```
 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                   COPYRIGHT IBM CORP 1976
                             3         COPY  LOG5001              ** MAP EC HISTORY **
                             4 ************************************************************************
                             5 *                                                                      *
                             6 *                     ***       PREREQUISITES       ***                *
                             7 *                                                                      *
                             8 *                                  NONE                                *
                             9 *                                                                      *
                            10 ************************************************************************
                            11 *                                                                      *
                            12 *                     ***       MODIFICATIONS       ***                *
                            13 *                                                                      *
                            14 *  MODIFICATION'S MADE TO CORRECT PROBLEMS ENCOUNTERED DURING TFSTING  *
                            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 010CT76  DATE 02DEC76  DATE 15MAR77  DATE 10JUN77      *
                            33 *          E.C. 578468   E.C. 578469   E.C. 578714   E.C. 578625       *
                            34 *                                                                      *
                            35 ************************************************************************
002500                      37 I5001    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
001800                      69 PID      EQU   *-X'0D00'          ADDRESS OF MDI HEADER
000232                      70 PTYPE    EQU   *-X'22CE'          ADDRESS OF PROCESSOR TYPE FIELD
00180C                      71 STEPNUM  EQU   PID+X'000C'        ADDRESS OF DECIMAL STEP NUMBER
00180E                      72 OPWD1    EQU   PID+X'000E'        ADDRESS OF OPTION WORD ONE
001810                      73 OPWD2    EQU   PID+X'0010'        ADDRESS OF OPTION WORD TWO
001818                      74 TUSTATUS EQU   PID+X'0018'        ADDRESS OF TU STATUS WORD
00181A                      75 TUWORK   EQU   PID+X'001A'        ADDRESS OF TU WORK AREA
00189A                      76 TUPARM1  EQU   PID+X'009A'        ADDRESS OF PARM 1 POINTER
00189C                      77 TUPARM2  EQU   PID+X'009C'        ADDRESS OF PARM 2 POINTER
00189E                      78 TUPARM3  EQU   PID+X'009E'        ADDRESS OF PARM 3 POINTER
0018A0                      79 TUPARM4  EQU   PID+X'00A0'        ADDRESS OF PARM 4 POINTER
0018A2                      80 TUPARM5  EQU   PID+X'00A2'        ADDRESS OF PARM 5 POINTER
0018A4                      81 TUPARM6  EQU   PID+X'00A4'        ADDRESS OF PARM 6 POINTER
0018A6                      82 TUPARM7  EQU   PID+X'00A6'        ADDRESS OF PARM 7 POINTER
0018A8                      83 TUPARM8  EQU   PID+X'00A8'        ADDRESS OF PARM 8 POINTER
0018AA                      84 TUPARM9  EQU   PID+X'00AA'        ADDRESS OF PARM 9 POINTER
0018AC                      85 TUPARM10 EQU   PID+X'00AC'        ADDRESS OF PARM 10 POINTER
0018AE                      86 TUPARM11 EQU   PID+X'00AE'        ADDRESS OF PARM 11 POINTER
0018B0                      87 TUPARM12 EQU   PID+X'00B0'        ADDRESS OF PARM 12 POINTER
0018B2                      88 TUPARM13 EQU   PID+X'00B2'        ADDRESS OF PARM 13 POINTER
0018B4                      89 TUPARM14 EQU   PID+X'00B4'        ADDRESS OF PARM 14 POINTER
0018B6                      90 TUPARM15 EQU   PID+X'00B6'        ADDRESS OF PARM 15 POINTER
0018B8                      91 TUPARM16 EQU   PID+X'00B8'        ADDRESS OF PARM 16 POINTER
0018BA                      92 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  2574               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       **
                           240 **                                                                    **
                           241 **        $CALL                                                       **
                           242 **              A) RULE EQUATE X'0201'                                **
                           243 **              B) ADDRESS OF MESSAGE                                 **
                           244 **              C) NAME OF MAP TO CALL                                **
                           245 **              D) ENTRY POINT WITHIN CALLED MAP TO USE               **
                           246 **              E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE       **
                           247 **                                                                    **
                           248 **        $INPT                                                       **
                           249 **              A) RULE EQUATE X'0300'                                **
                           250 **              B) INPUT TYPE (EBCDIC OR HEX)                         **
                           251 **              C) ADDRESS OF YES LEG RULE                            **
                           252 **              D) DESTINATION LOCATION OF INPUT DATA                 **
                           253 **              E) LENGTH OF INPUT DATA                               **
                           254 **              F) LOWER LIMIT OF GOOD DATA                           **
                           255 **              G) HIGHER LIMIT OF GOOD DATA                          **
                           256 **                                                                    **
                           257 **        $QUXX                                                       **
                           258 **              A) RULE EQUATE X'0400'                                **
                           259 **              B) ADDRESS OF YES LEG RULE                            **
                           260 **              C) TU BRANCH TO ADDRESS (INITIAL)                     **
                           261 **              D) TU BRANCH TO ADDRESS (SECONDARY)                   **
                           262 **              E) LENGTH OF PARAMETER IN BYTES                       **
                           263 **              F) PARAMETER TO PASS TO TU                            **
                           264 **              G) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER       **
                           265 **                                                                    **
                           266 **        $TUXX                                                       **
                           267 **              A) RULE EQUATE X'0500'                                **
                           268 **              B) ADDRESS OF YES LEG RULE                            **
                           269 **              C) TU BRANCH TO ADDRESS                               **
                           270 **              D) TYPE OF COMPARE TO MAKE ON RESULTS                 **
                           271 **              E) LENGTH OF COMPARED RESULTS                         **
                           272 **              F) MASK FIELD FOR COMPARE                             **
                           273 **              G) LENGTH OF PARAMETER IN BYTES                       **
                           274 **              H) PARAMETER TO PASS TO THE TU                        **
                           275 **              I) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER       **
                           276 **                                                                    **
                           277 **        $NVLD                                                       **
                           278 **              A) RULE EQUATE X'0600'                                **
                           279 **                                                                    **
                           280 **   ENTRY POINT TABLE                                                **
                           281 **        THIS TABLE CONTAINS THE ENTRY POINTS WITHIN THE MAP THAT     **
                           282 **        THE MAP CAN BE ENTERED FROM THESE ENTRY POINTS ARE           **
                           283 **        REFERENCED BY NAME AND ADDRESS. ENTRIES ARE AS FOLLOWES:     **
                           284 **                                                                    **
                           285 **            A) NAME OF ENTRY POINT                                  **
                           286 **            B) ADDRESS OF ENTRY POINT RULE TABLE                    **
                           287 **                                                                    **
                           288 **        THE ENTRY POINT TABLE END IS INDICATED BY A X'0000'         **
                           289 **                                                                    **
                           290 **   MESSAGE TABLE                                                    **
                           291 **        THIS TABLE CONTAINES THE MESSAGE PASSED TO THE OPERATOR      **
                           292 **        VIA THE MDI SUPERVISOR. THE TABLE IS AS FOLLOWES:           **
                           293 **                                                                    **
                           294 **            A) EQUATE FOR START OF MESSAGE BLOCK                    **
                           295 **            B) NUMBER OF LINES OF MESSAGE                           **
                           296 **            C) LENGTH OF FOLLOWING LINE                             **
                           297 **            D) FIRST LINE OF MESSAGE                                **
                           298 **            E) LENGTH OF FOLLOWING LINE                             **
                           299 **            F) SECOND LINE OF MESSAGE                               **
                           300 **            G) ETC.                                                 **
                           301 **                                                                    **
                           302 ************************************************************************
                           303 ************************************************************************
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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  2530               315          DC    AL2(N00001)
002504  0001               316          DC    XL2'0001'
000001                     317 EQN00001 EQU       0001
002506  2534               318          DC    AL2(N00002)
002508  0002               319          DC    XL2'0002'
000002                     320 EQN00002 EQU       0002
00250A  2540               321          DC    AL2(N00003)
00250C  0003               322          DC    XL2'0003'
000003                     323 EQN00003 EQU       0003
00250E  2552               324          DC    AL2(N00004)
002510  0004               325          DC    XL2'0004'
000004                     326 EQN00004 EQU       0004
002512  2556               327          DC    AL2(N00005)
002514  0005               328          DC    XL2'0005'
000005                     329 EQN00005 EQU       0005
002516  255A               330          DC    AL2(N00006)
002518  0006               331          DC    XL2'0006'
000006                     332 EQN00006 EQU       0006
00251A  255E               333          DC    AL2(N00007)
00251C  0007               334          DC    XL2'0007'
000007                     335 EQN00007 EQU       0007
00251E  2562               336          DC    AL2(N00008)
002520  0008               337          DC    XL2'0008'
000008                     338 EQN00008 EQU       0008
002522  2566               339          DC    AL2(N00009)
002524  0009               340          DC    XL2'0009'
000009                     341 EQN00009 EQU       0009
002526  256A               342          DC    AL2(N00010)
002528  0010               343          DC    XL2'0010'
00000A                     344 EQN00010 EQU       0010
00252A  256E               345          DC    AL2(N00011)
00252C  0011               346          DC    XL2'0011'
00000B                     347 EQN00011 EQU       0011
00252E  0000               348          DC    AL2(DUMMY)
                           349 ***************************************************************************
                           350 ***************************************************************************
                           351 **                                                                       **
                           352 **                          RULE INFORMATION TABLE                       **
                           353 **                                                                       **
                           354 ***************************************************************************
                           355 ***************************************************************************
                           356 N00001   $QUES QT=(Q00080),YES=N00003,CT=(C00060,C00061,C00063),       X
002530  0100               357+N00001   DC    A(@QUES)
002532  2540               358+         DC    AL2(N00003)
                           359 N00002   $GOTO TYPE=INTRNL,EP=EA,FT=(F00082),GTO=(N00001)
002534  0200               360+N00002   DC    A(@GOTO)
002536  257A               361+         DC    A(F00082)
002538  F3C3F0F0           362+         DC    CL4'3C00'
00253C  C5C1               363+         DC    CL2'EA'
00253E  0000               364+         DC    AL2(INTRNL)
                           365 N00003   $TUXX T5001,02,0000,EQ,QT=(Q00095),YES=N00011,CT=(C00084),    X
002540  0500               366+N00003   DC    A(@TUXX)
002542  256E               367+         DC    AL2(N00011)
002544  25F2               368+         DC    A(T5001)
002546  0000               369+         DC    AL2(EQ)
002548  0002               370+         DC    AL2(02)
00254A  0000               371+         DC    X'0000'
                           372+         ALIGN WORD
00254C  0000               373+         DC    AL2(0)
00254E  C1C1               374+         DC    C'AA'
                           375+         ALIGN WORD
002550  196E               376+         DC     AL2(PARMARA)
                           377 N00004   $QUES QT=(Q00098,S00101),YES=N00006,CT=(C00097)
002552  0100               378+N00004   DC    A(@QUES)
002554  255A               379+         DC    AL2(N00006)
                           380 N00005   $FIXT FT=(F00104),GTO=((1470,A))
002556  0101               381+N00005   DC    A(@FIXT)
002558  2580               382+         DC    A(F00104)
                           383 N00006   $QUES QT=(Q00113),YES=N00008,CT=(C00112)
00255A  0100               384+N00006   DC    A(@QUES)
00255C  2562               385+         DC    AL2(N00008)
                           386 N00007   $FIXT FT=(F00115),CT=(C00116)
00255E  0101               387+N00007   DC    A(@FIXT)
002560  2598               388+         DC    A(F00115)
                           389 N00008   $QUES QT=(Q00119,S00122),YES=N00010,CT=(C00118)
002562  0100               390+N00008   DC    A(@QUES)
002564  256A               391+         DC    AL2(N00010)
                           392 N00009   $FIXT FT=(F00125),CT=(C00126)
002566  0101               393+N00009   DC    A(@FIXT)
002568  25A6               394+         DC    A(F00125)
                           395 N00010   $FIXT FT=(F00107),CT=(C00108)
00256A  0101               396+N00010   DC    A(@FIXT)
00256C  25C4               397+         DC    A(F00107)
                           398 N00011   $STOP FT=(F00110)
00256E  0102               399+N00011   DC    A(@STOP)
002570  25DC               400+         DC    A(F00110)
002572  0000               401          DC    AL2(DUMMY)
002574                     402 ENTPT    EQU   *
                           403 ***************************************************************************
                           404 ***************************************************************************
                           405 **                                                                       **
                           406 **                           ENTRY POINT TABLE                           **
                           407 **                                                                       **
                           408 ***************************************************************************
                           409 ***************************************************************************
                           410          ENTPT EP=A,STEP=00001
002574  C140               411+         DC    CL2'A'
002576  2530               412+         DC    A(N00001)
002578  0000               413          DC    AL2(DUMMY)
                           414 ***************************************************************************
                           415 ***************************************************************************
                           416 **                                                                       **
                           417 **                            MESSAGE TABLE                              **
                           418 **                                                                       **
                           419 ***************************************************************************
                           420 ***************************************************************************
00257A                     421 F00082   EQU   *
00257A  0001               422          DC    AL2(0001)
00257C  0002               423          DC    A(0002)
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
00257E  4040               424          DC    CL0002' '
002580                     425 F00104   EQU   *
002580  0001               426          DC    AL2(0001)
002582  0014               427          DC    A(0020)
002584  C7D640E3D640E3C8C  428          DC    CL0020'GO TO THE POWER MAP.'
002598                     429 F00115   EQU   *
002598  0001               430          DC    AL2(0001)
00259A  000A               431          DC    A(0010)
00259C  E2C5C1E340C3C1D9C  432          DC    CL0010'SEAT CARD.'
0025A6                     433 F00125   EQU   *
0025A6  0001               434          DC    AL2(0001)
0025A8  001A               435          DC    A(0026)
0025AA  C9D5E2E3C1D3D340D  436          DC    CL0026'INSTALL JUMPERS CORRECTLY.'
0025C4                     437 F00107   EQU   *
0025C4  0001               438          DC    AL2(0001)
0025C6  0014               439          DC    A(0020)
0025C8  D9C5D7D3C1C3C540E  440          DC    CL0020'REPLACE TIMER CARD. '
0025DC                     441 F00110   EQU   *
0025DC  0001               442          DC    AL2(0001)
0025DE  0012               443          DC    A(0018)
0025E0  C7D6D6C440C5D5C44  444          DC    CL0018'GOOD END THIS MAP.'
                           445          COPY  COMEQU
                           446 ***************************************************************************
                           447 *                                                                         *
                           448 *                 EQUATED NAMES FOR SUPPORTED SVC'S                       *
                           449 *                                                                         *
                           450 ***************************************************************************
000000                     451 OUT    EQU   0                    OUT SVC
000001                     452 OUTIN  EQU   1                    OUTIN SVC
000002                     453 IDLE   EQU   2                    IDLE SVC
000003                     454 ASCII  EQU   3                    HEX TO ASCII SVC
000004                     455 CHNGE  EQU   4                    CHANGE LEVEL SVC
000005                     456 PGMCK  EQU   5                    ALLOW RETURN ON PROGRAM CHECK SVC
000006                     457 EXIT   EQU   6                    EXIT SVC
000007                     458 TERM   EQU   7                    TERMINATE SVC
000008                     459 RESET  EQU   8                    RESET DEVICE SVC
000009                     460 RID    EQU   9                    READ ID SVC
00000A                     461 START  EQU   10                   START CYCLE STEAL SVC
00000B                     462 STCSS  EQU   11                   START CYCLE STEAL STATUS SVC
00000C                     463 PREP   EQU   12                   PREPARE DEVICE SVC
00000D                     464 READO  EQU   13                   READ WITH FUNCTION BIT 3 OFF SVC
00000E                     465 READ1  EQU   14                   READ WITH FUNCTION BIT 3 ON SVC
00000F                     466 RSTAT  EQU   15                   READ STATUS SVC
000010                     467 WRITO  EQU   16                   WRITE WITH FUNCTION BIT 3 OFF SVC
000011                     468 WRIT1  EQU   17                   WRITE WITH FUNCTION BIT 3 ON SVC
000012                     469 CTRL   EQU   18                   CONTROL SVC
000013                     470 RICB   EQU   19                   RELEASE INTERUPT CONTROL BLOCK SVC
000014                     471 CICB   EQU   20                   CONNECT INTERUPT CONTROL BLOCK SVC
000015                     472 HIO    EQU   21                   HALT ALL I/O
000016                     473 REQSD  EQU   22                   REQUEST USE OF DCP DISK SVC
000017                     474 RELSD  EQU   23                   RELEASE USE OF DCP DISK SVC
000018                     475 HALT   EQU   24                   HALT SVC
000019                     476 ETOH   EQU   25                   EBCDIC TO HEX SVC (STRING)
00001A                     477 HTOE   EQU   26                   HEX TO EBCDIC SVC (STRING)
00001B                     478 ATOH   EQU   27                   ASCII TO HEX SVC (STRING)
00001C                     479 HTOA   EQU   28                   HEX TO ASCII SVC (STRING)
00001D                     480 ETOA   EQU   29                   EBCDIC TO ASCII SVC (STRING)
00001E                     481 ATOE   EQU   30                   ASCII TO EBCDIC SVC (STRING)
00001F                     482 READI  EQU   31                   READ DATA SETS FOR MDI/UTIL
000020                     483 WRITI  EQU   32                   WRITE DATA SETS FOR UTIL
                           484 ***************************************************************************
                           485 *                                                                         *
                           486 *                 EQUATES USED BY TU'S AS CONSTANTS                       *
                           487 *                                                                         *
                           488 ***************************************************************************
000004E                    489 PLUS   EQU   C'+'                  PLUS CHAR
000060                     490 MINUS  EQU   C'-'                  MINUS CHAR
000000                     491 ZERO   EQU   0
000001                     492 ONE    EQU   1
000002                     493 TWO    EQU   2
000003                     494 THREE  EQU   3
000004                     495 FOUR   EQU   4
000005                     496 FIVE   EQU   5
000006                     497 SIX    EQU   6
000007                     498 SEVEN  EQU   7
000008                     499 EIGHT  EQU   8
000009                     500 NINE   EQU   9
00000A                     501 TEN    EQU   10
00000B                     502 ELEVN  EQU   11                   11
00000C                     503 TWELV  EQU   12                   12
00000D                     504 THRTN  EQU   13                   13
00000F                     505 FIVTN  EQU   15                   15
000010                     506 SIXTN  EQU   16                   16
000020                     507 THRY2  EQU   32                   32
000040                     508 SIXTY  EQU   64                   64
000080                     509 ONE28  EQU   128                  128
000100                     510 TWO56  EQU   256                  256
000400                     511 ONEK   EQU   1024                 1024
000800                     512 TWOK   EQU   2048                 2048
000C00                     513 THREK  EQU   3072                 3072
001000                     514 FOURK  EQU   4096                 4096
FFFFFF                     515 M1     EQU   -1                   -1
FFFFFE                     516 M2     EQU   -2                   -2
FFFFFD                     517 M3     EQU   -3                   -3
FFFFFC                     518 M4     EQU   -4                   -4
                           519 ***************************************************************************
                           520 *                                                                         *
                           521 *     THE FOLLOWING ARE EQUATES FOR BIT DISPLACEMENTS FROM THE            *
                           522 *     BEGINNING OF THE BYTE TO EACH BIT IN THE WORD OF SWITCHES.          *
                           523 *                                                                         *
                           524 ***************************************************************************
000000                     525 BS0    EQU   0
000001                     526 BS1    EQU   1
000002                     527 BS2    EQU   2
000003                     528 BS3    EQU   3
000004                     529 BS4    EQU   4
000005                     530 BS5    EQU   5
000006                     531 BS6    EQU   6
000007                     532 BS7    EQU   7
000008                     533 BS8    EQU   8
000009                     534 BS9    EQU   9
00000A                     535 BS10   EQU   10
00000B                     536 BS11   EQU   11
00000C                     537 BS12   EQU   12
00000D                     538 BS13   EQU   13
00000E                     539 BS14   EQU   14
```

