000001C)
                     2039  2480  2604  2607  2615
     549  PREP        ABSOLUTE. HEX VALUE(0000000C)
                     1814
    2038  RASN        ABSOLUTE. HEX VALUE(0000001E)
                     2044  2241  2441
     770  RAY         ADDRESS. HEX LOCATION(000026F0) IN CSECT(I7AF9    ) LENGTH(2)
                     2367  2371  2373  2378  2386
    3018  RDBUF       ADDRESS. HEX LOCATION(00003B14) IN CSECT(I7AF9    ) LENGTH(2)
                     2060  2256  2297  2328  2857  2870  2879
    3019  RDBUF1      ADDRESS. HEX LOCATION(00003C14) IN CSECT(I7AF9    ) LENGTH(2)
                     2264  2304  2334
    3020  RDBUF2      ADDRESS. HEX LOCATION(00003D14) IN CSECT(I7AF9    ) LENGTH(2)
                     2278  2582
    3021  RDBUF3      ADDRESS. HEX LOCATION(00003E14) IN CSECT(I7AF9    ) LENGTH(2)
                     2286  2588
    2340  RDDAX       ADDRESS. HEX LOCATION(00002FBA) IN CSECT(I7AF9    ) LENGTH(4)
                     2327  2338
     725  RDDCB       ADDRESS. HEX LOCATION(000026AC) IN CSECT(I7AF9    ) LENGTH(2)
                      903   906  2060  2312  2318  2319  2328  2334  2638
                     2642  2851  2854  2856  2857  2858  2860  2863  2867
                     2902  2905  2911  2912  2927  2933
    2851  RDDF1       ADDRESS. HEX LOCATION(0000372E) IN CSECT(I7AF9    ) LENGTH(6)
                     2087
    2856  RDDF2       ADDRESS. HEX LOCATION(00003744) IN CSECT(I7AF9    ) LENGTH(6)
                     2853
    2865  RDDF3       ADDRESS. HEX LOCATION(0000376A) IN CSECT(I7AF9    ) LENGTH(4)
                     2862
    2875  RDDF4       ADDRESS. HEX LOCATION(0000378C) IN CSECT(I7AF9    ) LENGTH(4)
                     2872
    2876  RDDF5       ADDRESS. HEX LOCATION(00003790) IN CSECT(I7AF9    ) LENGTH(2)
                     2874
    2311  RDDTA       ADDRESS. HEX LOCATION(00002F60) IN CSECT(I7AF9    ) LENGTH(4)
                     2425
    2318  RDDTB       ADDRESS. HEX LOCATION(00002F76) IN CSECT(I7AF9    ) LENGTH(6)
                     2316
    2325  RDDTX       ADDRESS. HEX LOCATION(00002F8E) IN CSECT(I7AF9    ) LENGTH(4)
                     2311  2323
    2327  RDDT1       ADDRESS. HEX LOCATION(00002F92) IN CSECT(I7AF9    ) LENGTH(4)
                     2433
    2334  RDDT2       ADDRESS. HEX LOCATION(00002FA8) IN CSECT(I7AF9    ) LENGTH(6)
                     2332
    2857  RDD2        ADDRESS. HEX LOCATION(0000374A) IN CSECT(I7AF9    ) LENGTH(6)
                     2855
    2779  RDID1       ADDRESS. HEX LOCATION(000035E8) IN CSECT(I7AF9    ) LENGTH(6)
                     2085
    2786  RDID2       ADDRESS. HEX LOCATION(00003602) IN CSECT(I7AF9    ) LENGTH(6)
                     2784
     556  RICB        ABSOLUTE. HEX VALUE(00000013)
                     1871
     747  RKDCB       ADDRESS. HEX LOCATION(000026CC) IN CSECT(I7AF9    ) LENGTH(2)
                      915  2058  2148  2151  2165  2376  2378  2379  2380
                     2388  2518  2522  2560  2943  2945  2947  2957  2975
     758  RMDCB       ADDRESS. HEX LOCATION(000026DC) IN CSECT(I7AF9    ) LENGTH(2)
                      895  2216  2217  2218  2219  2380  2779  2780
     777  RSBA        ADDRESS. HEX LOCATION(000026FE) IN CSECT(I7AF9    ) LENGTH(2)
                      647   663   674   685   707   718   729   740   751
                      762
     670  RSDCB       ADDRESS. HEX LOCATION(0000265C) IN CSECT(I7AF9    ) LENGTH(2)
                      888  2057  2146  2147  2150  2151  2171  2176  2191
                     2457  2458  2461  2464  2469  2471  2476  2485  2494
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CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
                     2515  2517  2521  2522  2537  2542  2556  2613  2628
                     2942  2944  2945  2946  2956