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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
00000F                     544 BS15  EQU   15
                           546       COPY  T5001
0025F2                     547 T5001 EQU   *
                           548 ************************************************************
                           549 ************************************************************
                           550 **                                                        **
                           551 **          T I M E R   D I A G N O S T I C               **
                           552 **      (EXTERNAL CLOCK AND EXTERNAL GATE TEST)           **
                           553 **                                                        **
                           554 **                                                        **
                           555 **    THIS DIAGNOSTIC TESTS THE FUNCTIONS OF              **
                           556 **    EXTERNAL CLOCK AND EXTERNAL GATE. THE WRAP          **
                           557 **    CONNECTOR MUST BE INSTALLED BEFORE THIS TEST        **
                           558 **    IS EXECUTED.                                        **
                           559 **                                                        **
                           560 **    WHEN AN ERROR IS DETECTED, INSTRUCTIONS ARE         **
                           561 **    GIVEN TO REPLACE THE TIMER ATTACHMENT. A PRINT-     **
                           562 **    GIVING THE FAILING INTERNAL ROUTINE/CHECKPOINT,     **
                           563 **    THE ADDRESS+4 BYTES IN THE PROGRAM WHERE THE        **
                           564 **    ERROR WAS DETECTED, AND THE STATUS WORD IS          **
                           565 **    PRINTED.                                            **
                           566 **          THE STATUS WORD BITS SIGNIFIGANCE ARE-        **
                           567 **          BIT-00 TEST STARTED - TURNED ON AT            **
                           568 **                 BEGINNING, AND OFF AT END OF TEST.     **
                           569 **          BIT-14 AN UNEXPECTED TIMER INTERRUPT          **
                           570 **                 OCCURED.                               **
                           571 **          BIT-15 ANY ERROR OCCURED BIT                  **
                           572 **                                                        **
                           573 ************************************************************
                           574 ************************************************************
0025F2  6802 2C32          576       B     T0
                           577 *
                           578 *
                           579 ************************************************************
                           580 * NAME-             DELAY SUBROUTINE
                           581 *
                           582 * PURPOSE-          PROVIDE ANY NUMBER OF 1- USEC DELAYS
                           583 *                   BEFORE RETURNING TO THE CALLER. 'DEL1'
                           584 *                   CAN BE CHECKED ANYTIME FROM A HIGHER
                           585 *                   LEVEL TO DETERMINE WHAT THE REMAINING
                           586 *                   COUNT IS.
                           587 *
                           588 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDR.
                           589 *                   R5 MUST CONTAIN THE HEX NUMBER OF 10
                           590 *                   MICROSEC. DELAYS (MINUS 1).
                           591 *
                           592 * RETURN-           AT RETURN NO REGISTERS WILL HAVE BEEN
                           593 *                   MODIFIED.
                           594 ************************************************************
0025F6                     595 DEL   EQU   *
0025F6  6D0D 260E          596       MVW   R5,DEL1                 SET COUNT IN STORAGE
0025FA  6E0D 2606          597       MVW   R6,DEL2+2               SET UP RETURN
0025FE  4029 260E FFFF     598 DELX  AWI   -1,DEL1                 **
002604  6800 0000          599 DEL2  BZ    *-*                     RETURN    *  10 USEC-
002608  5000               600       NOP   ,                       *    PER-
00260A  5000               601       NOP   ,                       *  PASS.
00260C  50F8               602       J     DELX                    LOOP      **
00260E  0000               603 DEL1  DC    A(*-*)
002610  0000               604 SI    DC    A(*-*)
                           605 ************************************************************
                           606 * NAME-       MACHINE CHECK SUBROUTINE
                           607 *
                           608 * PURPOSE-    TO FIELD MACHINE CHECKS WHEN THEY OCCUR,
                           609 *             TERMINATE THE PROGRAM, PRINT A MESSAGE, AND
                           610 *             RETURN TO THE DCP.
                           611 *
                           612 * CALLING SEQUENCE- VIA MACHINE CHECK XFER VECTOR.
                           613 *
                           614 * RETURN-     EVENTUALLY TO THE DCP.
                           615 ************************************************************
002612                     616 MK    EQU   *
002612  6301               617       DIS   1                       DISABLE INTERRIPTS
002614  582F 267A          618       CPPSR SVPSW                   PUT PSW IN STORAGE
002618  8838 0008 2746     619       MVW   X'0008'*,EA             SET UP ER ADDR FOR INTER SUBR
00261E  6F03 26EA          620       BAL   INTER,R7                PRINT INTERNAL RTN/CKPT MSSG
002622  8828 267A 2792     621       MVW   SVPSW,BADDR             SET UP TO CONVERT SAVED PSW
002628  6A08 2792          622       MVW   BADDR,R2                PUT PSW IN R2
00262C  4020 279A 2796     623       MVA   DADDR,PARM3             PUT DATA ADDR IN CNTL BLK
002632  4724 2798          624       MVA   PARM2,R7                PUT CNTL BLK ADDR IN R7
002636  601A               625       SVC   HTOE                    HEX TO EBCDIC
002638  9028 2792 27BE     626       MVD   BADDR,PSW               PUT EBCDIC PSW IN MSSG
                           627 *
00263E  6808 180A          628       MVW   PID+10,R0               PUT STEP NUMBER IN R0
002642  4020 279A 180A     629       MVA   PID+10,PARM3            PUT DATA ADDR IN CNTL BLK
002648  601A               630       SVC   HTOE                    HEX TO EBCDIC
00264A  9028 2792 27AA     631       MVD   BADDR,RTN               PUT EBCDIC RTN IN MSSG
                           632 *
002650  6908 180C          633       MVW   PID+12,R1               PUT ADDR. & TYPE CODE IN R1
002654  4020 279A 180C     634       MVA   PID+12,PARM3            PUT DATA ADDR IN CNTL BLK
00265A  601A               635       SVC   HTOE                    HEX TO EBCDIC
00265C  9028 2792 27B4     636       MVD   BADDR,CKPT              PUT EBCDIC RTN IN MSSG
                           637 *
002662  6B08 2746          638       MVW   EA,R3                   PUT SAVED IAR IN R3
002666  9028 276C 27C8     639       MVD   EEA,IAR                 PUT EBCDIC IAR IN MSSG
                           640 *
                           641 *
00266C  4724 2790          642       MVA   PARM1,R7                GET CNTL BLK ADDR
002670  6C08 2610          643       MVW   SI,R4                   PUT ADDR OF LAST IDCB USED IN R4
002674  6000               644       SVC   OUT                     PRINT MESSAGE
002676  6802 26C6          645       B     EEND
00267A  0000               646 SVPSW DC    A(*-*)
                           647 ************************************************************
                           648 * NAME-       ENDING SUBROUTINES
                           649 *
                           650 * PURPOSE-    END PROGRAM EXECUTION WHEN GOOD RUNS AND
                           651 *             ERRORS OCCUR.
                           652 *
                           653 * CALLING SEQUENCE- BRANCH TO THE CORRECT LABELS.
                           654 *
                           655 * RETURN-     TO THE DCP.
                           656 ************************************************************
00267C                     657 BBB   EQU   *
00267C  6301               658       DIS   1                       DISABLE INTERRUPTS
00267E  402C 18C8 0001     659       OWI   1,TURESUL               SET ERROR CONDITION FOR MDI
002684  680C 290C          660       IO    RS0                     RESET EVEN TIMER
002688  680C 2910          661       IO    RS1                     RESET ODD TIMER
```



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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
00268C  6F03 27D0          662       BAL   OFF,R7                  GET TO LVL 3
002690  6F03 26EA          663       BAL   INTER,R7                PRINT INTERNAL RTN/CKPT NUMBER
                           664 *                                   THE ADDRESS THAT ERROR OCCURED
                           665 *                                   AT, AND THE STATUS WORD-
                           666 *                                   BIT 0= TEST STARTED BIT
                           667 *                                   BIT 14= UNEXPECTED TIMER INT
                           668 *                                   BIT 15= ERROR OCCURED BIT
002694  5018               669       J     EEND
                           670 *
                           671 * GOOD END ROUTINE
                           672 *
002696                     673 GEND  EQU   *
002696  6301               674       DIS   1
002698  6F03 27D0          675       BAL   OFF,R7                  GET TO LVL 3
00269C  4020 18C8 0000     676       MVWI  0,TURESUL               SET STATUS WORD TO 0
0026A2                     677 CEND  EQU   *
0026A2  6908 2A86          678       MVW   SAVA,R1                 GET XFER VECTOR ADDRESS
0026A6  9060 2780          679       MVD   SDCP,(R1)               RESTORE DCP XFER VECTORS
0026AA  8828 278C 000A     680       MVW   SAVA1,X'000A'           RESTORE DCP MCK RTN ADDR
0026B0  6201               681       EN    1
0026B2  4020 2B66 26C4     682       MVA   CEND1,LLSB              GO TO LVL 0 AND THEN LEX VIA SVC -
0026B8  4724 0000          683       MVWI  0,R7                    EXIT SO THAT THE DCP DOESNT GET -
0026BC  5F26 2B66          684       SELB  R7,LLSB                 MESSED UP.
                           685 *
0026C0  6802 0000          686 GOBCK B     *-*                     RETURN TO DCP ON LEVEL 3
0026C4  6006               687 CEND1 SVC   EXIT                    EXIT LEVEL 0, DROP TO LEVEL 3
                           688 * ERROR END ROUTINE - TURN ON ERROR BITS IN STATUS WORD
                           689 * BEFORE COMING HERE.
                           690 *
0026C6                     691 EEND  EQU   *
0026C6  6908 18C8          692       MVW   TURESUL,R1              GET STATUS WORD
0026CA  7920 7FFF          693       NWI   X'7FFF',R1              TURN OFF TEST STARTED BIT
0026CE  690D 18C8          694       MVW   R1,TURESUL              PUT STATUS WORD BACK
0026D2  50E7               695       J     CEND
                           696 *
0026D4                     697 ERTN  EQU   *
0026D4  4020 2746 26D4     698       MVA   ERTN,EA                 SET ADDR TO BE PRINTED
0026DA  5003               699       J     UNSET
0026DC                     700 ORTN  EQU   *
0026DC  4020 2746 26DC     701       MVA   ORTN,EA                 SET ADDR TO BE PRINTED
0026E2  402C 18C8 0002     702 UNSET OWI   X'0002',TURESUL         SET UNEX INT BIT IN STAT WD
0026E8  50C9               703       J     BBB
                           704 *
                           705 *
0026EA                     706 INTER EQU   *
0026EA  6F0D 2744          707       MVW   R7,RINTE+2              SET UP RETURN
0026EE  4020 279A 2748     708       MVA   IRTN,PARM3              PUT DATA ADDR IN CNTL BLK
0026F4  4724 2798          709       MVA   PARM2,R7                PUT ADDR OF CNTL BLK IN R7
0026F8  601A               710       SVC   HTOE                    HEX TO EBCDIC
0026FA  9028 2792 275E     711       MVD   BADDR,IRC               PUT EBCDIC DATA IN MSSG
002700  4020 279A 2746     712       MVA   EA,PARM3                PUT DATA ADDR IN CNTL BLOCK
002706  601A               713       SVC   HTOE                    HEX TO EBCDIC
002708  9028 2792 276C     714       MVD   BADDR,EEA               PUT EBCDIC DATA IN MSSG
00270E  4020 279A 18C8     715       MVA   TURESUL,PARM3           PUT DATA ADDR IN CNTL BLOCK
002714  601A               716       SVC   HTOE                    HEX TO EBCDIC
002716  9028 2792 277A     717       MVD   BADDR,STAT              PUT EBCDIC DATA IN MSSG
00271C  4724 27CE          718       MVA   RCMSG,R7
002720  4424 180E          719       MVA   OPWD1,R4
002724  4C05               720       TBT   (R4,5)
002726  120D               721       JN    RINTE                   JUMP IF NO PRINT IS ON
002728  6C08 2748          722       MVW   IRTN,R4                 PUT INTERNAL RTN/CKPT IN R4
00272C  6B08 2746          723       MVW   EA,R3                   * REG 3 HAS THE ADDRESS THAT THE-
002730  7B61 FFFC          724       AWI   -4,R3                   * ERROR WAS DETECTED AT.
002734  4224 0000          725       MVWI  0,R2                    ZERO R2
002738  6908 180C          726       MVW   PID+12,R1               PUT ADDR. & TYPE CODE IN R1
00273C  6808 180A          727       MVW   PID+10,R0               PUT STEP NUMBER IN R0
002740  6000               728       SVC   OUT                     PRINT MESSAGE
002742  6802 0000          729 RINTE B     *-*
                           730 *
002746  0000               731 EA    DC    A(*-*)
002748  0000               732 IRTN  DC    A(*-*)
002749                     733 ICKPT EQU   IRTN+1
00274A  0000               734       DC    A(*-*)
00274C  C9D5E3C5D9D5C1D34  735 RCMS  DC    C'INTERNAL RTN/CKPT='
00275E  00000000           736 IRC   DC    2A(*-*)
002762  6B40C5D940C1C4C4D  737       DC    C', ER ADDR='
00276C  00000000           738 EEA   DC    2A(*-*)
002770  6B40E2E3C1E340E6C  739       DC    C', STAT WD='
00277A  00000000           740 STAT  DC    2A(*-*)
00277E  0000               741       DC    X'0000'
                           742 *
002780  00000000           743 SDCP  DC    2A(*-*)                 DCP XFER VECTOR SAVE AREA
002784  2788               744 DUMVE DC    A(IDCB)
002786  278A               745       DC    A(IDCB+2)
                           746 *
002788  26D4               747 IDCB  DC    A(ERTN)                 EVEN DDB
00278A  26DC               748       DC    A(ORTN)                 ODD DDB
                           749 *
00278C  0000               750 SAVA1 DC    A(*-*)
00278E  00C0               751       DC    X'00C0'
002790  27A0               752 PARM1 DC    A(MKMSG)
002792  00000000           753 BADDR DC    2A(*-*)
002796  0000               754 DADDR DC    A(*-*)
002798  0002               755 PARM2 DC    A(2)
00279A  0000               756 PARM3 DC    A(*-*)
00279C  2792               757 PARM4 DC    A(BADDR)
00279E  3803               758       DC    X'3803'
0027A0  D4C3D2406040D4C1D  759 MKMSG DC    C'MCK - MAP='
0027AA  00000000           760 RTN   DC    2A(*-*)
0027AE  40E2E3C5D77E       761       DC    C' STEP='
0027B4  00000000           762 CKPT  DC    2A(*-*)
0027B8  4040D7E2E67E       763       DC    C'  PSW='
0027BE  00000000           764 PSW   DC    2A(*-*)
0027C2  4040C9C1D97E       765       DC    C'  IAR='
0027C8  00000000           766 IAR   DC    2A(*-*)
0027CC  0000               767       DC    X'0000'
0027CE  274C               768 RCMSG DC    A(RCMS)
                           769 *
                           770 ************************************************************
                           771 * NAME-       GO TO LEVEL 3 SUBROUTINE
                           772 *
                           773 * PURPOSE-    GET CPU ON LEVEL 3.
                           774 *
                           775 * CALLING SEQUENCE-R7 MUST CONTAIN RETURN ADDRESS.
                           776 *
                           777 * RETURN-     TO ADDRESS CONTAINED IN R7.
```

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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                            781 ************************************************************
0027D0                      782 OFF    EQU   *
0027D0  6F0D 27F6           783        MVW   R7,OFFR+2             SET UP RETURN
0027D4  4020 2B66 27F4      784        MVA   OFFR,LLSB             SET IARB
0027DA  4724 0003           785        MVWI  3,R7
0027DE  5F26 2B66           786        SELB  R7,LLSB               SET LVL 3 PENDING
0027E2  4724 0002           787        MVWI  2,R7
0027E6  5F26 2B6C           788        SELB  R7,DLLSB              TURN OFF LVL 2
0027EA  4724 0001           789        MVWI  1,R7
0027EE  5F26 2B6C           790        SELB  R7,DLLSB              TURN OFF LVL 1
0027F2  6100                791        LEX                         EXIT LVL 0
0027F4  6802 0000           792 OFFR   B     *-*                   RETURN
                            793 ************************************************************
                            794 * NAME-      GO TO LVL 0 SUBROUTINE
                            795 *
                            796 * PURPOSE-   GET CPU ON LEVEL 0.
                            797 *
                            798 * CALLING SEQUENCE-R7 MUST CONTAIN RETURN ADDRESS.
                            799 *
                            800 * RETURN-    TO ADDRESS CONTAINED IN R7.
                            801 ************************************************************
0027F8                      802 LV0    EQU   *
0027F8  6F0D 2824           803        MVW   R7,LV0R+2             SET UP RETURN
0027FC  4020 2B66 280A      804        MVA   LV0A,LLSB             SET IARB
002802  4724 0000           805        MVWI  0,R7
002806  5F26 2B66           806        SELB  R7,LLSB               GO TO LVL 0
00280A  4724 0001           807 LV0A   MVWI  1,R7
00280E  5F26 2B6C           808        SELB  R7,DLLSB              TURN OFF LVL 1
002812  4724 0002           809        MVWI  2,R7
002816  5F26 2B6C           810        SELB  R7,DLLSB              TURN OFF LVL 2
00281A  4724 0003           811        MVWI  3,R7
00281E  5F26 2B6C           812        SELB  R7,DLLSB              TURN OFF LVL 3
002822  6802 0000           813 LV0R   B     *-*                   RETURN
                            814 ************************************************************
                            815 * NAME-              START TIMER PERIODIC SUBROUTINE
                            816 *
                            817 * PURPOSE-           ISSUE START TIMER PERIODIC OIOS.
                            818 *
                            819 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDR.
                            820 *                    USE ENTRY POINT 'STPE0' FOR EVEN TIMER
                            821 *                    AND 'STPE1' FOR ODD TIMER.
                            822 *
                            823 * RETURN-            OCCURS ONLY IF CC7 RESULTS FROM IO CMMD.
                            824 ************************************************************
002826                      825 STPE0  EQU   *
002826  4020 2610 284E      826        MVA   IDCB0,SI
00282C  680C 284E           827        IO    IDCB0                 START IO
002830  6F04 284A           828        BCC   7,PERTN
002834  6F03 2A1A           829        BAL   E,R7                  BAD C.C.
002838                      830 STPE1  EQU   *
002838  4020 2610 2852      831        MVA   IDCB1,SI
00283E  680C 2852           832        IO    IDCB1                 START IO
002842  6F04 284A           833        BCC   7,PERTN
002846  6F03 2A1A           834        BAL   E,R7                  BAD C.C.
00284A  68C2 0000           835 PERTN  B     (R6)                  RETURN
                            836 *
00284E  6600                837 IDCB0  DC    X'6600'               START PERIODIC IDCB
002850  0000                838        DC    A(*-*)
002852  6600                839 IDCB1  DC    X'6600'               START PERIODIC IDCB
002854  0000                840        DC    A(*-*)
                            841 ************************************************************
                            842 *
                            843 * NAME-              SET DEVICE ADDRESS SUBROUTINE
                            844 *
                            845 * PURPOSE-           SET UP ALL TIMER DDBS USED IN PROGRAM
                            846 *                    WITH THE TIMER DEVICE ADDRESSES.
                            847 *
                            848 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                            849 *                    R5 MUST CONTAIN THE RIGHT JUSTIFIED
                            850 *                    EVEN TIMER DEVICE ADDRESS.
                            851 *
                            852 * RETURN-            TO ADDRESS CONTAINED IN R6.
                            853 ************************************************************
002856                      854 SETT   EQU   *
002856  C528 28DD           855        MVB   R5,STO+1
00285A  C528 290D           856        MVB   R5,RS0+1
00285E  C528 2949           857        MVB   R5,RV0+1
002862  C528 2985           858        MVB   R5,RM0+1
002866  C528 29BD           859        MVB   R5,RD0+1
00286A  C528 29F5           860        MVB   R5,SETV0+1
00286E  C528 2A17           861        MVB   R5,IPREP+1
002872  C528 2A37           862        MVB   R5,STAP+1
002876  C528 2A83           863        MVB   R5,ID0+1
00287A  C528 284F           864        MVB   R5,IDCB0+1
                            865 *
00287E  7DA1 0001           866        AWI   1,R5                  SET R5 TO THE ODD ADDR
002882  C528 28E1           867        MVB   R5,ST1+1
002886  C528 2911           868        MVB   R5,RS1+1
00288A  C528 294D           869        MVB   R5,RV1+1
00288E  C528 2989           870        MVB   R5,RM1+1
002892  C528 29C1           871        MVB   R5,RD1+1
002896  C528 29F9           872        MVB   R5,SETV1+1
00289A  C528 2A3B           873        MVB   R5,STP+1
00289E  C528 2A85           874        MVB   R5,ID1+1
0028A2  C528 2853           875        MVB   R5,IDCB1+1
                            876 * ADD     MVB INSTS. AS REQUIRED
0028A6  68C2 0000           877        B     (R6)                  RETURN
                            878 *
0028AA  2000                879 F10    DC    X'2000'               READ ID IDCB
0028AC  0000                880 F11    DC    A(*-*)                ID ENDS UP HERE
0028AE  0028                881 F12    DC    X'0028'               S/B TIMER ID
0028B0  FF00                882 XFF00  DC    X'FF00'
0028B2  FFFF                883 ZFFFF  DC    X'FFFF'
                            884 ************************************************************
                            885 * NAME=              STOP SUBROUTINE
                            886 *
                            887 * PURPOSE-           ISSUE STOP COMMANDS TO TIMERS.
                            888 *
                            889 * CALLING SEQUENCE-R6 MUST CONTAIN RETURN ADDRESS.
                            890 *                    USE ENTRY POINT 'STOP0' FOR EVEN,
                            891 *                    AND 'STOP1' FOR ODD.
                            892 *
                            893 * RETURN-            TO ADDRESS CONTAINED IN R6.
                            894 ************************************************************
0028B4                      895 STOP0  EQU   *
0028B4  4020 2610 28DC      896        MVA   STO,SI
```



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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
0028BA  680C 28DC           897        IO    STO                   STOP TIMER
0028BE  6F04 28D8           898        BCC   7,STOPR
0028C2  6F03 2A1A           899        BAL   E,R7                  BAD C.C.
0028C6                      900 STOP1  EQU   *
0028C6  4020 2610 28E0      901        MVA   ST1,SI
0028CC  680C 28E0           902        IO    ST1                   STOP TIMER
0028D0  6F04 28D8           903        BCC   7,STOPR
0028D4  6F03 2A1A           904        BAL   E,R7                  BAD CC
0028D8  68C2 0000           905 STOPR  B     (R6)                  RETURN
                            906 *
0028DC  6E00                907 STO    DC    X'6E00'               EVEN ADDR STOP IDCB
0028DE  0000                908        DC    A(*-*)
0028E0  6E00                909 ST1    DC    X'6E00'
0028E2  0000                910        DC    A(*-*)
                            911 ************************************************************
                            912 * NAME-              DEVICE RESET ROUTINE
                            913 *
                            914 * PURPOSE-           ISSUE RESET COMMANDS TO TIMERS.
                            915 *
                            916 * CALLING SEQUENCE-R6 MUST CONTAIN RETURN ADDRESS.
                            917 *                    USE ENTRY POINT 'RSET0' FOR EVEN,
                            918 *                    AND 'RSET1' FOR ODD.
                            919 *
                            920 * RETURN-            TO ADDRESS CONTAINED IN R6.
                            921 ************************************************************
0028E4                      922 RSET0  EQU   *
0028E4  4020 2610 290C      923        MVA   RS0,SI
0028EA  680C 290C           924        IO    RS0                   RESET TIMER
0028EE  6F04 2908           925        BCC   7,RSETR
0028F2  6F03 2A1A           926        BAL   E,R7                  BAD CC
0028F6                      927 RSET1  EQU   *
0028F6  4020 2610 2910      928        MVA   RS1,SI
0028FC  680C 2910           929        IO    RS1                   RESET TIMER
002900  6F04 2908           930        BCC   7,RSETR
002904  6F03 2A1A           931        BAL   E,R7                  BAD CC
002908  68C2 0000           932 RSETR  B     (R6)                  RETURN
                            933 *
00290C  6F00                934 RS0    DC    X'6F00'               RESET EVEN TMR IDCB
00290E  0000                935        DC    A(*-*)
002910  6F00                936 RS1    DC    X'6F00'               RESET ODD TMR IDCB
002912  0000                937        DC    A(*-*)
                            938 ************************************************************
                            939 * NAME-              READ TIMER VAUE SUBROUTINE
                            940 *
                            941 * PURPOSE-           READ TIMER VALUE REGISTERS
                            942 *
                            943 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                            944 *                    USE ENTRY POINT 'RDM0' FOR EVEN, AND,
                            945 *                    'RDM1' FOR ODD.
                            946 *
                            947 * RETURN-            TO ADDRESS CONTAINED IN R6 - R5 WILL
                            948 *                    CONTAIN THE DATA THAT WAS READ.
                            949 ************************************************************
002914                      950 RDV0   EQU   *
002914  4020 2610 2948      951        MVA   RV0,SI
00291A  680C 2948           952        IO    RV0                   READ TIMER VALUE
00291E  6F04 2926           953        BCC   7,RDV00
002922  6F03 2A1A           954        BAL   E,R7                  BAD CC
002926  6D08 294A           955 RDV00  MVW   RV2,R5                GET READ DATA
00292A  68C2 0000           956        B     (R6)                  RETURN
00292E                      957 RDV1   EQU   *
00292E  4020 2610 294C      958        MVA   RV1,SI
002934  680C 294C           959        IO    RV1                   READ TIMER VALUE
002938  6F04 2940           960        BCC   7,RDV11
00293C  6F03 2A1A           961        BAL   E,R7                  BAD CC
002940  6D08 294E           962 RDV11  MVW   RV3,R5                GET TIMER DATA
002944  68C2 0000           963        B     (R6)                  RETURN
                            964 *
002948  2400                965 RV0    DC    X'2400'               READ TMR VAL IDCB
00294A  0000                966 RV2    DC    A(*-*)
00294C  2400                967 RV1    DC    X'2400'               READ TMR VAL IDCB
00294E  0000                968 RV3    DC    A(*-*)
                            969 ************************************************************
                            970 * NAME-              READ TIMER MODE SUBROUTINE
                            971 *
                            972 * PURPOSE-           READ TIMER MODE REGISTERS.
                            973 *
                            974 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                            975 *                    USE ENTRY POINT 'RDM0' FOR EVEN, AND
                            976 *                    'RDM1' FOR ODD.
                            977 *
                            978 * RETURN-            TO ADDRESS CONTAINED IN R6 - R5 WILL
                            979 *                    CONTAIN THE DATA THAT WAS READ.
                            980 ************************************************************
002950                      981 RDM0   EQU   *
002950  4020 2610 2984      982        MVA   RM0,SI
002956  680C 2984           983        IO    RM0                   READ TIMER MODE
00295A  6F04 2962           984        BCC   7,RDM00
00295E  6F03 2A1A           985        BAL   E,R7                  BAD CC
002962  6D08 2986           986 RDM00  MVW   RM2,R5                GET MODE DATA
002966  68C2 0000           987        B     (R6)                  RETURN
00296A                      988 RDM1   EQU   *
00296A  4020 2610 2988      989        MVA   RM1,SI
002970  680C 2988           990        IO    RM1                   READ TMR MODE
002974  6F04 297C           991        BCC   7,RDM11
002978  6F03 2A1A           992        BAL   E,R7                  BAD CC
00297C  6D08 298A           993 RDM11  MVW   RM3,R5                GET MODE DATA
002980  68C2 0000           994        B     (R6)                  RETURN
                            995 *
002984  2500                996 RM0    DC    X'2500'               READ TIMER MODE IDCB
002986  0000                997 RM2    DC    A(*-*)
002988  2500                998 RM1    DC    X'2500'               READ TIMER MODE IDCB
00298A  0000                999 RM3    DC    A(*-*)
                           1000 ************************************************************
                           1001 * NAME-              SET MODE SUBROUTINE
                           1002 *
                           1003 * PURPOSE-           WRITE TO THE TIMER MODE REGISTERS.
                           1004 *
                           1005 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1006 *                    R5 MUST CONTAIN THE DATA TO BE WRITTEN.
                           1007 *                    USE ENTRY POINT 'SETM0' FOR EVEN, AND
                           1008 *                    'SETM1' FOR ODD.
                           1009 *
                           1010 * RETURN-            TO ADDRESS CONTAINED IN R6.
                           1011 ************************************************************
00298C                     1012 SETM0 EQU   *
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
00298C  6D0D 29BE          1022        MVW   R5,RD2                 PUT MODE DATA IN IDCB
002990  4020 2610 29BC     1023        MVA   RD0,SI
002996  680C 29BC          1024        IO    RD0                    SET MODE
002998  6F04 29B8          1025        BCC   7,SETMR
00299E  6F03 2A1A          1026        BAL   E,R7                   BAD CC
0029A2                     1027 SETM1  EQU   *
0029A2  6D0D 29C2          1028        MVW   R5,RD3                 PUT MODE DATA IN IDCB
0029A6  4020 2610 29C0     1029        MVA   RD1,SI
0029AC  680C 29C0          1030        IO    RD1                    SET MODE
0029B0  6F04 29B8          1031        BCC   7,SETMR
0029B4  6F03 2A1A          1032        BAL   E,R7                   BAD CC
0029B8  68C2 0000          1033 SETMR  B     (R6)                   RETURN
                           1034 *
0029BC  6500               1035 RD0    DC    X'6500'                EVEN ADDR SET MODE IDCB
0029BE  0000               1036 RD2    DC    A(*-*)
0029C0  6500               1037 RD1    DC    X'6500'                ODD ADDR SET MODE IDCB
0029C2  0000               1038 RD3    DC    A(*-*)
                           1039 ************************************************************
                           1040 * NAME-              SET TIMER VALUE SUBROUTINE
                           1041 *
                           1042 * PURPOSE-           WRITE TO TIMER VALUE REGISTERS.
                           1043 *
                           1044 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1045 *                    R5 MUST CONTAIN THE DATA TO BE WRITTEN.
                           1046 *                    USE ENTRY POINT 'SET0' FOR EVEN, AND
                           1047 *                    'SET1' FOR ODD.
                           1048 *
                           1049 * RETURN-            TO ADDRESS CONTAINED IN R6.
                           1050 ************************************************************
0029C4                     1051 SET0   EQU   *
0029C4  6D0D 29F6          1052        MVW   R5,SETV2               PUT TMR VAL DATA IN IDCB
0029C8  4020 2610 29F4     1053        MVA   SETV0,SI
0029CE  680C 29F4          1054        IO    SETV0                  SET VALUE
0029D2  6F04 29F0          1055        BCC   7,SETR
0029D6  6F03 2A1A          1056        BAL   E,R7                   BAD CC
0029DA                     1057 SET1   EQU   *
0029DA  6D0D 29FA          1058        MVW   R5,SETV3               PUT TMR VAL DATA IN IDCB
0029DE  4020 2610 29F8     1059        MVA   SETV1,SI
0029E4  680C 29F8          1060        IO    SETV1                  SET VALUE
0029E8  6F04 29F0          1061        BCC   7,SETR
0029EC  6F03 2A1A          1062        BAL   E,R7                   BAD CC
0029F0  68C2 0000          1063 SETR   B     (R6)                   RETURN
                           1064 *
0029F4  6400               1065 SETV0  DC    X'6400'                EVEN ADDR SET VAL IDCB
0029F6  0000               1066 SETV2  DC    A(*-*)
0029F8  6400               1067 SETV1  DC    X'6400'                ODD ADDR SET VAL IDCB
0029FA  0000               1068 SETV3  DC    A(*-*)
                           1069 ************************************************************
                           1070 * NAME-              PREPARE TIMERS SUBROUTINE
                           1071 *
                           1072 * PURPOSE-           ISSUE PREPARE COMMAND TO TIMERS.
                           1073 *
                           1074 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1075 *                    R5 MUST CONTAIN THE PREPARE DATA WORD.
                           1076 *
                           1077 * RETURN-            TO ADDRESS CONTAINED IN R6.
                           1078 ************************************************************
0029FC                     1079 PRE    EQU   *
0029FC  6D0D 2A18          1080        MVW   R5,PREPD               PUT PREP DATA IN IDCB
002A00  4020 2610 2A16     1081        MVA   IPREP,SI
002A06  680C 2A16          1082        IO    IPREP                  PREPARE
002A0A  6F04 2A12          1083        BCC   7,PRE1
002A0E  6F03 2A1A          1084        BAL   E,R7                   BAD CC
002A12  68C2 0000          1085 PRE1   B     (R6)
                           1086 *
002A16  6000               1087 IPREP  DC    X'6000'                PREP IDCB
002A18  0000               1088 PREPD  DC    A(*-*)
                           1089 ************************************************************
                           1090 * NAME-      ERROR DETECTED SUBROUTINE
                           1091 *
                           1092 * PURPOSE-   HANDLE PROGRAM DETECTED ERRORS
                           1093 *
                           1094 * CALLING SEQUENCE-R7 MUST CONTAIN THE ADDRESS THAT THE
                           1095 *                    ERROR WAS DETECTED AT.
                           1096 *
                           1097 * RETURN-    EVENTUALLY TO THE DCP
                           1098 ************************************************************
002A1A                     1099 E      EQU   *
002A1A  6F0D 2746          1100        MVW   R7,EA                  SAVE ADDR IN R7
002A1E  4029 2746 FFFC     1101        AWI   -4,EA                  SUBTRACT 4 BYTES FROM SAVED ADDR
002A24  6802 267C          1102        B     BBB
                           1103 ************************************************************
                           1104 * NAME-              COPY CURRENT LEVEL SUBROUTINE
                           1105 *
                           1106 * PURPOSE-           TO VERIFY THAT CPU IS ON THE SPECIFIED
                           1107 *                    LEVEL.
                           1108 *
                           1109 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1110 *                    R5 MUST CONTAIN THE RIGHT JUSTIFIED S/B
                           1111 *                    CURRENT LEVEL DATA.
                           1112 *
                           1113 * RETURN-            OCCURS TO ADDRESS CONTAINED IN R6 ONLY IF
                           1114 *                    CURRENT LEVEL IS THE SAME AS IS SPECIFIED
                           1115 *                    IN R5.
                           1116 ************************************************************
002A28                     1117 COPY   EQU   *
002A28  78F9               1118        CPCL  R7
002A2A  75E5               1119        CW    R5,R7                  IS CPU ON THE RIGHT LEVEL?
002A2C  1002               1120        JE    COPY1                  JUMP IF YES
002A2E  6F03 2A1A          1121        BAL   E,R7                   ON WRONG LEVEL
002A32  68C2 0000          1122 COPY1  B     (R6)
002A36  6700               1123 STAP   DC    X'6700'                START EVEN TMR - APERIODIC
002A38  0000               1124        DC    A(*-*)
                           1125 *
002A3A  6700               1126 STP    DC    X'6700'                START ODD TMR - APERIODIC
002A3C  0000               1127        DC    A(*-*)
002A3E  FFFF               1128 XFFFF  DC    X'FFFF'
002A40  FFFC               1129 XFFFC  DC    X'FFFC'
002A42  0000               1130 EVENM  DC    A(*-*)
002A44  0000               1131 EVENV  DC    A(*-*)
002A46  0000               1132 ODDM   DC    A(*-*)
002A48  0000               1133 ODDV   DC    A(*-*)
                           1134 ************************************************************
                           1135 * NAME-              TIMER INTERRUPT SERVICE SUBROUTINES.
                           1136 *
                           1137 * PURPOSE-           TO SERVICE TIMER INTERRUPTS, CHECK COND.
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                           1139 *                    CODES, AND CHECK INTERRUPT IDS.
                           1140 *
                           1141 * CALLING SEQUENCE-PLACE ADDRESSES OF THESE ROUTINES ('INT0
                           1142 *                    FOR EVEN AND 'INT1' FOR ODD) IN THE
                           1143 *                    APPROPRIATE TRANSFER VECTORS. BEFORE
                           1144 *                    CAUSING AN INTERRUPT PUT THE RETURN ADDRESS
                           1145 *                    IN 'INTR0' FOR EVEN, 'INTR1' FOR ODD. IF
                           1146 *                    THESE POSITIONS ARE ZERO WHEN AN INTERRUPT
                           1147 *                    OCCURS, NO INTERRUPT IS EXPECTED, AND THAT
                           1148 *                    IS AN ERROR CONDITION. THE POSITIONS ARE
                           1149 *                    ZEROED JUST BEFORE RETURN OCCURS.
                           1150 *
                           1151 * RETURN-            TO ADDRESS CONTAINED IN 'INTR0' OR 'INTR1'.
                           1152 ************************************************************
002A4A                     1153 INT0   EQU   *
002A4A  6B04 2A52          1154        BCC   3,INT00
002A4E  6F03 2A1A          1155        BAL   E,R7                   BAD CC AT INT TIME
002A52  6E03 28B4          1156 INT00  BAL   STOP0,R6               STOP TIMER 0
002A56  CF24 2A82          1157 INT0A  CW    ID0,R7
002A5A  1002               1158        JE    INT01
002A5C  6F03 2A1A          1159        BAL   E,R7                   BAD INTERRUPT ID
002A60  402B 2A74 FFFF     1160 INT01  TWI   -1,INTR0               WAS INT EXPECTED?
002A66  1802               1161        JNZ   INT02                  JUMP IF YES
002A68  6F03 2A1A          1162        BAL   E,R7                   UNEXPECTED INTERRUPT
002A6C  CF25 2A74          1163 INT02  MVWZ  INTR0,R7               ZERO INT EXP FLAG
002A70  68E2 0000          1164        B     (R7)                   RETURN
002A74  0000               1165 INTR0  DC    A(*-*)
002A76  2A7A               1166 AINT   DC    A(AINT0)
002A78  2A7C               1167        DC    A(AINT1)
002A7A  2A4A               1168 AINT0  DC    A(INT0)                DDB
002A7C  2A88               1169 AINT1  DC    A(INT1)                DDB
002A7E  00000000           1170 ISAV   DC    2A(*-*)
002A82  0000               1171 ID0    DC    A(*-*)
002A84  0000               1172 ID1    DC    A(*-*)
002A86  0000               1173 SAVA   DC    A(*-*)
                           1174 *
002A88                     1175 INT1   EQU   *
002A88  6B04 2A90          1176        BCC   3,INT10
002A8C  6F03 2A1A          1177        BAL   E,R7                   BAD CC
002A90  6E03 28C6          1178 INT10  BAL   STOP1,R6               STOP TIMER 1
002A94  CF24 2A84          1179 INT1A  CW    ID1,R7
002A98  1002               1180        JE    INT11
002A9A  6F03 2A1A          1181        BAL   E,R7                   BAD INTERRUPT ID
002A9E  402B 2AB2 FFFF     1182 INT11  TWI   -1,INTR1               WAS INTERRUPT EXPECTED?
002AA4  1802               1183        JNZ   INT12                  JUMP IF YES
002AA6  6F03 2A1A          1184        BAL   E,R7                   UNEXPECTED INTERRUPT
002AAA  CF25 2AB2          1185 INT12  MVWZ  INTR1,R7               ZERO INT EXP FLAG
002AAE  68E2 0000          1186        B     (R7)                   RETURN
002AB2  0000               1187 INTR1  DC    A(*-*)
                           1188 *
002AB4  2AB8               1189 CODE4  DC    A(EC4)
002AB6  2AC0               1190        DC    A(OC4)
                           1191 *
002AB8                     1192 EC4    EQU   *
002AB8  6C04 2A52          1193        BCC   4,INT00                WRONG C.C.
002ABC  6F03 2A1A          1194        BAL   E,R7
                           1195 *
002AC0                     1196 OC4    EQU   *
002AC0  6C04 2A90          1197        BCC   4,INT10                WRONG C.C.
002AC4  6F03 2A1A          1198        BAL   E,R7
                           1199 *
002AC8  2ACC               1200 C4     DC    A(E4)
002ACA  2AD4               1201        DC    A(O4)
                           1202 *
002ACC                     1203 E4     EQU   *
002ACC  6C04 2A56          1204        BCC   4,INT0A                WRONG C.C.
002AD0  6F03 2A1A          1205        BAL   E,R7
                           1206 *
002AD4                     1207 O4     EQU   *
002AD4  6C04 2A94          1208        BCC   4,INT1A                WRONG C.C.
002AD8  6F03 2A1A          1209        BAL   E,R7
                           1210 *
002ADC  2AE8               1211 CC2    DC    A(E2)
002ADE  2AF0               1212        DC    A(O2)
                           1213 *
002AE0  2AF8               1214 CC6    DC    A(E6)
002AE2  2B00               1215        DC    A(O6)
                           1216 *
002AE4  2B08               1217 CC7    DC    A(E7)
002AE6  2B10               1218        DC    A(O7)
                           1219 *
002AE8                     1220 E2     EQU   *
002AE8  6A04 2A56          1221        BCC   2,INT0A                WRONG C.C.
002AEC  6F03 2A1A          1222        BAL   E,R7
                           1223 *
002AF0                     1224 O2     EQU   *
002AF0  6A04 2A94          1225        BCC   2,INT1A                WRONG C.C.
002AF4  6F03 2A1A          1226        BAL   E,R7
                           1227 *
002AF8                     1228 E6     EQU   *
002AF8  6E04 2A56          1229        BCC   6,INT0A                WRONG C.C.
002AFC  6F03 2A1A          1230        BAL   E,R7
                           1231 *
002B00                     1232 O6     EQU   *
002B00  6E04 2A94          1233        BCC   6,INT1A                WRONG C.C.
002B04  6F03 2A1A          1234        BAL   E,R7
                           1235 *
002B08                     1236 E7     EQU   *
002B08  6F04 2A56          1237        BCC   7,INT0A                WRONG C.C.
002B0C  6F03 2A1A          1238        BAL   E,R7
                           1239 *
002B10                     1240 O7     EQU   *
002B10  6F04 2A94          1241        BCC   7,INT1A                WRONG C.C.
002B14  6F03 2A1A          1242        BAL   E,R7
                           1243 *
002B18  2B40               1244 AEN    DC    A(EN)
002B1A  0000               1245 ST     DC    X'0000'
002B1C  FFFF               1246        DC    X'FFFF'
002B1E  AAAA               1247        DC    X'AAAA'
002B20  5555               1248        DC    X'5555'
002B22  8001               1249        DC    X'8001'
002B24  4002               1250        DC    X'4002'
002B26  2004               1251        DC    X'2004'
002B28  1008               1252        DC    X'1008'
002B2A  0180               1253        DC    X'0180'
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002B2C  0240              1260         DC    X'0240'
002B2E  0420              1261         DC    X'0420'
002B30  0810              1262         DC    X'0810'
002B32  0101              1263         DC    X'0101'
002B34  0202              1264         DC    X'0202'
002B36  0404              1265         DC    X'0404'
002B38  0808              1266         DC    X'0808'
002B3A  1010              1267         DC    X'1010'
002B3C  2020              1268         DC    X'2020'
002B3E  4040              1269         DC    X'4040'
002B40  8080              1270 EN      DC    X'8080'
                          1271 *
002B42  2B62              1272 AENN    DC    A(ENN)
002B44  0000              1273 STT     DC    X'0000'
002B46  0001              1274         DC    X'0001'
002B48  0002              1275         DC    X'0002'
002B4A  0003              1276         DC    X'0003'
002B4C  0004              1277         DC    X'0004'
002B4E  0005              1278         DC    X'0005'
002B50  0006              1279         DC    X'0006'
002B52  0007              1280         DC    X'0007'
002B54  0008              1281         DC    X'0008'
002B56  0009              1282         DC    X'0009'
002B58  000A              1283         DC    X'000A'
002B5A  000B              1284         DC    X'000B'
002B5C  000C              1285         DC    X'000C'
002B5E  000E              1286         DC    X'000E'
002B60  000F              1287         DC    X'000F'
002B62  0000              1288 ENN     DC    X'0000'
                          1289 *
002B64  0001              1290 X0001   DC    X'0001'
002B66  00000000          1291 LLSB    DC    2A(*-*)            IAR-AKR
002B6A  00D0              1292         DC    X'00D0'            LSR
002B6C  00000000          1293 DLLSB   DC    2A(*-*)            R06R1      OR  IAR-AKR
002B70  0090              1294         DC    X'0090'            R2         OR  LSR
002B72  00000000000000000 1295         DC    8A(*-*)            R3-R7      OR  R0-R7
002B82  00000000000000000 1296         DC    30A(*-*)           PATCH AREA
                          1297 *
                          1299 ************************************************************
                          1300 * NAME-              INTERRUPT ROUTINE FOR DRIVER TIMER
                          1301 *                     DURING EXTERNAL CLOCK TESTS.
                          1302 *
                          1303 * PURPOSE-           SERVICE A SPECIFIED NUMBER OF INTERRUPTS
                          1304 *H                    BEFORE RETURNING.
                          1305 *
                          1306 * CALLING SEQUENCE-PUT RETURN ADDRESS IN 'CTRT0' FOR EVEN
                          1307 *                    AND 'CTRT1' FOR ODD.
                          1308 *                    SET UP TRANSFER VECTORS WITH THE ADDRESS
                          1309 *                    OF 'DRI00' FOR EVEN AND 'DRI01' FOR ODD.
                          1310 *
                          1311 * RETURN-            WHEN THE SPECIFIED NUMBER OF INTERRUPTS
                          1312 *                    HAVE OCCURED.
                          1313 ************************************************************
002BBE                    1314 DRI00 EQU   *
002BBE  6B04 2BC6         1315       BCC   3,DRI01
002BC2  6F03 2A1A         1316       BAL   E,R7                       BAD C.C.
002BC6  6E03 28B4         1317 DRI01 BAL   STOP0,R6
002BCA  4029 2BDC FFFF    1318       AWI   -1,CT0                     DECR. INTERRUPT COUNTER
002BD0  1003              1319       JZ    DRI02                      JUMP IF CTR WENT TO 0
002BD2  6E03 2826         1320       BAL   STPE0,R6                   START EVEN PERIODIC
002BD6  6100              1321       LEX
002BD8  6802 0000         1322 DRI02 B     *-*                        RETURN
002BDA                    1323 CTRT0 EQU   DRI02+2
002BDC  0000              1324 CT0   DC    A(*-*)
002BDE  2BBE              1325 DRI0  DC    A(DRI00)                   DDB
                          1326 *
002BE0  2BE2              1327 DRI1  DC    A(DRI11)                   DDB
002BE2                    1328 DRI11 EQU   *
002BE2  6B04 2BEA         1329       BCC   3,DRI12
002BE6  6F03 2A1A         1330       BAL   E,R7                       BAD C.C.
002BEA  6E03 28C6         1331 DRI12 BAL   STOP1,R6
002BEE  4029 2C00 FFFF    1332       AWI   -1,CT1                     DECR INTERRUPT COUNTER
002BF4  1003              1333       JZ    DRI13                      JUMP IF CTR WENT TO 0
002BF6  6E03 2838         1334       BAL   STPE1,R6                   START ODD PERIODIC
002BFA  6100              1335       LEX
002BFC  6802 0000         1336 DRI13 B     *-*                        RETURN
002BFE                    1337 CTRT1 EQU   DRI13+2
002C00  0000              1338 CT1   DC    A(*-*)
                          1339 ************************************************************
                          1341 ************************************************************
                          1342 * NAME-              INTERRUPT ROUTINE FOR TIMER UNDER TEST
                          1343 *                     DURING EXTERNAL CLOCK TESTS.
                          1344 *
                          1345 * PURPOSE-           SERVICE INTERRUPTS FROM TIMER UNDER TEST
                          1346 *                     DURING EXTERNAL CLOCK TESTS.
                          1347 *
                          1348 * CALLING SEQUENCE-SET RETURN ADDRESS IN 'CLK0' FOR EVEN AND
                          1349 *                    'CLK1' FOR ODD. IF AN INTERRUPT OCCURS AND
                          1350 *                    THESE POSITIONS ARE ZERO, THAT IS AN
                          1351 *                    UNEXPECTED INTERRUPT.
                          1352 *
                          1353 * RETURN-            OCCURS WHEN AN EXPCTED INTERRUPT OCCURED
                          1354 *                    PROPERLY. RETURN ADDRESS SLOTS ARE ZEROED
                          1355 *                    JUST BEFORE RETURN TAKES PLACE.
                          1356 ************************************************************
002C02                    1357 CLK00 EQU   *
002C02  6B04 2C0A         1358       BCC   3,CLK01
002C06  6F03 2A1A         1359       BAL   E,R7                       BAD C.C.
002C0A  C925 2C16         1360 CLK01 MVWZ  CLK0,R1
002C0E  6821 0000         1361       BNZ   (R1)                       RETURN
002C12  6F03 2A1A         1362       BAL   E,R7                       UNEXPECTED INTERRUPT
002C16  0000              1363 CLK0  DC    A(*-*)
002C18  2C02              1364 CK0   DC    A(CLK00)                   DDB
                          1365 *
002C1A                    1366 CLK11 EQU   *
002C1A  6B04 2C22         1367       BCC   3,CLK12
002C1E  6F03 2A1A         1368       BAL   E,R7                       BAD C.C.
002C22  C925 2C2E         1369 CLK12 MVWZ  CLK1,R1
002C26  6821 0000         1370       BNZ   (R1)                       RETURN
002C2A  6F03 2A1A         1371       BAL   E,R7                       UNEXPECTED INTERRUPT
002C2E  0000              1372 CLK1  DC    A(*-*)
002C30  2C1A              1373 CK1   DC    A(CLK11)                   DDB
                          1374 ************************************************************
                          1376 ************************************************************
                          1377 * NAME-     BEGIN PROGRAM ROUTINE
                          1378 *
```