    2098  RT405       ADDRESS. HEX LOCATION(00002C44) IN CSECT(I7AF9    ) LENGTH(4)
                     2089  2104
    2108  RT416       ADDRESS. HEX LOCATION(00002C60) IN CSECT(I7AF9    ) LENGTH(6)
                     2081
    2125  RT420       ADDRESS. HEX LOCATION(00002CAC) IN CSECT(I7AF9    ) LENGTH(6)
                     2119
    2110  RT500       ADDRESS. HEX LOCATION(00002C6C) IN CSECT(I7AF9    ) LENGTH(4)
                     2140
    2114  RT501       ADDRESS. HEX LOCATION(00002C7E) IN CSECT(I7AF9    ) LENGTH(6)
                     2112
       0  R0          REGISTER. HEX VALUE(00000000)
                     2793  2804  2877
       0  R1          REGISTER. HEX VALUE(00000001)
                      792   793   794   795   798   799   800   802   804
                      832  1851  1854  1857  1860  2403  2406  2408  2416
                     2417  2420  2423  2637  2638  2639  2640  2644  2645
                     2647  2650  2669  2673  2675  2796  2801  2812  2817
       0  R2          REGISTER. HEX VALUE(00000002)
                     1856  1857  2366  2369  2375  2402  2404  2650  2651
                     2652  2808  2810  3003  3004
       0  R3          REGISTER. HEX VALUE(00000003)
                      889   892   898   899   902   905   925   928  1550
                     1563  1566  1567  1570  1572  1629  1630  1631  1665
                     1666  1672  1676  1705  1706  1711  1724  1756  1801
                     1803  1804  1812  1849  1850  1854  1866  2448  2449
                     2450  2451  2452  2464  2465  2466  2467  2708  2709
                     2711  2712  2787  2879  2936  2939  2966  2969
       0  R4          REGISTER. HEX VALUE(00000004)
                     1556  1557  1560  1574  1575  1577  1578  1581  1587
                     1595  1667  1668  1670  1674  1678  1707  1708  1709
                     1719  1720  1721  1723  1726  1736  1738  1740  1743
                     1745  2029  2039  2040  2041  2042  2043  2044  2045
                     2046  2047  2048  2049  2050  2051  2052  2053  2054
                     2055  2064  2067  2079  2122  2132  2154  2160  2164
                     2168  2170  2175  2179  2187  2201  2211  2222  2225
                     2237  2241  2253  2260  2262  2267  2269  2275  2282
                     2284  2289  2291  2301  2307  2315  2317  2322  2324
                     2331  2333  2337  2339  2348  2354  2383  2385  2399
                     2411  2421  2426  2430  2434  2438  2441  2462  2474
                     2478  2480  2502  2506  2510  2514  2525  2531  2535
                     2536  2541  2545  2549  2553  2557  2562  2569  2574
                     2585  2592  2604  2607  2609  2615  2617  2619  2621
                     2630  2649  2677  2695  2703  2716  2727  2783  2788
                     2805  2864  2868  2871  2878  2916  2921  2925  2930
                     2950  2952  2958  2962  2971  2976
       0  R5          REGISTER. HEX VALUE(00000005)
                      890   892   897   899   903   905   926   928  1564
                     1566  1568  1570  1586  1593  1715  1716  1717  1748
                     1749  1751  1753  1802  1803  1848  1861  2368  2375
                     2376  2377  2807  2810  2937  2939  2967  2969
       0  R6          REGISTER. HEX VALUE(00000006)
                     1562  1582  1596  1632  1737  1742  1744  1752  1755
                     1757  1807  1813  1815  1853  1858  1859  2030  2065
                     2071  2098  2120  2130  2152  2158  2166  2177  2192
                     2193  2194  2195  2198  2208  2220  2224  2240  2250
                     2258  2265  2272  2280  2287  2296  2299  2305  2311
                     2313  2320  2327  2329  2335  2343  2346  2352  2361
                     2362  2381  2414  2419  2424  2425  2428  2429  2432