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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                          1379 * PURPOSE-   INITIALIZE POINTERS AND SET UP TO BEGIN
                          1380 *            TESTING THE TIMERS.
                          1381 *
                          1382 * METHOD-    SAVE DCP XFER VECTORS AND MACHINE CHECK POINTER.
                          1383 *            PUT IN TIMER VECTORS, ENALBE INTERRUPTS,
                          1384 *            AND INITIALIZE PROGRAM POINTERS
                          1385 ************************************************************
002C32                    1386 TO    EQU   *
002C32  6301              1387       DIS   1                          DISABLE INTERRUPTS
002C34  4020 2748 0000    1388       MVWI  0,IRTN                     SET RTN/CKPT 0 <<<<<<<<<<<<
002C3A  6F0D 26C2         1389       MVW   R7,GOBCK+2                 SAVE RETURN ADDRESS
002C3E  4124 18C8         1390       MVA   TURESUL,R1                 PUT STATUS WORD ADDR IN P1
002C42  4940              1391       TBTS  (R1,0)                     TURN ON BIT 0 IF IT WASNT ON
002C44  1211              1392       JN    E1                         JUMP IF BIT 0 WAS ALREADY ON
                          1393 * TEST STARTED BIT IS NOW ON IN THE STATUS WORD.
002C46  C520 19D0         1394       MVB   DEVADD,R5                  GET DEVICE ADDRESS
002C4A  7DA0 00FE         1395       NWI   X'00FE',R5                 ZERO BITS 0-7, AND 15
002C4E  7584              1396       MVW   R5,R4                      SAVE EVEN DEVICE ADDRESS
002C50  6E03 2856         1397       BAL   SETT,R6                    SET UP DEVICE ADDRESS'S
002C54  3409              1398       SLL   1,R4                       R5 TIMES 2
002C56  7C81 0030         1399       AWI   X'0030',R4                 R5 NOW HAS XFER VECTOR ADDR
002C5A  6C0D 2A86         1400       MVW   R4,SAVA                    SAVE XFER VECTOR ADDRESS
002C5E  9408 2780         1401       MVD   (R4),SDCP                  SAVE DCP XFER VECTORS
002C62  8828 000A 278C    1402       MVW   X'000A',SAVA1              SAVE DCP MCK RTN ADDR
                          1403 *
002C68  4020 000A 2612    1404 E1    MVA   MK,X'000A'                 PUT IN TMR MCK RTN ADDR
002C6E  6908 2A86         1405       MVW   SAVA,R1                    GET XFER VECTOR ADDRESS
002C72  9060 2784         1406       MVD   DUMVE,(R1)                 PUT IN TIMER VECTOR ADDR
002C76  6F03 27F8         1407       BAL   LV0,R7                     GET ON LVL 0
002C7A  6201              1408 E1A   EN    1                          ENABLE INTERRUPTS
002C7C  6802 2C80         1409       B     T176
                          1411 ************************************************************
                          1412 * THE FOLLOWING ROUTINES TEST THE CUSTOMER INPUT AND OUTPUT
                          1413 * LINES TO THE TIMERS.
                          1414 ************************************************************
                          1415 *
                          1416 * NAME-             EXTERNAL GATE TEST
                          1417 *
                          1418 * PURPOSE-          VERIFY THAT EXTERNAL GATR FUNCTION WORKS
                          1419 *                   ON BOTH TIMERS.
                          1420 *
                          1421 * METHOD-           A WRAP PLUG OR JUMPERS IS INSTALLED ON
                          1422 *                   THE TIMER ATTACHMENT. THIS ALLOWS A
                          1423 *                   COMPLETE TEST OF THE EXTERNAL GATE
                          1424 *                   FUNCTION TO BE MADE INDIVIDUALLY ON EACH
                          1425 *                   TIMER, BY HAVING THE TIMER UNDER TEST'S
                          1426 *                   EXTERNAL GATE INPUT LINE WRAPPED TO THE
                          1427 *                   OTHER TIMER'S EXTERNAL GATE ENABLED
                          1428 *                   OUTPUT LINE. IN THIS MANNER, EXT. GATE
                          1429 *                   CAN BE TURNED ON AND OFF TO THE TIMER
                          1430 *                   UNDER TEST AT ANY TIME.
                          1431 *
                          1432 ************************************************************
                          1433 *
                          1434 * VERIFY THAT EXTERNAL GATE HAS NO EFFECT ON THE EVEN
                          1435 * TIMER, AS LONG AS THE EVEN TIMER HAS EXT. GATE DISABLED.
                          1436 *
002C80                    1437 T176  EQU   *
002C80  4020 2748 0100    1438       MVWI  X'0100',IRTN               >>>> RTN/CKPT= 0100 <<<<<<<<
002C86  6B08 2A86         1439       MVW   SAVA,R0
002C8A  9020 2A76         1440       MVD   AINT,(R0)                  SET FOR CC3 INTS.
002C8E  4524 0001         1441       MVWI  1,R5
002C92  6E03 29FC         1442       BAL   PRE,R6                     PREPARE TO LEVEL 0
002C96  4524 000C         1443       MVWI  X'000C',R5
002C9A  6E03 298C         1444       BAL   SETM0,R6                   EVEN-1USEC-NO EXT. GATE
002C9E  6E03 29A2         1445       BAL   SETM1,R6                   ODD-1USEC-NO EXT. GATE
002CA2  4524 0100         1446       MVWI  X'0100',R5
002CA6  6E03 29C4         1447       BAL   SET0,R6                    COUNT = X'0100'
002CAA  4020 2A74 2CB6    1448       MVA   T178,INTR0                 SET INT EXP FLAG
002CB0  6F03 2826         1449       BAL   STPE0,R6                   START EVEN PERIODIC
002CB4  6100              1450       LEX   ,
                          1451 *
002CB6                    1452 T178  EQU   *
002CB6  4524 000D         1453       MVWI  X'000D',R5
002CBA  6E03 29A2         1454       BAL   SETM1,R6                   TURN ON EXT GATE TO EVEN TMR
002CBE  4020 2A74 2CCA    1455       MVA   T179,INTR0                 SET INT EXP FLAG
002CC4  6F03 2826         1456       BAL   STPE0,R6                   START EVEN PERIODIC
002CC8  6100              1457       LEX   ,
                          1458 *
                          1459 * NOW ENABLE EVEN TIMERS EXT GATE AND VERIFY CORRECT OPERATION
                          1460 *
002CCA                    1461 T179  EQU   *
002CCA  4029 2748 0001    1462       AWI   1,IRTN                     >>>>>>>>>> CKPT 1 <<<<<<<<<<
002CD0  4524 000D         1463       MVWI  X'000D',R5
002CD4  6E03 298C         1464       BAL   SETM0,R6                   ENABLE EVEN EXT GATE
002CD8  4524 0100         1465       MVWI  X'0100',R5
002CDC  6E03 29C4         1466       BAL   SET0,R6                    COUNT = X'0100'
002CE0  4020 2A74 2CEC    1467       MVA   T180,INTR0                 SET INT EXP FLAG
                          1468 *
                          1469 * EVEN TIMER SHOULD RUN THIS TIME
                          1470 *
002CE6  6E03 2826         1471       BAL   STPE0,R6                   START EVEN PERIODIC
002CEA  6100              1472       LEX
002CEC                    1473 T180  EQU   *
002CEC  4524 0000         1474       MVWI  0,R5
002CF0  6E03 2A28         1475       BAL   COPY,R6                    VERIFY SYSTEM ON LVL 0
                          1477 *
                          1478 * NOW TURN OFF EXT GATE TO EVEN TIMER, AND VERIFY THAT EVEN
                          1479 * TIMER WONT RUN, AND THAT CC4 COMES FROM TIMER 0 WHEN
                          1480 * EXTERNAL GATE GOES AWAY. CC4 CAN OCCUR ONLY IF TIMER IS
                          1481 * IN RUN STATE AND EXTERNAL GATE IS ENABLED, AND THEN THE
                          1482 * GATE IS DROPPED.
                          1483 *
002CF4  4029 2748 0001    1484       AWI   1,IRTN                     >>>>>>>>>> CKPT 2 <<<<<<<<<<
002CFA  4524 000C         1485       MVWI  X'000C',R5
002CFE  6E03 29A2         1486       BAL   SETM1,R6                   TURN OFF EXT GATE TO EVEN
002D02  4020 2B66 2D16    1487       MVA   T181,LLSB
002D08  4724 0001         1488       MVWI  1,R7
002D0C  5F26 2B66         1489       SELB  R7,LLSB                    SET LVL 1 PENDING
002D10  6E03 2826         1490       BAL   STPE0,R6                   START EVEN PERIODIC
002D14  6100              1491       LEX
002D16                    1492 T181  EQU   *
002D16  4524 0002         1493       MVWI  2,R5
002D1A  6E03 25F6         1494       BAL   DEL,R6                     GO DELAY AWHILE
002D1E  4524 0001         1495       MVWI  1,R5
002D22  6E03 2A28         1496       BAL   COPY,R6                    VERIFY SYSTEM IS ON LVL 1
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 LOCTR   OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002D26  4029 2748 0003      1497         AWI   3,IRTN                >>>>>>>>>> CKPT 3 <<<<<<<<<<
002D2C  4020 2610 284E      1498         MVA   IDCB0,SI
002D32  680C 284E           1499         IO    IDCB0
002D36  6904 2D3E           1500         BCC   1,T182
002D3A  6F03 2A1A           1501         BAL   E,R7                  WRONG C.C., S/B BUSY NOW
002D3E                      1502  T182   EQU   *
002D3E  6808 2A86           1503         MVW   SAVA,R0
002D42  9020 2A76           1504         MVD   AINT,(R0)             SET FOR CC3 INTS
002D46  4020 2A74 2D56      1505         MVA   T183,INTR0            SET INT EXP FLAG
002D4C  4524 0001           1506         MVWI  1,R5
002D50  6E03 29A2           1507         BAL   SETM1,R6              TURN ON EXT GATE TO EVEN TMR
002D54  6100                1508         LEX                         TMR SHOULD INT ON LVL 0
002D56                      1509  T183   EQU   $                     S/B ON LVL 0
002D56  4524 0000           1510         MVWI  0,R5
002D5A  6E03 2A28           1511         BAL   COPY,R6               VERIFY LVL 0
                            1512  *
002D5E  4524 7FFF           1513         MVWI  X'7FFF',R5
002D62  6E03 29C4           1514         BAL   SET0,R6               SET LONGER COUNT
002D66  6808 2A86           1515         MVW   SAVA,R0               SET FOR CC4 INTS-
002D6A  4000 2AC8           1516         MVA   C4,(R0)               AND DONT STOP TIMER.
002D6E  4020 2A74 2D82      1517         MVA   T185,INTR0            SET INT EXP FLAG
002D74  6E03 2826           1518         BAL   STPE0,R6              START EVEN PER.
002D78                      1519  T184   EQU   *
002D78  4524 0000           1520         MVWI  0,R5
002D7C  6E03 29A2           1521         BAL   SETM1,R6              TURN OFF EXT GATE TO EVEN
002D80  6100                1522         LEX   ,
002D82                      1523  T185   EQU   $                     COLLECT STATUS OF EVEN TIMER
002D82  6E03 2914           1524         BAL   RDV0,R6
002D86  7504                1525         MVW   R5,R0                 SAVE VALUE
002D88  6E03 2950           1526         BAL   RDM0,R6
002D8C  7524                1527         MVW   R5,R1                 SAVE MODE
002D8E  4524 0001           1528  T186A  MVWI  1,R5
002D92  6E03 29A2           1529         BAL   SETM1,R6              TURN ON EXT GATE TO EVEN
                            1530  *
                            1531  * TIMER SHOULD START RUNNING AGAIN
                            1532  *
002D96  4029 2748 0001      1533         AWI   1,IRTN                >>>>>>>>> CKPT 4 <<<<<<<<<<<<
002D9C  4524 0002           1534         MVWI  2,R5
002DA0  6E03 25F6           1535         BAL   DEL,R6                DELAY AWHILE
002DA4  6E03 2914           1536         BAL   RDV0,R6
002DA8  70A5                1537  T187   CW    R0,R5
002DAA  1001                1538         JE    T188                  JUMP IF VALUE HAS   CHANGED
002DAC  6400                1539         STOP                        VALUE REG DIDNT CHANGE, WHICH
                            1540  * MEANS THE TIMER DIDNT START RUNNING AGAIN.
002DAE  6E03 2950           1541  T188   BAL   RDM0,R6
002DB2  71A5                1542         CW    R1,R5
002DB4  1002                1543         JZ    T188A                 JUMP IF MODE WASNT CHANGED
002DB6  6F03 2A1A           1544         BAL   E,R7                  MODE REG WAS CHANGED
002DBA                      1545  T188A  EQU   *
002DBA  4524 0000           1546  T188B  MVWI  0,R5
002DBE  6E03 2A28           1547         BAL   COPY,R6               VERIFY LEVEL 0
                            1548  *
                            1549  * VERIFY THAT TIMER 0 GETS CC2 WHEN IT SHOULD.
                            1550  *
002DC2                      1551  T188C  EQU   *
002DC2  4029 2748 0001      1552         AWI   1,IRTN                >>>>>>>>>> CKPT 5 <<<<<<<<<<<<
002DC8  6808 2A86           1553         MVW   SAVA,R0
002DCC  4000 2ADC           1554         MVA   CC2,(R0)              SET FOR CC2 INTS
002DD0  4524 000D           1555         MVWI  X'000D',R5
002DD4  6E03 298C           1556         BAL   SETM0,R6              1 USEC, EXT GATE ENABLE
002DD8  4524 0001           1557         MVWI  1,R5
002DDC  6E03 29C4           1558         BAL   SET0,R6               SET VALUE TO 1
002DE0  4020 2A74 2DF4      1559  T188D  MVA   T188E,INTR0           SET INT EXP
002DE6  6E03 2826           1560         BAL   STPE0,R6              START EVEN PERIODIC
002DEA  4524 0002           1561         MVWI  2,R5
002DEE  6E03 25F6           1562         BAL   DEL,R6                GO DELAY AWHILE
002DF2  6100                1563         LEX   ,
                            1564  *
002DF4                      1565  T188E  EQU   *
002DF4  6E03 28E4           1566         BAL   RSET0,R6
002DF8  6E03 28F6           1567         BAL   RSET1,R6
                            1568  *
                            1569  * VERIFY THAT TIMER 0 GETS CC6 WHEN IT SHOULD.
                            1570  *
002DFC  4029 2748 0001      1571         AWI   1,IRTN                >>>>>>>>>> CKPT 6 <<<<<<<<<<<<
002E02  4524 000D           1572         MVWI  X'000D',R5
002E06  6E03 298C           1573         BAL   SETM0,R6              1 USEC, EXT GATE ENABLED
002E0A  6E03 29A2           1574         BAL   SETM1,R6              TURN ON EXT GATE TO EVEN
002E0E  6808 2A86           1575         MVW   SAVA,R0
002E12  4000 2AE0           1576         MVA   CC6,(R0)              SET FOR CC6 INTS
002E16  4020 2A74 2E32      1577         MVA   T188F,INTR0           SET INT EXP
002E1C  6E03 2826           1578         BAL   STPE0,R6              START EVEN PERIODIC
002E20  4524 0002           1579         MVWI  2,R5
002E24  6E03 25F6           1580         BAL   DEL,R6                GO DELAY AWHILE
002E28  4524 0000           1581         MVWI  0,R5
002E2C  6E03 29A2           1582         BAL   SETM1,R6              TURN OFF EXT GATE
002E30  6100                1583         LEX   ,
                            1584  *
002E32                      1585  T188F  EQU   *
                            1586  *
                            1587  * VERIFY TIMEF 0 GETS CC7 WHEN IT SHOULD
                            1588  *
002E32  4029 2748 0001      1589         AWI   1,IRTN                >>>>>>>>>> CKPT 7 <<<<<<<<<<<<
002E38  6E03 28E4           1590         BAL   RSET0,R6
002E3C  6E03 28F6           1591         BAL   RSET1,R6
002E40  6808 2A86           1592         MVW   SAVA,R0
002E44  4000 2AE4           1593         MVA   CC7,(R0)              SET EVEN FOR CC7
002E48  4524 0001           1594         MVWI  1,R5
002E4C  6E03 298C           1595         BAL   SETM0,R6              * SET BOTH TO-
002E50  6E03 29A2           1596         BAL   SETM1,R6              * 50 USEC, EXT. GATE ON
002E54  6E03 29C4           1597         BAL   SET0,R6               *   SET BOTH VALUES-
002E58  6E03 29DA           1598         BAL   SET1,R6               *   TO 1.
                            1599  *
002E5C  4020 2A74 2E86      1600  T188G  MVA   T188I,INTR0           SET INT EXP
002E62  4020 2610 2A36      1601         MVA   STAP,SI
002E68  680C 2A36           1602         IO    STAP                  START EVEN APERIODIC
002E6C  6F04 2E74           1603         BCC   7,T188H
002E70  6F03 2A1A           1604         BAL   E,R7
002E74  4524 000A           1605  T188H  MVWI  10,R5
002E78  6E03 25F6           1606         BAL   DEL,R6                DELAY AWHILE
002E7C  4524 0000           1607         MVWI  0,R5
002E80  6E03 29A2           1608         BAL   SETM1,R6              TURN OFF EXT GATE TO EVEN
002E84  6100                1609         LEX   ,
                            1610  *
002E86                      1611  T188I  EQU   *
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 LOCTR   OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002E86  6E03 28E4           1615         BAL   RSET0,R6
002E8A  6E03 28F6           1616         BAL   RSET1,R6
                            1617  *
                            1618  * NOW TEST ODD TIMER
                            1619  *
002E8E                      1620  T189   EQU   *
002E8E  4029 2748 0001      1621         AWI   1,IRTN                >>>>>>>>> CKPT 8 <<<<<<<<<<<<
002E94  6808 2A86           1622         MVW   SAVA,R0               POINT TO XFER VECTORS
002E98  8820 2A76           1623         MVW   AINT,(R0)             RESTORE OLD VECTOR
                            1624  *
                            1625  * VERIFY THAT EXT GATE HAS NO EFFECT ON ODD TIMER AS LONG
                            1626  * AS EXTERNAL GATE REMAINS DISABLED.
                            1627  *
002E9C                      1628  T190   EQU   *
002E9C  4029 2748 0001      1629         AWI   1,IRTN                >>>>>>>>>> CKPT 9 <<<<<<<<<<
002EA2  4524 000C           1630         MVWI  X'000C',R5
002EA6  6E03 298C           1631         BAL   SETM0,R6              EVEN-1USEC-NO EXT GATE
002EAA  6E03 29A2           1632         BAL   SETM1,R6              ODD-1USEC-NO EXT GATE
002EAE  4524 0100           1633         MVWI  X'0100',R5
002EB2  6E03 29DA           1634         BAL   SET1,R6               COUNT = X'0100'
002EB6  4020 2AB2 2EC2      1635         MVA   T191,INTR1            SET INT EXP FLAG
002EBC  6E03 2838           1636         BAL   STPE1,R6              START ODD PER.
002EC0  6100                1637         LEX   ,
002EC2                      1638  T191   EQU   $
002EC2  4524 000D           1639         MVWI  X'000D',R5
002EC6  6E03 298C           1640         BAL   SETM0,R6              TURN ON EXT GATE TO ODD
002ECA  4020 2AB2 2ED6      1641         MVA   T192,INTR1            SET INT EXP FLAG
002ED0  6E03 2838           1642         BAL   STPE1,R6              START ODD PER.
002ED4  6100                1643         LEX   ,
                            1644  *
                            1645  * NOW ENABLE ODD TIMERS EXT. GATE AND VERIFY CORRECT
                            1646  * OPERATION.
                            1647  *
002ED6  4524 000D           1648  T192   MVWI  X'000D',R5
002EDA  4029 2748 0001      1649         AWI   1,IRTN                >>>>>>>>>> CKPT A <<<<<<<<<
002EE0  6E03 29A2           1650         BAL   SETM1,R6              ENABLE ODD EXT GATE
002EE4  6E03 298C           1651         BAL   SETM0,R6              TURN ON EXT GATE TO ODD
002EE8  4524 0100           1652         MVWI  X'0100',R5
002EEC  6E03 29DA           1653         BAL   SET1,R6               COUNT = X'0100'
002EF0  4020 2AB2 2EFC      1654         MVA   T193,INTR1            SET INT EXP FLAG
                            1655  *
                            1656  * ODD TIMER SHOULD RUN WHEN STARTED.
                            1657  *
002EF6  6E03 2838           1658         BAL   STPE1,R6              START ODD PER.
002EFA  6100                1659         LEX   ,
002EFC                      1660  T193   EQU   $
002EFC  4524 0000           1661         MVWI  0,R5
002F00  6E03 2A28           1662         BAL   COPY,R6               VERIFY SYSTEM IS ON LVL 0
                            1663  *
                            1664  * NOW TURN OFF EXT GATE TO ODD TIMER AND VERIFY THAT
                            1665  * THE ODD TIMER WONT RUN. AND THAT CC4 COMES FROM TIMER 1
                            1666  * WHEN EXTERNAL GATE TO IT GOES AWAY. CC4 CAN OCCUR ONLY
                            1667  * IF TIMER IS IN RUN STATE AND EXTERNAL GATE IS ENABLED,
                            1668  * AND THEN THE GATE IS DROPPED.
                            1669  *
002F04  4029 2748 0001      1670         AWI   1,IRTN                >>>>>>>>>> CKPT B <<<<<<<<<<
002F0A  4524 000C           1671         MVWI  X'000C',R5
002F0E  6E03 298C           1672         BAL   SETM0,R6              TURN OFF EXT GATE TO ODD
002F12  4020 2B66 2F26      1673         MVA   T194,LLSB
002F18  4724 0001           1674         MVWI  1,R7
002F1C  5F26 2B66           1675         SELB  R7,LLSB               SET LVL 1 PENDING
002F20  6E03 2838           1676         BAL   STPE1,R6              START ODD PER.
002F24  6100                1677         LEX   ,
002F26                      1678  *
002F26  4524 0002           1679  T194   EQU   *
002F2A  6E03 25F6           1680         MVWI  2,R5
002F2E  4524 0001           1681         BAL   DEL,R6                GO DELAY AWHILE
002F32  6E03 2A28           1682         MVWI  1,R5
002F36  4029 2748 0001      1683         BAL   COPY,R6               VERIFY SYSTEM IS ON LVL 1
002F3C  4020 2610 2852      1684         AWI   1,IRTN                >>>>>>>>>> CKPT C <<<<<<<<<<
002F42  680C 2852           1685         MVA   IDCB1,SI
002F46  6904 2F4E           1686         IO    IDCB1
002F4A  6F03 2A1A           1687         BCC   1,T195
002F4E                      1688         BAL   E,R7                  WRONG C.C.- BUSY S/B ON
002F4E  6808 2A86           1689  T195   EQU   *
002F52  9020 2A76           1690         MVW   SAVA,R0
002F56  4020 2AB2 2F66      1691         MVD   AINT,(R0)             SET FOR CC3 INTS
002F5C  4524 0001           1692         MVA   T196,INTR1            SET INT EXP FLAG
002F60  6E03 298C           1693         MVWI  1,R5
002F64  6100                1694         BAL   SETM0,R6              TURN ON EXT GATE TO ODD
002F66                      1695         LEX   ,
002F66  4524 0000           1696  T196   EQU   $
002F6A  6E03 2A28           1697         MVWI  0,R5
                            1698         BAL   COPY,R6               VERIFY LVL 0
002F6E  4524 7FFF           1699  *
002F72  6E03 29DA           1700         MVWI  X'7FFF',R5
002F76  6908 2A86           1701         BAL   SET1,R6               SET LONGER COUNT
002F7A  4060 0002 2ACA      1702         MVW   SAVA,R1               SET FOR CC4 INTS-
002F80  4020 2AB2 2F94      1703         MVA   C4+2,(R1,2)           AND DONT STOP TIMER.
002F86  6E03 2838           1704         MVA   T198,INTR1            SET INT EXP FLAG
002F8A                      1705         BAL   STPE1,R6              START ODD PERIODIC
002F8A  4524 0000           1706  T197   EQU   *
002F8E  6E03 298C           1707         MVWI  0,R5
002F92  6100                1708         BAL   SETM0,R6              TURN OFF EXT GATE TO ODD
002F94                      1709         LEX   ,
002F94  6E03 292E           1710  T198   EQU   $
002F98  7504                1711         BAL   RDV1,R6
002F9A  6E03 296A           1712         MVW   R5,R0                 SAVE VALUE
002F9E  7524                1713         BAL   RDM1,R6
002FA0  4524 0001           1714         MVW   R5,R1                 SAVE MODE
002FA4  6E03 298C           1715  T199A  MVWI  1,R5
                            1716         BAL   SETM0,R6              TURN ON EXT GATE TO ODD
                            1717  *
                            1718  * TIMER 1 SHOULD START RUNNING AGAIN.
                            1719  *
002FA8  4029 2748 0001      1720         AWI   1,IRTN                >>>>>>>>>> CKPT D <<<<<<<<<<
002FAE  4524 0002           1721         MVWI  2,R5
002FB2  6E03 25F6           1722         BAL   DEL,R6                DELAY AWHILE
002FB6  6E03 292E           1723         BAL   RDV1,R6
002FBA  70A5                1724  T200   CW    R0,R5
002FBC  1002                1725         JE    T201
002FBE  6F03 2A1A           1726         BAL   E,R7                  VALUE REG WASNT CHANGED, -
                            1727  * WHICH MEANS THAT THE TIMER DIDNT START RUNNING AGAIN.
002FC2                      1728  T201   EQU   *
002FC2  6E03 296A           1729         BAL   RDM1,R6
002FC6  71A5                1730         CW    R1,R5
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
002FC8  1002              1734         JZ    T202
002FCA  6F03 2A1A         1735         BAL   E,R7                   MODE REG WAS CHANGED
002FCE                    1736 T202    EQU   *
002FCE  4524 0000         1737 T202A   MVWI  0,R5
002FD2  6E03 2A28         1738         BAL   COPY,R6                VERIFY LVL 0
                          1739 *
                          1740 * VERIFY THAT TIMER 1 GETS CC2 WHEN IT SHOULD.
                          1741 *
002FD6                    1742 T202B   EQU   *
002FD6  4029 2748 0001    1743         AWI   1,IRTN                 >>>>>>>>>>> CKPT E <<<<<<<<<<
002FDC  6908 2A86         1744         MVW   SAVA,R1
002FE0  4060 0002 2ADE    1745         MVA   CC2+2,(R1,2)           SET FOR CC2 INTS
002FE6  4524 000D         1746         MVWI  X'000D',R5
002FEA  6E03 29A2         1747         BAL   SETM1,R6               1 USEC, EXT GATE EN
002FEE  4524 0001         1748         MVWI  1,R5
002FF2  6E03 29DA         1749         BAL   SET1,R6                SET VALUE TO 1
                          1750 *
002FF6  4020 2AB2 300A    1751 T202C   MVA   T202D,INTR1            SET INT EXP
002FFC  6E03 2838         1752         BAL   STPE1,R6               START ODD PERIODIC
003000  4524 0002         1753         MVWI  2,R5
003004  6E03 25F6         1754         BAL   DEL,R6                 GO DELAY AWHILE
003008  6100              1755         LEX   ,
                          1756 *
00300A                    1757 T202D   EQU   *
00300A  6E03 28E4         1758         BAL   RSET0,R6
00300E  6E03 28F6         1759         BAL   RSET1,R6
                          1761 *
                          1762 * VERIFY THAT TIMER 1 GETS CC6 WHEN IT SHOULD.
                          1763 *
003012  4029 2748 0001    1764         AWI   1,IRTN                 >>>>>>>>>>> CKPT F <<<<<<<<<<
003018  4524 000D         1765         MVWI  X'000D',R5
00301C  6E03 29A2         1766         BAL   SETM1,R6               1 USEC, EXT GATE EN
003020  6E03 298C         1767         BAL   SETM0,R6               TURN ON EXT GATE TO ODD
003024  6908 2A86         1768         MVW   SAVA,R1
003028  4060 0002 2AE2    1769         MVA   CC6+2,(R1,2)           SET FOR CC6 INTS
00302E  4020 2AB2 304A    1770         MVA   T202E,INTR1            SET INT EXP
003034  6E03 2838         1771         BAL   STPE1,R6               START ODD PERIODIC
003038  4524 0002         1772         MVWI  2,R5
00303C  6E03 25F6         1773         BAL   DEL,R6                 GO DELAY AWHILE
003040  4524 0000         1774         MVWI  0,R5
003044  6E03 298C         1775         BAL   SETM0,R6               TURN OFF EXT GATE
003048  6100              1776         LEX   ,
                          1777 *
00304A                    1778 T202E   EQU   *
                          1779 *
                          1780 * VERIFY THAT TIMER 1 GETS CC7 WHEN IT SHOULD.
                          1781 *
00304A  4029 2748 0001    1782         AWI   1,IRTN                 >>>>>>>>>>> CKPT 10 <<<<<<<<<<
003050  6E03 28E4         1783         BAL   RSET0,R6
003054  6E03 28F6         1784         BAL   RSET1,R6
003058  6908 2A86         1785         MVW   SAVA,R1
00305C  4060 0002 2AE6    1786         MVA   CC7+2,(R1,2)           SET ODD FOR CC7 INTS
003062  4524 0001         1787         MVWI  1,R5
003066  6E03 298C         1788         BAL   SETM0,R6               * SET BOTH TO-
00306A  6E03 29A2         1789         BAL   SETM1,R6               * 50 USEC, EXT GATE ON
00306E  6E03 29C4         1790         BAL   SET0,R6                *   SET BOTH VALUES-
003072  6E03 29DA         1791         BAL   SET1,R6                *   TO 1.
                          1792 *
003076  4020 2AB2 30A0    1793 T202F   MVA   T202H,INTR1            SET INT EXP
00307C  4020 2610 2A3A    1794         MVA   STP,SI
003082  680C 2A3A         1795         IO    STP                    START ODD APERIODIC
003086  6F04 308E         1796         BCC   7,T202G
00308A  6F03 2A1A         1797         BAL   E,R7
00308E  4524 000A         1798 T202G   MVWI  10,R5
003092  6E03 25F6         1799         BAL   DEL,R6                 DELAY AWHILE
003096  4524 0000         1800         MVWI  0,R5
00309A  6E03 298C         1801         BAL   SETM0,R6               TURN OFF EXT GATE TO ODD
00309E  6100              1802         LEX   ,
                          1803 *
0030A0                    1804 T202H   EQU   *
0030A0  6E03 28E4         1805         BAL   RSET0,R6
0030A4  6E03 28F6         1806         BAL   RSET1,R6
                          1808 ************************************************************
                          1809 *
                          1810 * NAME-              EXTERNAL CLOCK TEST
                          1811 *
                          1812 * PURPOSE-           VERIFY THAT THE EXTFRNAL CLOCK FUNCTION
                          1813 *                    WORKS ON BOTH TIMERS.
                          1814 *
                          1815 * METHOD-            A WRAP PLUG OR JUMPERS IS INSTALLED ON
                          1816 *                    THE TIMER ATTACHMENT. THIS ALLOWS A
                          1817 *                    COMPLETE TEST FO THE EXTERNAL CLOCK
                          1818 *                    FUNCTION TO BE MADE INDIVIDUALLY ON EACH
                          1819 *                    TIMER BY HAVING THE TIMER UNDER TEST'S
                          1820 *                    EXTERNAL CLOCK INPUT TIED TO THE OTHER
                          1821 *                    TIMER'S RUN OUTPUT. ON EXTERNAL CLOCK
                          1822 *                    IS SIMULATED TO THE TIMER UNDER TEST'S
                          1823 *                    EXTERNAL CLOCK INPUT BY STARTING AND
                          1824 *                    STOPPING THE OTHER TIMER.
                          1825 *
                          1826 ************************************************************
0030A8  4020 2748 0200    1827         MVWI  X'0200',IRTN           >>> RTN/CKPT = 0200 <<<<<<<<
0030AE  6908 2A86         1828         MVW   SAVA,R1                GET ADDR OF XFER VECTORS.
0030B2  4040 2C18         1829         MVA   CK0,(R1)               * SET UP-
0030B6  4060 0002 2BE0    1830         MVA   DRI1,(R1,2)            *XFER VECTORS.
                          1831 *
0030BC  4524 002D         1832         MVWI  45,R5
0030C0  6E03 29DA         1833         BAL   SET1,R6                SET DRIVER VAL TO 45
0030C4  4524 0066         1834         MVWI  102,R5
0030C8  6E03 29C4         1835         BAL   SET0,R6                SET OTHER VALUE TO 102
                          1836 *
0030CC  4524 0008         1837 T203    MVWI  X'0008',R5
0030D0  6E03 29A2         1838         BAL   SETM1,R6               SET DRIVER MODE TO 5 USEC
0030D4  6E03 298C         1839         BAL   SETM0,R6               SET OTHER TO INTERNAL CLOCK
                          1840 *
0030D8  4020 2BFE 30EA    1841         MVA   T204,CTRT1             SET RETURN ADDR.
0030DE  4020 2C00 0069    1842         MVWI  105,CT1                SET COUNT IN DRIVER INT RTN
0030E4  6E03 2838         1843         BAL   STPE1,R6               START DRIVER PERIODIC
0030E8  6100              1844         LEX   ,
                          1845 *
0030EA  6E03 2914         1846 T204    BAL   RDV0,R6
0030EE  4029 2748 0001    1847         AWI   1,IRTN                 >>>>>>>>>> CKPT 1 <<<<<<<<<<
0030F4  7D06 0066         1848         CWI   102,R5
0030F8  1002              1849         JZ    T205
0030FA  6F03 2A1A         1850         BAL   E,R7                   EVEN VALUE CHANGED
0030FE                    1851 T205    EQU   *
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
0030FE  6E03 2950         1852         BAL   RDM0,R6
003102  7D06 0008         1853         CWI   X'0008',R5
003106  1002              1854         JZ    T206
003108  6F03 2A1A         1855         BAL   E,R7                   EVEN MODE CHANGED
                          1857 *
                          1858 * NOW VERIFY THAT TIMER 0 WILL COUNT AND INTERRUPT IN
                          1859 * EXTERNAL CLOCK MODE.
                          1860 *
00310C                    1861 T206    EQU   *
00310C  4029 2748 0001    1862         AWI   1,IRTN                 >>>>>>>>>> CKPT 2 <<<<<<<<<<
003112  4020 2C00 0064    1863         MVWI  100,CT1                SET COUNT
003118  4020 2BFE 3142    1864         MVA   T209,CTRT1             SET RETURN
00311E  4524 0002         1865         MVWI  2,R5
003122  6E03 298C         1866         BAL   SETM0,R6               SET EVEN TO EXT. CLK.
003126  6E03 2826         1867 T207    BAL   STPE0,R6               START EVEN PERIODIC
00312A  4020 2610 2A36    1868         MVA   STAP,SI
003130  680C 2A36         1869         IO    STAP
003134  6F04 313C         1870         BCC   7,T208
003138  6F03 2A1A         1871         BAL   E,R7                   TMR 0 WASNT BUSY
00313C                    1872 T208    EQU   *
00313C  6E03 2838         1873         BAL   STPE1,R6               START DRIVER TIMER
003140  6100              1874         LEX   ,
003142                    1875 T209    EQU   *
003142  4020 2610 2A36    1876         MVA   STAP,SI
003148  680C 2A36         1877         IO    STAP
00314C  6904 3154         1878         BCC   1,T210
003150  6F03 2A1A         1879         BAL   E,R7                   TMR 0 WASNT STILL BUSY
003154                    1880 T210    EQU   *
003154  6E03 2914         1881         BAL   RDV0,R6
003158  7D06 0002         1882         CWI   2,R5
00315C  1002              1883         JZ    T211
00315E  6F03 2A1A         1884         BAL   E,R7                   EVEN VALUE WASNT 2
003162                    1885 T211    EQU   *
003162  4020 2C00 0003    1886         MVWI  3,CT1                  SET COUNT
003168  4020 2BFE 3178    1887         MVA   T212,CTRT1             SET RETURN - DRIVER
00316E  4020 2C16 317A    1888         MVA   T213,CLK0              SET RETURN - OTHER ONE
003174  6E03 2838         1889         BAL   STPE1,R6
003178  6100              1890 T212    LEX   ,                      EXECUTE THIS TWICE
                          1892 *
                          1893 * GET HERE FROM TIMER UNDER TEST INTERRUPT ROUTINE.
                          1894 *
00317A                    1895 T213    EQU   *
00317A  4029 2748 0001    1896         AWI   1,IRTN                 >>>>>>>>>> CKPT 3 <<<<<<<<<<
003180  6E03 28F6         1897         BAL   RSET1,R6               RESET ODD FOR NOW
003184  4020 2610 2A36    1898         MVA   STAP,SI
00318A  680C 2A36         1899         IO    STAP
00318E  6F04 3196         1900         BCC   7,T214
003192  6F03 2A1A         1901         BAL   E,R7                   TMR 0 WASNT STILL BUSY
003196  6E03 2914         1902 T214    BAL   RDV0,R6                READ EVEN VALUE
00319A  7D06 0066         1903         CWI   102,R5
00319E  1002              1904         JE    T215
0031A0  6F03 2A1A         1905         BAL   E,R7                   EVEN VALUE WASNT 102
0031A4                    1906 T215    EQU   *
0031A4  6E03 28B4         1907         BAL   STOP0,R6               STOP EVEN TIMER
0031A8  4020 2610 2A36    1908         MVA   STAP,SI
0031AE  680C 2A36         1909         IO    STAP                   START EVEN PERIODIC
0031B2  6F04 31BA         1910         BCC   7,T215A
0031B6  6F03 2A1A         1911         BAL   E,R7                   WRONG C.C.
                          1912 *
0031BA  4020 2610 2A36    1913 T215A   MVA   STAP,SI
0031C0  680C 2A36         1914         IO    STAP
0031C4  6904 31CC         1915         BCC   1,T215B
0031C8  6F03 2A1A         1916         BAL   E,R7                   BUSY S/B ON
                          1917 *
0031CC  4020 2C00 0067    1918 T215B   MVWI  103,CT1                SET COUNT
0031D2  4020 2BFE 31EA    1919         MVA   T215C,CTRT1            SET RETURN - DRIVER
0031D8  4020 2C16 31EC    1920         MVA   T215D,CLK0             SET RETURN - OTHER ONE
0031DE  4524 0008         1921         MVWI  X'0008',R5
0031E2  6E03 29A2         1922         BAL   SETM1,R6               SET ODD MODE - 5USEC
0031E6  6E03 2838         1923         BAL   STPE1,R6
0031EA  6100              1924 T215C   LEX   ,
                          1925 *
                          1926 * TIMER UNDER TEST SHOULD INTERRUPT NOW.
                          1927 *
0031EC  4029 2748 0001    1928 T215D   AWI   1,IRTN                 >>>>>>>>>> CKPT 4 <<<<<<<<<<
0031F2  4020 2610 2A36    1929         MVA   STAP,SI
0031F8  680C 2A36         1930         IO    STAP
0031FC  6904 3204         1931         BCC   1,T215E
003200  6F03 2A1A         1932         BAL   E,R7                   BUSY S/B ON
003204  6E03 2914         1933 T215E   BAL   RDV0,R6                READ EVEN VALUE
003208  7D06 FFFF         1934         CWI   -1,R5
00320C  1002              1935         JE    T215F
00320E  6F03 2A1A         1936         BAL   E,R7                   EVEN VALUE WASNT -1
003212                    1937 T215F   EQU   *
003212  6E03 28E4         1938         BAL   RSET0,R6               * RESET BOTH-
003216  6E03 28F6         1939         BAL   RSET1,R6               * TIMERS.
                          1941 *
                          1942 * NOW MAKE TIMER 0 THE DRIVER AND TIMER 1 THE
                          1943 * TIMER UNDER TEST.
                          1944 *
00321A  4029 2748 0001    1945         AWI   1,IRTN                 >>>>>>>>>> CKPT 5 <<<<<<<<<<
003220  6908 2A86         1946         MVW   SAVA,R1                GET ADDR OF XFER VECTORS
003224  4040 2BDE         1947         MVA   DRI0,(R1)              * SET UP-
003228  4060 0002 2C30    1948         MVA   CK1,(R1,2)             * XFER VECTORS.
                          1949 *
00322E  4524 002D         1950         MVWI  45,R5
003232  6E03 29C4         1951         BAL   SET0,R6                SET DRIVER VALUE TO 45
003236  4524 0066         1952         MVWI  102,R5
00323A  6E03 29DA         1953         BAL   SET1,R6                SET OTHER TO 102
                          1954 *
00323E  4524 0008         1955 T216    MVWI  X'0008',R5
003242  6E03 298C         1956         BAL   SETM0,R6               SET DRIVER MODE - 5 USEC
003246  6E03 29A2         1957         BAL   SETM1,R6               SET OTHER TO INTERNAL CLK
                          1958 *
00324A  4020 2BDA 325C    1959         MVA   T217,CTRT0             SET RETURN
003250  4020 2BDC 0069    1960         MVWI  105,CT0                SET COUNT
003256  6E03 2826         1961         BAL   STPE0,R6               START DRIVER PERIODIC
00325A  6100              1962         LEX   ,
                          1963 *
00325C  6E03 292E         1964 T217    BAL   RDV1,R6
003260  7D06 0066         1965         CWI   102,R5
003264  1002              1966         JE    T218
003266  6F03 2A1A         1967         BAL   E,R7                   ODD VALUE CHANGED
00326A                    1968 T218    EQU   *
00326A  6E03 296A         1969         BAL   RDM1,R6
00326E  7D06 0008         1970         CWI   X'0008',R5
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