                     2433  2436  2437  2447  2472  2476  2477  2481  2483
                     2500  2504  2523  2529  2543  2551  2567  2572  2579
                     2580  2581  2583  2589  2636  2640  2641  2642  2643
                     2652  2653  2656  2660  2664  2668  2669  2670  2671
                     2676  2678  2679  2694  2701  2714  2725  2781  2785
                     2858  2859  2860  2865  2898  2907  2908  2909  2913
                     2914  2919  2923  2928  2948  2960  3008
       0  R7          REGISTER. HEX VALUE(00000007)
                      529   791   891   896   904   927  1565  1569  1576
                     1671  1712  1800  1805  1810  1843  1852  1855  1867
                     1870  2027  2110  2149  2251  2273  2460  2520  2740
                     2743  2746  2749  2752  2789  2791  2797  2802  2809
                     2813  2818  2873  2875  2938  2941  2968  3002  3005
    2736  SADDR       ADDRESS. HEX LOCATION(0000350C) IN CSECT(I7AF9    ) LENGTH(2)
                     2416  2713  2718  2719
     839  SAVE1       ADDRESS. HEX LOCATION(000027B6) IN CSECT(I7AF9    ) LENGTH(2)
                      792   832
    3014  SAVID       ADDRESS. HEX LOCATION(0000390C) IN CSECT(I7AF9    ) LENGTH(2)
                     2234  2446  2448  2457  2493  2515  2516  2519  2576
     490  SCTID       ADDRESS. HEX LOCATION(000025E2) IN CSECT(I7AF9    ) LENGTH(2)
                      677   754   890  2057  2058  2162  2173  2184  2189
                     2388  2490  2492  2533  2539  2946  2947  2954  2973
                     2978
    2688  SEC0E       ADDRESS. HEX LOCATION(0000346C) IN CSECT(I7AF9    ) LENGTH(2)
                     2658
    2981  SEC00       ADDRESS. HEX LOCATION(000038D4) IN CSECT(I7AF9    ) LENGTH(2)
                     2645
    2689  SEC1E       ADDRESS. HEX LOCATION(0000346E) IN CSECT(I7AF9    ) LENGTH(2)
                     2662
    2690  SEC2E       ADDRESS. HEX LOCATION(00003470) IN CSECT(I7AF9    ) LENGTH(2)
                     2666
    2142  SEC31       ADDRESS. HEX LOCATION(00002CF8) IN CSECT(I7AF9    ) LENGTH(2)
                     2101  2654
    2687  SEC64       ADDRESS. HEX LOCATION(0000346A) IN CSECT(I7AF9    ) LENGTH(2)
                     2396  2647
     681  SKDCB       ADDRESS. HEX LOCATION(0000266C) IN CSECT(I7AF9    ) LENGTH(2)
                      882  2061  2109  2146  2499  2697  2707  2722  2779
    2735  SKEW        ADDRESS. HEX LOCATION(0000350A) IN CSECT(I7AF9    ) LENGTH(2)
                     2171  2537  2706  2709  2720  2721
    2076  SMLF1       ADDRESS. HEX LOCATION(00002BFC) IN CSECT(I7AF9    ) LENGTH(6)
                     2074
     547  START       ABSOLUTE. HEX VALUE(0000000A)
                     1579
     104  SUPSTAT     ADDRESS. HEX LOCATION(000019C4) IN CSECT(I7AF9    ) LENGTH(1)
                     1865
    2795  TD69R       ADDRESS. HEX LOCATION(00003626) IN CSECT(I7AF9    ) LENGTH(6)
                     2804
    2797  TD69S       ADDRESS. HEX LOCATION(0000362E) IN CSECT(I7AF9    ) LENGTH(4)
                     2801
    2794  TD69T       ADDRESS. HEX LOCATION(00003620) IN CSECT(I7AF9    ) LENGTH(6)
                     2880
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CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
  2813    TD69X      ADDRESS. HEX LOCATION(00003662) IN CSECT(I7AF9   ) LENGTH(4)
                    2817
  2820    TD69Y      ADDRESS. HEX LOCATION(0000367C) IN CSECT(I7AF9   ) LENGTH(4)
                    2806
  2960    TTSKE      ADDRESS. HEX LOCATION(00003890) IN CSECT(I7AF9   ) LENGTH(4)
                    2951  2977
  2948    TTSK1      ADDRESS. HEX LOCATION(0000386A) IN CSECT(I7AF9   ) LENGTH(4)
                    2959
  2564    TT708      ADDRESS. HEX LOCATION(000032DC) IN CSECT(I7AF9   ) LENGTH(6)
                    2575
   100    TUINPT     ADDRESS. HEX LOCATION(00001948) IN CSECT(I7AF9   ) LENGTH(1)
                    2061  2062  2069  2070  2080  2082  2084  2086  2088
                    2099  2101  2103  2108  2111  2118  2125  2134  2184
                    2185  2188  2193  2239  2396  2398  2418  2444  2445
                    2446  2654  2658  2662  2666  2851  2852  2861  2899
                    2906  2940  2999  3000
    92    TUMSGWTR   ADDRESS. HEX LOCATION(000018BA) IN CSECT(I7AF9   ) LENGTH(1)
                    1867
   519    TURTN      ADDRESS. HEX LOCATION(0000261C) IN CSECT(I7AF9   ) LENGTH(2)
                    1872  2027
    74    TUSTATUS   ADDRESS. HEX LOCATION(00001818) IN CSECT(I7AF9   ) LENGTH(1)
                    1842
    75    TUWORK     ADDRESS. HEX LOCATION(0000181A) IN CSECT(I7AF9   ) LENGTH(1)
                    1845  1846  1847  1849  1905
  2457    T023       ADDRESS. HEX LOCATION(00003146) IN CSECT(I7AF9   ) LENGTH(6)
                    2454
  2027    T7AAA      ADDRESS. HEX LOCATION(00002B6C) IN CSECT(I7AF9   ) LENGTH(4)
                     369
  2444    T701       ADDRESS. HEX LOCATION(0000310C) IN CSECT(I7AF9   ) LENGTH(6)
                    2230  2233
  2448    T702       ADDRESS. HEX LOCATION(00003122) IN CSECT(I7AF9   ) LENGTH(4)
                    2442
  2462    T703       ADDRESS. HEX LOCATION(00003162) IN CSECT(I7AF9   ) LENGTH(2)
                    2614  2629
  2471    T7033      ADDRESS. HEX LOCATION(0000317C) IN CSECT(I7AF9   ) LENGTH(6)
                    2468
  2472    T704       ADDRESS. HEX LOCATION(00003182) IN CSECT(I7AF9   ) LENGTH(4)
                    2463  2470  2486
  2483    T7044      ADDRESS. HEX LOCATION(000031A0) IN CSECT(I7AF9   ) LENGTH(4)
                    2479
  2476    T706       ADDRESS. HEX LOCATION(0000318C) IN CSECT(I7AF9   ) LENGTH(4)
                    2491
  2490    T7066      ADDRESS. HEX LOCATION(000031B2) IN CSECT(I7AF9   ) LENGTH(6)
                    2475
  2598    T709       ADDRESS. HEX LOCATION(00003358) IN CSECT(I7AF9   ) LENGTH(6)
                    2482  2484
  2615    T710       ADDRESS. HEX LOCATION(00003396) IN CSECT(I7AF9   ) LENGTH(2)
                    2599
  2617    T711       ADDRESS. HEX LOCATION(0000339A) IN CSECT(I7AF9   ) LENGTH(2)
                    2601  2603
  2604    T712       ADDRESS. HEX LOCATION(00003370) IN CSECT(I7AF9   ) LENGTH(2)
                    2616  2618
  2619    T713       ADDRESS. HEX LOCATION(0000339E) IN CSECT(I7AF9   ) LENGTH(2)
                    2605
  2606    T714       ADDRESS. HEX LOCATION(00003374) IN CSECT(I7AF9   ) LENGTH(6)
                    2623
  2626    T715       ADDRESS. HEX LOCATION(000033B0) IN CSECT(I7AF9   ) LENGTH(6)
                    2608
  2630    T716       ADDRESS. HEX LOCATION(000033C4) IN CSECT(I7AF9   ) LENGTH(2)
                    2610
  2613    T717       ADDRESS. HEX LOCATION(0000338C) IN CSECT(I7AF9   ) LENGTH(6)
                    2632
  2624    T718       ADDRESS. HEX LOCATION(000033A8) IN CSECT(I7AF9   ) LENGTH(6)
                    2620  2622
  2628    T719       ADDRESS. HEX LOCATION(000033BA) IN CSECT(I7AF9   ) LENGTH(6)
                    2631
  2607    T720       ADDRESS. HEX LOCATION(0000337A) IN CSECT(I7AF9   ) LENGTH(2)
                    2625
  2134    T99C       ADDRESS. HEX LOCATION(00002CD4) IN CSECT(I7AF9   ) LENGTH(6)
                    2124
  2740    T99K       ADDRESS. HEX LOCATION(0000350E) IN CSECT(I7AF9   ) LENGTH(4)
                    2123  2133
   714    VRDCB      ADDRESS. HEX LOCATION(0000269C) IN CSECT(I7AF9   ) LENGTH(2)
                     909  2191  2192  2195  2196  2197  2200  2206  2207
                    2210
  3004    WB2        ADDRESS. HEX LOCATION(000038F2) IN CSECT(I7AF9   ) LENGTH(4)
                    3006