003272  1002              1971         JE    T219
003274  6F03 2A1A         1972         BAL   E,R7                   ODD MODE CHANGED
                          1974 *
                          1975 * VERIFY THAT TIMER 1 WILL COUNT AND INTERRUPT IN
                          1976 * EXTERNAL CLOCK MODE.
                          1977 *
003278                    1978 T219    EQU   *
003278  4029 2748 0001    1979         AWI   1,IRTN                 >>>>>>>>>> CKPT 6 <<<<<<<<<<
00327E  4020 2BDC 0064    1980         MVWI  100,CT0                SET COUNT
003284  4020 2BDA 32AE    1981         MVA   T222,CTRT0             SET RETURN ADDRESS
00328A  4524 0002         1982         MVWI  2,R5
00328E  6E03 29A2         1983         BAL   SETM1,R6               SET ODD TO EXT CLOCK
003292  6E03 2838         1984 T220    BAL   STPE1,R6               START ODD PERIODIC
003296  4020 2610 2A3A    1985         MVA   STP,SI
00329C  680C 2A3A         1986         IO    STP
0032A0  6904 32A8         1987         BCC   1,T221
0032A4  6F03 2A1A         1988         BAL   E,R7                   TMR 1 WASNT BUSY
0032A8                    1989 T221    EQU   *
0032A8  6E03 2826         1990         BAL   STPE0,R6               START DRIVER TIMER
0032AC  6100              1991         LEX   ,
0032AE  4020 2610 2A3A    1992 T222    MVA   STP,SI
0032B4  680C 2A3A         1993         IO    STP
0032B8  6904 32C0         1994         BCC   1,T223
0032BC  6F03 2A1A         1995         BAL   E,R7                   TMR 1 WASNT STILL BUSY
0032C0                    1996 T223    EQU   *
0032C0  6E03 292E         1997         BAL   RDV1,R6
0032C4  7D06 0002         1998         CWI   2,R5
0032C8  1002              1999         JE    T224
0032CA  6F03 2A1A         2000         BAL   E,R7                   ODD VALUE WASNT 2
0032CE                    2001 T224    EQU   *
0032CE  4020 2BDC 0003    2002         MVWI  3,CT0                  SET COUNT
0032D4  4020 2BDA 32E4    2003         MVA   T225,CTRT0             SET RETURN
0032DA  4020 2C2E 32E6    2004         MVA   T226,CLK1              SET RETURN IN OTHER INT RTN
0032E0  6E03 2826         2005         BAL   STPE0,R6
0032E4  6100              2006 T225    LEX   ,                      EXECUTE THIS TWICE
                          2008 *
                          2009 * GET HERE FROM TIMER UNDER TEST INTERRUPT ROUTINE.
                          2010 *
0032E6                    2011 T226    EQU   *
0032E6  4029 2748 0001    2012         AWI   1,IRTN                 >>>>>>>>>> CKPT 7 <<<<<<<<<<
0032EC  6E03 28E4         2013         BAL   RSET0,R6               RESET EVEN FOR NOW
0032F0  4020 2610 2A3A    2014         MVA   STP,SI
0032F6  680C 2A3A         2015         IO    STP
0032FA  6904 3302         2016         BCC   1,T227
0032FE  6F03 2A1A         2017         BAL   E,R7                   TMR 1 WASNT BUSY
003302  6E03 292E         2018 T227    BAL   RDV1,R6               READ ODD VALUE
003306  7D06 0066         2019         CWI   102,R5
00330A  1002              2020         JE    T228
00330C  6F03 2A1A         2021         BAL   E,R7                   ODD VALUE WASNT 102
003310                    2022 T228    EQU   *
003310  6E03 28C6         2023         BAL   STOP1,R6               STOP ODD TIMER
003314  4020 2610 2A3A    2024         MVA   STP,SI
00331A  680C 2A3A         2025         IO    STP                    START ODD APERIODIC
00331E  6F04 3326         2026         BCC   7,T229
003322  6F03 2A1A         2027         BAL   E,R7                   WRONG C.C.
                          2028 *
003326  4020 2610 2A3A    2029 T229    MVA   STP,SI
00332C  680C 2A3A         2030         IO    STP
003330  6904 3338         2031         BCC   1,T230
003334  6F03 2A1A         2032         BAL   E,R7                   BUSY S/B ON
                          2033 *
003338  4020 2BDC 0067    2034 T230    MVWI  103,CT0                SET COUNT
00333E  4020 2BDA 3356    2035         MVA   T231,CTRT0             SET RETURN - DRIVER
003344  4020 2C2E 3358    2036         MVA   T232,CLK1              SET RETURN - OTHER ONE
00334A  4524 0008         2037         MVWI  X'0008',R5
00334E  6E03 298C         2038         BAL   SETM0,R6               SET EVEN MODE - 5USEC
003352  6E03 2826         2039         BAL   STPE0,R6
003356  6100              2040 T231    LEX   ,
                          2041 *
                          2042 * TIMER UNDER TEST SHOULD INTERRUPT NOW.
                          2043 *
003358  4029 2748 0001    2044 T232    AWI   1,IRTN                 >>>>>>>>>> CKPT 8 <<<<<<<<<<
00335E  4020 2610 2A3A    2045         MVA   STP,SI
003364  680C 2A3A         2046         IO    STP
003368  6904 3370         2047         BCC   1,T233
00336C  6F03 2A1A         2048         BAL   E,R7                   BUSY S/B ON
003370  6E03 292E         2049 T233    BAL   RDV1,R6                READ ODD VALUE
003374  7D06 FFFF         2050         CWI   -1,R5
003378  1002              2051         JE    T234
00337A  6F03 2A1A         2052         BAL   E,R7                   ODD VAL WASNT -1
00337E                    2053 T234    EQU   *
00337E  6E03 28E4         2054         BAL   RSET0,R6               * RESET BOTH-
003382  6E03 28F6         2055         BAL   RSET1,R6               * TIMERS.
003386  6808 2A86         2056         MVW   SAVA,R0
00338A  9020 2A7E         2057         MVD   ISAV,(R0)              RESTORE OLD VECTORS
00338E  6802 2696         2058         B     GEND                   GO TO END ROUTINE
000000                    2059         END
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CROSS-REFERENCE LISTING — COPYRIGHT IBM CORP 1976