   771    WDATA      ADDRESS. HEX LOCATION(000026F2) IN CSECT(I7AF9   ) LENGTH(2)
                    2999  3000  3001  3001  3004  3007
   736    WKDCB      ADDRESS. HEX LOCATION(000026BC) IN CSECT(I7AF9   ) LENGTH(2)
                     918  2127  2128  2129  2377  2564  2565  2566  2706
                    2707  2713  2724
  3016    WRBUF      ADDRESS. HEX LOCATION(00003914) IN CSECT(I7AF9   ) LENGTH(2)
                    2059  2312  2344  2937  2964  2965  2967  3003
  3017    WRBUF1     ADDRESS. HEX LOCATION(00003A14) IN CSECT(I7AF9   ) LENGTH(2)
                    2318  2351
   703    WRDCB      ADDRESS. HEX LOCATION(0000268C) IN CSECT(I7AF9   ) LENGTH(2)
                     912  2059  2297  2298  2303  2304  2344  2345  2350
                    2351  2576  2577  2578  2579  2581  2582  2587  2588
                    2591  2639  2643  2671  2901  2904  2906  2907  2909
                    2910  2911  2918  2932
  2898    WRRD       ADDRESS. HEX LOCATION(000037A0) IN CSECT(I7AF9   ) LENGTH(4)
                    2098
  2936    WRRD1      ADDRESS. HEX LOCATION(00003830) IN CSECT(I7AF9   ) LENGTH(4)
                    2869  2917  2922  2926  2931
  2904    WRRD4      ADDRESS. HEX LOCATION(000037BA) IN CSECT(I7AF9   ) LENGTH(6)
                    2900
  2906    WRRD5      ADDRESS. HEX LOCATION(000037C6) IN CSECT(I7AF9   ) LENGTH(6)
                    2903
   775    WRSID      ADDRESS. HEX LOCATION(000026FA) IN CSECT(I7AF9   ) LENGTH(2)
                     666   743  2108  2109  2117  2129  2139  2493  2496
                    2497  2498  2508  2509  2512  2513  2559  2561  2565
  2356    WRTWX      ADDRESS. HEX LOCATION(00002FEE) IN CSECT(I7AF9   ) LENGTH(4)
                    2343
  2343    WRTW2      ADDRESS. HEX LOCATION(00002FBE) IN CSECT(I7AF9   ) LENGTH(4)
                    2437
   659    WSDCB      ADDRESS. HEX LOCATION(0000264C) IN CSECT(I7AF9   ) LENGTH(2)
                     921  2114  2115  2116  2117  2494  2495  2496  2499
                    2556  2560  2561  2564  2697  2698  2699  2700  2712
                    2719  2721  2722
   466    XE         ABSOLUTE. HEX VALUE(00000024)
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CROSS-REFERENCE LISTING

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DECLARED  NAME      ATTRIBUTES AND REFERENCES
                    1674  1736
   464    XI         ABSOLUTE. HEX VALUE(00000022)
                    1578  1721
  1550    XIO        ADDRESS. HEX LOCATION(00002840) IN CSECT(I7AF9   ) LENGTH(4)
                     883   886   893   900   907   910   913   916   919
                     922   929
  1736    XIOCK      ADDRESS. HEX LOCATION(00002914) IN CSECT(I7AF9   ) LENGTH(2)
                    1588
  1743    XIOCO      ADDRESS. HEX LOCATION(00002926) IN CSECT(I7AF9   ) LENGTH(2)
                    1741
  1753    XIOCQ      ADDRESS. HEX LOCATION(0000293C) IN CSECT(I7AF9   ) LENGTH(4)
                    1750
  1558    XIOCS      ADDRESS. HEX LOCATION(00002852) IN CSECT(I7AF9   ) LENGTH(6)
                    1754  2071  2362
  1745    XIOCV      ADDRESS. HEX LOCATION(0000292A) IN CSECT(I7AF9   ) LENGTH(2)
                    1739
  1756    XIOCX      ADDRESS. HEX LOCATION(00002948) IN CSECT(I7AF9   ) LENGTH(4)
                    1746
  1629    XIOER      ADDRESS. HEX LOCATION(000028B2) IN CSECT(I7AF9   ) LENGTH(2)
                    1762
  1562    XIO1       ADDRESS. HEX LOCATION(00002862) IN CSECT(I7AF9   ) LENGTH(4)
                    1551  1554
  1575    XIO2       ADDRESS. HEX LOCATION(00002888) IN CSECT(I7AF9   ) LENGTH(2)
                    1561
  1587    XIO8       ADDRESS. HEX LOCATION(0000289E) IN CSECT(I7AF9   ) LENGTH(2)
                    1594
   768    ZERO0      ADDRESS. HEX LOCATION(000026EC) IN CSECT(I7AF9   ) LENGTH(2)
                    2490
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