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DECLARED  NAME     ATTRIBUTES AND REFERENCES

     0    .R0.     ABSOLUTE.  HEX VALUE(00000000)
                     629   729  1439  1440  1503  1504  1515  1516  1525
                    1537  1554  1555  1577  1578  1595  1596  1623  1624
                    1624  1692  1693  1714  1727  2056  2057

     0    .R1.     ABSOLUTE.  HEX VALUE(00000001)
                     634   680   681   694   695   696   728  1360  1361
                    1369  1370  1390  1391  1405  1406  1527  1542  1704
                    1705  1716  1733  1744  1745  1768  1769  1785  1786
                    1828  1829  1830  1946  1947  1948

     0    .R2.     ABSOLUTE.  HEX VALUE(00000002)
                     623   727

     0    .R3.     ABSOLUTE.  HEX VALUE(00000003)
                     639   725   726

     0    .R4.     ABSOLUTE.  HEX VALUE(00000004)
                     644   721   722   724  1396  1398  1399  1400  1401

     0    .R5.     ABSOLUTE.  HEX VALUE(00000005)
                     596   858   859   860   861   862   863   864   865
                     866   867   869   870   871   872   873   874   875
                     876   877   878   962   969   994  1001  1022  1028
                    1053  1059  1082  1123  1394  1395  1396  1441  1443
                    1446  1453  1463  1465  1474  1485  1493  1495  1506
                    1510  1513  1520  1525  1527  1528  1534  1537  1542
                    1546  1556  1558  1563  1574  1581  1583  1597  1608
                    1610  1631  1634  1640  1650  1654  1663  1673  1682
                    1684  1695  1699  1702  1709  1714  1716  1717  1724
                    1727  1733  1737  1746  1748  1753  1765  1772  1774
                    1787  1798  1800  1832  1834  1837  1848  1853  1865
                    1882  1903  1921  1934  1950  1952  1955  1965  1970
                    1982  1998  2019  2037  2050

     0    .R6.     ABSOLUTE.  HEX VALUE(00000006)
                     597   837   880   910   938   963   970   995  1002
                    1033  1064  1087  1126  1161  1183  1317  1320  1331
                    1334  1397  1442  1444  1445  1447  1449  1454  1456
                    1464  1466  1471  1475  1486  1490  1494  1496  1507
                    1511  1514  1518  1521  1524  1526  1529  1535  1536
                    1541  1547  1557  1559  1562  1564  1568  1569  1575
                    1576  1580  1582  1584  1593  1594  1598  1599  1600
                    1601  1609  1611  1615  1616  1632  1633  1635  1637
                    1641  1643  1652  1653  1655  1660  1664  1674  1678
                    1683  1685  1696  1700  1703  1707  1710  1713  1715
                    1718  1725  1726  1732  1738  1747  1749  1752  1754
                    1758  1759  1766  1767  1771  1773  1775  1783  1784
                    1788  1789  1790  1791  1799  1801  1805  1806  1833
                    1835  1838  1839  1843  1846  1852  1866  1867  1873
                    1881  1889  1897  1902  1907  1922  1923  1933  1938
                    1939  1951  1953  1956  1957  1961  1964  1969  1983
                    1984  1990  1997  2005  2013  2018  2023  2038  2039
                    2049  2054  2055

     0    .R7.     ABSOLUTE.  HEX VALUE(00000007)
                     621   625   643   664   665   677   685   686   709
                     711   720   783   785   786   787   788   789   790
                     804   806   807   808   809   810   811   812   813
                     831   836   904   909   932   937   961   968   993
                    1000  1026  1032  1057  1063  1086  1103  1122  1123
                    1125  1160  1162  1164  1167  1168  1169  1182  1184
                    1186  1189  1190  1191  1199  1203  1210  1214  1227
                    1231  1235  1239  1243  1247  1316  1330  1359  1362
                    1368  1371  1389  1407  1488  1489  1501  1544  1607
                    1676  1677  1690  1729  1735  1797  1850  1855  1871
                    1879  1884  1901  1905  1911  1916  1932  1936  1967
                    1972  1988  1995  2000  2017  2021  2027  2032  2048
                    2052

    39    @FIXT    ABSOLUTE.  HEX VALUE(00000101)
                     381   387   393   396

    41    @GOTO    ABSOLUTE.  HEX VALUE(00000200)
                     360

    38    @QUES    ABSOLUTE.  HEX VALUE(00000100)
                     357   378   384   390

    40    @STOP    ABSOLUTE.  HEX VALUE(00000102)
                     399

    45    @TUXX    ABSOLUTE.  HEX VALUE(00000500)
                     366

  1171    AINT     ADDRESS.  HEX LOCATION(00002A76) IN CSECT(I5001   ) LENGTH(2)
                    1440  1504  1624  1693

  1173    AINT0    ADDRESS.  HEX LOCATION(00002A7A) IN CSECT(I5001   ) LENGTH(2)
                    1171

  1174    AINT1    ADDRESS.  HEX LOCATION(00002A7C) IN CSECT(I5001   ) LENGTH(2)
                    1172

   755    BADDR    ADDRESS.  HEX LOCATION(00002792) IN CSECT(I5001   ) LENGTH(2)
                     622   623   627   632   637   713   716   719   759

   659    BBB      ADDRESS.  HEX LOCATION(0000267C) IN CSECT(I5001   ) LENGTH(1)
                     705  1105

  1216    CC2      ADDRESS.  HEX LOCATION(00002ADC) IN CSECT(I5001   ) LENGTH(2)
                    1555  1745

  1219    CC6      ADDRESS.  HEX LOCATION(00002AE0) IN CSECT(I5001   ) LENGTH(2)
                    1578  1769

  1222    CC7      ADDRESS.  HEX LOCATION(00002AE4) IN CSECT(I5001   ) LENGTH(2)
                    1596  1786

   679    CEND     ADDRESS.  HEX LOCATION(000026A2) IN CSECT(I5001   ) LENGTH(1)
                     697

   689    CEND1    ADDRESS.  HEX LOCATION(000026C4) IN CSECT(I5001   ) LENGTH(2)
                     684

   764    CKPT     ADDRESS.  HEX LOCATION(000027B4) IN CSECT(I5001   ) LENGTH(2)
                     637

  1364    CK0      ADDRESS.  HEX LOCATION(00002C18) IN CSECT(I5001   ) LENGTH(2)
                    1829

  1373    CK1      ADDRESS.  HEX LOCATION(00002C30) IN CSECT(I5001   ) LENGTH(2)
                    1948

  1363    CLK0     ADDRESS.  HEX LOCATION(00002C16) IN CSECT(I5001   ) LENGTH(2)
                    1360  1888  1920

  1357    CLK00    ADDRESS.  HEX LOCATION(00002C02) IN CSECT(I5001   ) LENGTH(1)
                    1364

  1360    CLK01    ADDRESS.  HEX LOCATION(00002C0A) IN CSECT(I5001   ) LENGTH(4)
                    1358

  1372    CLK1     ADDRESS.  HEX LOCATION(00002C2E) IN CSECT(I5001   ) LENGTH(2)
                    1369  2004  2036

  1366    CLK11    ADDRESS.  HEX LOCATION(00002C1A) IN CSECT(I5001   ) LENGTH(1)
                    1373

  1369    CLK12    ADDRESS.  HEX LOCATION(00002C22) IN CSECT(I5001   ) LENGTH(4)
                    1367

  1121    COPY     ADDRESS.  HEX LOCATION(00002A28) IN CSECT(I5001   ) LENGTH(1)
                    1475  1496  1511  1547  1664  1685  1700  1738

  1126    COPY1    ADDRESS.  HEX LOCATION(00002A32) IN CSECT(I5001   ) LENGTH(4)
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CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
		1124
1323	CTRT0	ADDRESS. HEX LOCATION(00002BDA) IN CSECT(I5001) LENGTH(1) 1959 1981 2003 2035
1337	CTRT1	ADDRESS. HEX LOCATION(00002BFE) IN CSECT(I5001) LENGTH(1) 1841 1864 1887 1919
1324	CT0	ADDRESS. HEX LOCATION(00002BDC) IN CSECT(I5001) LENGTH(2) 1318 1960 1980 2002 2034
1338	CT1	ADDRESS. HEX LOCATION(00002C00) IN CSECT(I5001) LENGTH(2) 1332 1842 1863 1886 1918
1205	C4	ADDRESS. HEX LOCATION(00002AC8) IN CSECT(I5001) LENGTH(2) 1516 1705
756	DADDR	ADDRESS. HEX LOCATION(00002796) IN CSECT(I5001) LENGTH(2) 624
595	DEL	ADDRESS. HEX LOCATION(000025F6) IN CSECT(I5001) LENGTH(1) 1494 1535 1564 1582 1609 1683 1725 1754 1773 1799
598	DELX	ADDRESS. HEX LOCATION(000025FE) IN CSECT(I5001) LENGTH(6) 602
603	DEL1	ADDRESS. HEX LOCATION(0000260E) IN CSECT(I5001) LENGTH(2) 596 598
599	DEL2	ADDRESS. HEX LOCATION(00002604) IN CSECT(I5001) LENGTH(4) 597
105	DEVADD	ADDRESS. HEX LOCATION(000019D0) IN CSECT(I5001) LENGTH(1) 1394
1293	DLLSB	ADDRESS. HEX LOCATION(00002B6C) IN CSECT(I5001) LENGTH(2) 788 790 809 811 813
1325	DRI0	ADDRESS. HEX LOCATION(00002BDE) IN CSECT(I5001) LENGTH(2) 1947
1314	DRI00	ADDRESS. HEX LOCATION(00002BBE) IN CSECT(I5001) LENGTH(1) 1325
1317	DRI01	ADDRESS. HEX LOCATION(00002BC6) IN CSECT(I5001) LENGTH(4) 1315
1322	DRI02	ADDRESS. HEX LOCATION(00002BD8) IN CSECT(I5001) LENGTH(4) 1319 1323
1327	DRI1	ADDRESS. HEX LOCATION(00002BE0) IN CSECT(I5001) LENGTH(2) 1830
1328	DRI11	ADDRESS. HEX LOCATION(00002BE2) IN CSECT(I5001) LENGTH(1) 1327
1331	DRI12	ADDRESS. HEX LOCATION(00002BEA) IN CSECT(I5001) LENGTH(4) 1329
1336	DRI13	ADDRESS. HEX LOCATION(00002BFC) IN CSECT(I5001) LENGTH(4) 1333 1337
67	DUMMY	ABSOLUTE. HEX VALUE(00000000) 348 401 413
746	DUMVE	ADDRESS. HEX LOCATION(00002784) IN CSECT(I5001) LENGTH(2) 1406
1102	E	ADDRESS. HEX LOCATION(00002A1A) IN CSECT(I5001) LENGTH(1) 831 836 904 909 932 937 961 968 993 1000 1026 1032 1057 1063 1086 1125 1160 1164 1167 1182 1186 1189 1199 1203 1210 1214 1227 1231 1235 1239 1243 1247 1316 1330 1359 1362 1368 1371 1501 1544 1607 1690 1729 1735 1797 1850 1855 1871 1879 1884 1901 1905 1911 1916 1932 1936 1967 1972 1988 1995 2000 2017 2021 2027 2032 2048 2052
733	EA	ADDRESS. HEX LOCATION(00002746) IN CSECT(I5001) LENGTH(2) 620 639 700 703 714 725 1103 1104
1197	EC4	ADDRESS. HEX LOCATION(00002AB8) IN CSECT(I5001) LENGTH(1) 1194
740	EEA	ADDRESS. HEX LOCATION(0000276C) IN CSECT(I5001) LENGTH(2) 640 716
693	EEND	ADDRESS. HEX LOCATION(000026C6) IN CSECT(I5001) LENGTH(1) 646 671
1270	EN	ADDRESS. HEX LOCATION(00002B40) IN CSECT(I5001) LENGTH(2) 1250
1288	ENN	ADDRESS. HEX LOCATION(00002B62) IN CSECT(I5001) LENGTH(2) 1272
402	ENTPT	ADDRESS. HEX LOCATION(00002574) IN CSECT(I5001) LENGTH(1) 198
47	EQ	ABSOLUTE. HEX VALUE(00000000) 369
699	ERTN	ADDRESS. HEX LOCATION(000026D4) IN CSECT(I5001) LENGTH(1) 700 749
457	EXIT	ABSOLUTE. HEX VALUE(00000006) 689
1404	E1	ADDRESS. HEX LOCATION(00002C68) IN CSECT(I5001) LENGTH(6) 1392
1225	E2	ADDRESS. HEX LOCATION(00002AE8) IN CSECT(I5001) LENGTH(1) 1216
1208	E4	ADDRESS. HEX LOCATION(00002ACC) IN CSECT(I5001) LENGTH(1) 1205
1233	E6	ADDRESS. HEX LOCATION(00002AF8) IN CSECT(I5001) LENGTH(1) 1219
1241	E7	ADDRESS. HEX LOCATION(00002B08) IN CSECT(I5001) LENGTH(1) 1222
421	F00082	ADDRESS. HEX LOCATION(0000257A) IN CSECT(I5001) LENGTH(1) 361
425	F00104	ADDRESS. HEX LOCATION(00002580) IN CSECT(I5001) LENGTH(1) 382
437	F00107	ADDRESS. HEX LOCATION(000025C4) IN CSECT(I5001) LENGTH(1) 397
441	F00110	ADDRESS. HEX LOCATION(000025DC) IN CSECT(I5001) LENGTH(1) 400
429	F00115	ADDRESS. HEX LOCATION(00002598) IN CSECT(I5001) LFNGTH(1) 388
433	F00125	ADDRESS. HEX LOCATION(000025A6) IN CSECT(I5001) LENGTH(1) 394
675	GEND	ADDRESS. HEX LOCATION(00002696) IN CSECT(I5001) LENGTH(1) 2058
688	GOBCK	ADDRESS. HEX LOCATION(000026C0) IN CSECT(I5001) LENGTH(4) 1389
477	HTOE	ABSOLUTE. HEX VALUE(0000001A) 626 631 636 712 715 718
768	IAR	ADDRESS. HEX LOCATION(000027C8) IN CSECT(I5001) LENGTH(2) 640
749	IDCB	ADDRESS. HEX LOCATION(00002788) IN CSECT(I5001) LENGTH(2) 746 747
839	IDCB0	ADDRESS. HEX LOCATION(0000284E) IN CSECT(I5001) LENGTH(2) 828 829 867 1498 1499
841	IDCB1	ADDRESS. HEX LOCATION(00002852) IN CSECT(I5001) LENGTH(2) 833 834 878 1687 1688
1176	ID0	ADDRESS. HEX LOCATION(00002A82) IN CSECT(I5001) LENGTH(2) 866 1162

CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
1177	ID1	ADDRESS. HEX LOCATION(00002A84) IN CSECT(I5001) LENGTH(2) 877 1184
708	INTER	ADDRESS. HEX LOCATION(000026EA) IN CSECT(I5001) LENGTH(1) 621 665
63	INTRNL	ABSOLUTE. HEX VALUE(00000000) 364
1170	INTR0	ADDRESS. HEX LOCATION(00002A74) IN CSECT(I5001) LENGTH(2) 1165 1168 1448 1455 1467 1505 1517 1561 1579 1603
1192	INTR1	ADDRESS. HEX LOCATION(00002AB2) IN CSECT(I5001) LENGTH(2) 1187 1190 1636 1642 1656 1694 1706 1751 1770 1793
1158	INT0	ADDRESS. HEX LOCATION(00002A4A) IN CSECT(I5001) LENGTH(1) 1173
1162	INT0A	ADDRESS. HEX LOCATION(00002A56) IN CSECT(I5001) LENGTH(4) 1209 1226 1234 1242
1161	INT00	ADDRESS. HEX LOCATION(00002A52) IN CSECT(I5001) LENGTH(4) 1159 1198
1165	INT01	ADDRESS. HEX LOCATION(00002A60) IN CSECT(I5001) LENGTH(6) 1163
1168	INT02	ADDRESS. HEX LOCATION(00002A6C) IN CSECT(I5001) LENGTH(4) 1166
1180	INT1	ADDRESS. HEX LOCATION(00002A88) IN CSECT(I5001) LENGTH(1) 1174
1184	INT1A	ADDRESS. HEX LOCATION(00002A94) IN CSECT(I5001) LENGTH(4) 1213 1230 1238 1246
1183	INT10	ADDRESS. HEX LOCATION(00002A90) IN CSECT(I5001) LENGTH(4) 1181 1202
1187	INT11	ADDRESS. HEX LOCATION(00002A9E) IN CSECT(I5001) LENGTH(6) 1185
1190	INT12	ADDRESS. HEX LOCATION(00002AAA) IN CSECT(I5001) LENGTH(4) 1188
1089	IPREP	ADDRESS. HEX LOCATION(00002A16) IN CSECT(I5001) LENGTH(2) 864 1083 1084
738	IRC	ADDRESS. HEX LOCATION(0000275E) IN CSECT(I5001) LENGTH(2) 713
734	IRTN	ADDRESS. HEX LOCATION(00002748) IN CSECT(I5001) LENGTH(2) 710 724 735 1388 1438 1462 1484 1497 1533 1553 1573 1592 1622 1630 1651 1672 1686 1723 1743 1764 1782 1827 1847 1862 1896 1928 1945 1979 2012 2044
1175	ISAV	ADDRESS. HEX LOCATION(00002A7E) IN CSECT(I5001) LENGTH(2) 2057
37	I5001	CSECT. START(00002500) LENGTH(3730) ESDID(0) 37
1291	LLSB	ADDRESS. HEX LOCATION(00002B66) IN CSECT(I5001) LENGTH(2) 684 686 784 786 805 807 1487 1489 1675 1677
803	LV0	ADDRESS. HEX LOCATION(000027F8) IN CSECT(I5001) LENGTH(1) 1407
808	LV0A	ADDRESS. HEX LOCATION(0000280A) IN CSECT(I5001) LENGTH(4) 805
814	LV0P	ADDRESS. HEX LOCATION(00002822) IN CSECT(I5001) LENGTH(4) 804
617	MK	ADDRESS. HEX LOCATION(00002612) IN CSECT(I5001) LENGTH(1) 1404
761	MKMSG	ADDRESS. HEX LOCATION(000027A0) IN CSECT(I5001) LENGTH(10) 754
357	N00001	ADDRESS. HEX LOCATION(00002530) IN CSECT(I5001) LENGTH(2) 315 412
360	N00002	ADDRESS. HEX LOCATION(00002534) IN CSECT(I5001) LENGTH(2) 318
366	N00003	ADDRESS. HEX LOCATION(00002540) IN CSECT(I5001) LENGTH(2) 321 358
378	N00004	ADDRESS. HEX LOCATION(00002552) IN CSECT(I5001) LENGTH(2) 324
381	N00005	ADDRESS. HEX LOCATION(00002556) IN CSECT(I5001) LENGTH(2) 327
384	N00006	ADDRESS. HEX LOCATION(0000255A) IN CSECT(I5001) LENGTH(2) 330 379
387	N00007	ADDRESS. HEX LOCATION(0000255E) IN CSECT(I5001) LENGTH(2) 333
390	N00008	ADDRESS. HEX LOCATION(00002562) IN CSECT(I5001) LENGTH(2) 336 385
393	N00009	ADDRESS. HEX LOCATION(00002566) IN CSECT(I5001) LENGTH(2) 339
396	N00010	ADDRESS. HEX LOCATION(0000256A) IN CSECT(I5001) LENGTH(2) 342 391
399	N00011	ADDRESS. HEX LOCATION(0000256E) IN CSECT(I5001) LENGTH(2) 345 367
1201	OC4	ADDRESS. HEX LOCATION(00002AC0) IN CSECT(I5001) LENGTH(1) 1195
782	OFF	ADDRESS. HEX LOCATION(000027D0) IN CSECT(I5001) LENGTH(1) 664 677
792	OFFR	ADDRESS. HEX LOCATION(000027F4) IN CSECT(I5001) LENGTH(4) 783 784
72	OPWD1	ADDRESS. HEX LOCATION(0000180E) IN CSECT(I5001) LENGTH(1) 721
702	ORTN	ADDRESS. HEX LOCATION(000026DC) IN CSECT(I5001) LENGTH(1) 703 750
451	OUT	ABSOLUTE. HEX VALUE(00000000) 645 730
1229	O2	ADDRESS. HEX LOCATION(00002AF0) IN CSECT(I5001) LENGTH(1) 1217
1212	O4	ADDRESS. HEX LOCATION(00002AD4) IN CSECT(I5001) LENGTH(1) 1206
1237	O6	ADDRESS. HEX LOCATION(00002B00) IN CSECT(I5001) LENGTH(1) 1220
1245	O7	ADDRESS. HEX LOCATION(00002B10) IN CSECT(I5001) LENGTH(1) 1223
101	PARMARA	ADDRESS. HEX LOCATION(0000196E) IN CSECT(I5001) LENGTH(1) 376
754	PARM1	ADDRESS. HEX LOCATION(00002790) IN CSECT(I5001) LENGTH(2) 643
757	PARM2	ADDRESS. HEX LOCATION(00002798) IN CSECT(I5001) LENGTH(2) 625 711
758	PARM3	ADDRESS. HEX LOCATION(0000279A) IN CSECT(I5001) LENGTH(2) 624 630 635 710 714 717
837	PERTN	ADDRESS. HEX LOCATION(0000284A) IN CSECT(I5001) LENGTH(4) 830 835
69	PID	ADDRESS. HEX LOCATION(00001800) IN CSECT(I5001) LENGTH(1) 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88

CROSS-REFERENCE LISTING

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DECLARED  NAME     ATTRIBUTES AND REFERENCES

                     89    90    91    92    93    94    95    96    97
                     98    99   100   101   102   103   104   105   106
                    107   108   109   110   111   112   629   630   634
                    635   728   729
  1081    PRE        ADDRESS. HEX LOCATION(000029FC) IN CSECT(I5001   ) LENGTH(1)
                   1442
  1090    PREPD      ADDRESS. HEX LOCATION(00002A18) IN CSECT(I5001   ) LENGTH(2)
                   1082
  1087    PRE1       ADDRESS. HEX LOCATION(00002A12) IN CSECT(I5001   ) LENGTH(4)
                   1085
   766    PSW        ADDRESS. HEX LOCATION(000027BE) IN CSECT(I5001   ) LENGTH(2)
                    627
   737    RCMS       ADDRESS. HEX LOCATION(0000274C) IN CSECT(I5001   ) LENGTH(18)
                    770
   770    RCMSG      ADDRESS. HEX LOCATION(000027CE) IN CSECT(I5001   ) LENGTH(2)
                    720
   989    RDM0       ADDRESS. HEX LOCATION(00002950) IN CSECT(I5001   ) LENGTH(1)
                   1526  1541  1852
   994    RDM00      ADDRESS. HEX LOCATION(00002962) IN CSECT(I5001   ) LENGTH(4)
                    992
   996    RDM1       ADDRESS. HEX LOCATION(0000296A) IN CSECT(I5001   ) LENGTH(1)
                   1715  1732  1969
  1001    RDM11      ADDRESS. HEX LOCATION(0000297C) IN CSECT(I5001   ) LENGTH(4)
                    999
   957    RDV0       ADDRESS. HEX LOCATION(00002914) IN CSECT(I5001   ) LENGTH(1)
                   1524  1536  1846  1881  1902  1933
   962    RDV00      ADDRESS. HEX LOCATION(00002926) IN CSECT(I5001   ) LENGTH(4)
                    960
   964    RDV1       ADDRESS. HEX LOCATION(0000292E) IN CSECT(I5001   ) LENGTH(1)
                   1713  1726  1964  1997  2018  2049
   969    RDV11      ADDRESS. HEX LOCATION(00002940) IN CSECT(I5001   ) LENGTH(4)
                    967
  1035    RD0        ADDRESS. HEX LOCATION(000029BC) IN CSECT(I5001   ) LENGTH(2)
                    862  1023  1024
  1037    RD1        ADDRESS. HEX LOCATION(000029C0) IN CSECT(I5001   ) LENGTH(2)
                    874  1029  1030
  1036    RD2        ADDRESS. HEX LOCATION(000029BE) IN CSECT(I5001   ) LENGTH(2)
                   1022
  1038    RD3        ADDRESS. HEX LOCATION(000029C2) IN CSECT(I5001   ) LENGTH(2)
                   1028
   731    RINTE      ADDRESS. HEX LOCATION(00002742) IN CSECT(I5001   ) LENGTH(4)
                    709   723
  1004    RM0        ADDRESS. HEX LOCATION(00002984) IN CSECT(I5001   ) LENGTH(2)
                    861   990   991
  1006    RM1        ADDRESS. HEX LOCATION(00002988) IN CSECT(I5001   ) LENGTH(2)
                    873   997   998
  1005    RM2        ADDRESS. HEX LOCATION(00002986) IN CSECT(I5001   ) LENGTH(2)
                    994
  1007    RM3        ADDRESS. HEX LOCATION(0000298A) IN CSECT(I5001   ) LENGTH(2)
                   1001
   938    RSETP      ADDRESS. HEX LOCATION(00002908) IN CSECT(I5001   ) LENGTH(4)
                    931   936
   928    RSET0      ADDRESS. HEX LOCATION(000028E4) IN CSECT(I5001   ) LENGTH(1)
                   1568  1593  1615  1758  1783  1805  1938  2013  2054
   933    RSET1      ADDRESS. HEX LOCATION(000028F6) IN CSECT(I5001   ) LENGTH(1)
                   1569  1594  1616  1759  1784  1806  1897  1939  2055
   940    RS0        ADDRESS. HEX LOCATION(0000290C) IN CSECT(I5001   ) LENGTH(2)
                    662   859   929   930
   942    RS1        ADDRESS. HEX LOCATION(00002910) IN CSECT(I5001   ) LENGTH(2)
                    663   871   934   935
   762    RTN        ADDRESS. HEX LOCATION(000027AA) IN CSECT(I5001   ) LENGTH(2)
                    632
   972    RV0        ADDRESS. HEX LOCATION(00002948) IN CSECT(I5001   ) LENGTH(2)
                    860   958   959
   974    RV1        ADDRESS. HEX LOCATION(0000294C) IN CSECT(I5001   ) LENGTH(2)
                    872   965   966
   973    RV2        ADDRESS. HEX LOCATION(0000294A) IN CSECT(I5001   ) LENGTH(2)
                    962
   975    RV3        ADDRESS. HEX LOCATION(0000294E) IN CSECT(I5001   ) LENGTH(2)
                    969
  1178    SAVA       ADDRESS. HEX LOCATION(00002A86) IN CSECT(I5001   ) LENGTH(2)
                    680  1400  1405  1439  1503  1515  1554  1577  1595
                   1623  1692  1704  1744  1768  1785  1828  1946  2056
   752    SAVA1      ADDRESS. HEX LOCATION(0000278C) IN CSECT(I5001   ) LENGTH(2)
                    682  1402
   745    SDCP       ADDRESS. HEX LOCATION(00002780) IN CSECT(I5001   ) LENGTH(2)
                    681  1401
  1033    SETMR      ADDRESS. HEX LOCATION(000029B8) IN CSECT(I5001   ) LENGTH(4)
                   1025  1031
  1021    SETM0      ADDRESS. HEX LOCATION(0000298C) IN CSECT(I5001   ) LENGTH(1)
                   1444  1464  1557  1575  1598  1632  1641  1653  1674
                   1696  1710  1718  1767  1775  1788  1801  1839  1866
                   1956  2038
  1027    SETM1      ADDRESS. HEX LOCATION(000029A2) IN CSECT(I5001   ) LENGTH(1)
                   1445  1454  1486  1507  1521  1529  1576  1584  1599
                   1611  1633  1652  1747  1766  1789  1838  1922  1957
                   1983
  1064    SETR       ADDRESS. HEX LOCATION(000029F0) IN CSECT(I5001   ) LENGTH(4)
                   1056  1062
   857    SETT       ADDRESS. HEX LOCATION(00002856) IN CSECT(I5001   ) LENGTH(1)
                   1397
  1066    SETV0      ADDRESS. HEX LOCATION(000029F4) IN CSECT(I5001   ) LENGTH(2)
                    863  1054  1055
  1068    SETV1      ADDRESS. HEX LOCATION(000029F8) IN CSECT(I5001   ) LENGTH(2)
                    875  1060  1061
  1067    SETV2      ADDRESS. HEX LOCATION(000029F6) IN CSECT(I5001   ) LENGTH(2)
                   1053
  1069    SETV3      ADDRESS. HEX LOCATION(000029FA) IN CSECT(I5001   ) LENGTH(2)
                   1059
  1052    SET0       ADDRESS. HEX LOCATION(000029C4) IN CSECT(I5001   ) LENGTH(1)
                   1447  1466  1514  1559  1600  1790  1835  1951
  1058    SET1       ADDRESS. HEX LOCATION(000029DA) IN CSECT(I5001   ) LENGTH(1)
                   1601  1635  1655  1703  1749  1791  1833  1953
   604    SI         ADDRESS. HEX LOCATION(00002610) IN CSECT(I5001   ) LENGTH(2)
                    644   828   833   901   906   929   934   958   965
                    990   997  1023  1029  1054  1060  1083  1498  1604
                   1687  1794  1868  1876  1898  1908  1913  1929  1985
                   1992  2014  2024  2029  2045
  1128    STAP       ADDRESS. HEX LOCATION(00002A36) IN CSECT(I5001   ) LENGTH(2)
                    865  1604  1605  1868  1869  1876  1877  1898  1899
                   1908  1909  1913  1914  1929  1930
   742    STAT       ADDRESS. HEX LOCATION(0000277A) IN CSECT(I5001   ) LENGTH(2)
                    719
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CROSS-REFERENCE LISTING

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DECLARED  NAME     ATTRIBUTES AND REFERENCES

   910    STOPR      ADDRESS. HEX LOCATION(000028D8) IN CSECT(I5001   ) LENGTH(4)
                    903   908
   900    STOP0      ADDRESS. HEX LOCATION(000028B4) IN CSECT(I5001   ) LENGTH(1)
                   1161  1317  1907
   905    STOP1      ADDRESS. HEX LOCATION(000028C6) IN CSECT(I5001   ) LENGTH(1)
                   1183  1331  2023
  1131    STP        ADDRESS. HEX LOCATION(00002A3A) IN CSECT(I5001   ) LENGTH(2)
                    876  1794  1795  1985  1986  1992  1993  2014  2015
                   2024  2025  2029  2030  2045  2046
   827    STPE0      ADDRESS. HEX LOCATION(00002826) IN CSECT(I5001   ) LENGTH(1)
                   1320  1449  1456  1471  1490  1518  1562  1580  1867
                   1961  1990  2005  2039
   832    STPE1      ADDRESS. HEX LOCATION(00002838) IN CSECT(I5001   ) LENGTH(1)
                   1334  1637  1643  1660  1678  1707  1752  1771  1843
                   1873  1889  1923  1984
   912    ST0        ADDRESS. HEX LOCATION(000028DC) IN CSECT(I5001   ) LENGTH(2)
                    858   901   902
   914    ST1        ADDRESS. HEX LOCATION(000028E0) IN CSECT(I5001   ) LENGTH(2)
                    870   906   907
   647    SVPSW      ADDRESS. HEX LOCATION(0000267A) IN CSECT(I5001   ) LENGTH(2)
                    619   622
    98    TURESUL    ADDRESS. HEX LOCATION(000018C8) IN CSECT(I5001   ) LENGTH(1)
                    661   678   694   696   704   717  1390
  1386    T0         ADDRESS. HEX LOCATION(00002C32) IN CSECT(I5001   ) LENGTH(1)
                    576
  1437    T176       ADDRESS. HEX LOCATION(00002C80) IN CSECT(I5001   ) LENGTH(1)
                   1409
  1452    T178       ADDRESS. HEX LOCATION(00002CB6) IN CSECT(I5001   ) LENGTH(1)
                   1448
  1461    T179       ADDRESS. HEX LOCATION(00002CCA) IN CSECT(I5001   ) LENGTH(1)
                   1455
  1473    T180       ADDRESS. HEX LOCATION(00002CEC) IN CSECT(I5001   ) LENGTH(1)
                   1467
  1492    T181       ADDRESS. HEX LOCATION(00002D16) IN CSECT(I5001   ) LENGTH(1)
                   1487
  1502    T182       ADDRESS. HEX LOCATION(00002D3E) IN CSECT(I5001   ) LENGTH(1)
                   1500
  1509    T183       ADDRESS. HEX LOCATION(00002D56) IN CSECT(I5001   ) LENGTH(1)
                   1505
  1523    T185       ADDRESS. HEX LOCATION(00002D82) IN CSECT(I5001   ) LENGTH(1)
                   1517
  1541    T188       ADDRESS. HEX LOCATION(00002DAE) IN CSECT(I5001   ) LENGTH(4)
                   1538
  1545    T188A      ADDRESS. HEX LOCATION(00002DBA) IN CSECT(I5001   ) LENGTH(1)
                   1543
  1567    T188E      ADDRESS. HEX LOCATION(00002DF4) IN CSECT(I5001   ) LENGTH(1)
                   1561
  1587    T188F      ADDRESS. HEX LOCATION(00002E32) IN CSECT(I5001   ) LENGTH(1)
                   1579
  1608    T188H      ADDRESS. HEX LOCATION(00002E74) IN CSECT(I5001   ) LENGTH(4)
                   1606
  1614    T188I      ADDRESS. HEX LOCATION(00002E86) IN CSECT(I5001   ) LENGTH(1)
                   1603
  1639    T191       ADDRESS. HEX LOCATION(00002EC2) IN CSECT(I5001   ) LENGTH(1)
                   1636
  1650    T192       ADDRESS. HEX LOCATION(00002ED6) IN CSECT(I5001   ) LENGTH(4)
                   1642
  1662    T193       ADDRESS. HEX LOCATION(00002EFC) IN CSECT(I5001   ) LENGTH(1)
                   1656
  1681    T194       ADDRESS. HEX LOCATION(00002F26) IN CSECT(I5001   ) LENGTH(1)
                   1675
  1691    T195       ADDRESS. HEX LOCATION(00002F4E) IN CSECT(I5001   ) LENGTH(1)
                   1689
  1698    T196       ADDRESS. HEX LOCATION(00002F66) IN CSECT(I5001   ) LENGTH(1)
                   1694
  1712    T198       ADDRESS. HEX LOCATION(00002F94) IN CSECT(I5001   ) LFNGTH(1)
                   1706
  1731    T201       ADDRESS. HEX LOCATION(00002FC2) IN CSECT(I5001   ) LENGTH(1)
                   1728
  1736    T202       ADDRESS. HEX LOCATION(00002FCE) IN CSECT(I5001   ) LENGTH(1)
                   1734
  1757    T202D      ADDRESS. HEX LOCATION(0000300A) IN CSECT(I5001   ) LENGTH(1)
                   1751
  1778    T202E      ADDRESS. HEX LOCATION(0000304A) IN CSECT(I5001   ) LENGTH(1)
                   1770
  1798    T202G      ADDRESS. HEX LOCATION(0000308E) IN CSECT(I5001   ) LENGTH(4)
                   1796
  1804    T202H      ADDRESS. HEX LOCATION(000030A0) IN CSECT(I5001   ) LENGTH(1)
                   1793
  1846    T204       ADDRESS. HEX LOCATION(000030EA) IN CSECT(I5001   ) LENGTH(4)
                   1841
  1851    T205       ADDRESS. HEX LOCATION(000030FE) IN CSECT(I5001   ) LENGTH(1)
                   1849
  1861    T206       ADDRESS. HEX LOCATION(0000310C) IN CSECT(I5001   ) LENGTH(1)
                   1854
  1872    T208       ADDRESS. HEX LOCATION(0000313C) IN CSECT(I5001   ) LENGTH(1)
                   1870
  1875    T209       ADDRESS. HEX LOCATION(00003142) IN CSECT(I5001   ) LENGTH(1)
                   1864
  1880    T210       ADDRESS. HEX LOCATION(00003154) IN CSECT(I5001   ) LENGTH(1)
                   1878
  1885    T211       ADDRESS. HEX LOCATION(00003162) IN CSECT(I5001   ) LENGTH(1)
                   1883
  1890    T212       ADDRESS. HEX LOCATION(00003178) IN CSECT(I5001   ) LENGTH(2)
                   1887
  1895    T213       ADDRESS. HEX LOCATION(0000317A) IN CSECT(I5001   ) LENGTH(1)
                   1888
  1902    T214       ADDRESS. HEX LOCATION(00003196) IN CSECT(I5001   ) LENGTH(4)
                   1900
  1906    T215       ADDRESS. HEX LOCATION(000031A4) IN CSECT(I5001   ) LENGTH(1)
                   1904
  1913    T215A      ADDRESS. HEX LOCATION(000031BA) IN CSECT(I5001   ) LENGTH(6)
                   1910
  1918    T215B      ADDRESS. HEX LOCATION(000031CC) IN CSECT(I5001   ) LENGTH(6)
                   1915
  1924    T215C      ADDRESS. HEX LOCATION(000031EA) IN CSECT(I5001   ) LENGTH(2)
                   1919
  1928    T215D      ADDRESS. HEX LOCATION(000031EC) IN CSECT(I5001   ) LENGTH(6)
                   1920
  1933    T215E      ADDRESS. HEX LOCATION(00003204) IN CSECT(I5001   ) LENGTH(4)
                   1931
  1937    T215F      ADDRESS. HEX LOCATION(00003212) IN CSECT(I5001   ) LENGTH(1)
                   1935
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CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
1964	T217	ADDRESS. HEX LOCATION(0000325C) IN CSECT(I5001) LENGTH(4)
		1959
1968	T218	ADDRESS. HEX LOCATION(0000326A) IN CSECT(I5001) LENGTH(1)
		1966
1978	T219	ADDRESS. HEX LOCATION(00003278) IN CSECT(I5001) LENGTH(1)
		1971
1989	T221	ADDRESS. HEX LOCATION(000032A8) IN CSECT(I5001) LENGTH(1)
		1987
1992	T222	ADDRESS. HEX LOCATION(000032AE) IN CSECT(I5001) LENGTH(6)
		1981
1996	T223	ADDRESS. HEX LOCATION(000032C0) IN CSECT(I5001) LENGTH(1)
		1994
2001	T224	ADDRESS. HEX LOCATION(000032CE) IN CSECT(I5001) LENGTH(1)
		1999
2006	T225	ADDRESS. HEX LOCATION(000032E4) IN CSECT(I5001) LENGTH(2)
		2003
2011	T226	ADDRESS. HEX LOCATION(000032E6) IN CSECT(I5001) LENGTH(1)
		2004
2018	T227	ADDRESS. HEX LOCATION(00003302) IN CSECT(I5001) LENGTH(4)
		2016
2022	T228	ADDRESS. HEX LOCATION(00003310) IN CSECT(I5001) LENGTH(1)
		2020
2029	T229	ADDRESS. HEX LOCATION(00003326) IN CSECT(I5001) LENGTH(6)
		2026
2034	T230	ADDRESS. HEX LOCATION(00003338) IN CSECT(I5001) LENGTH(6)
		2031
2040	T231	ADDRESS. HEX LOCATION(00003356) IN CSECT(I5001) LENGTH(2)
		2035
2044	T232	ADDRESS. HEX LOCATION(00003358) IN CSECT(I5001) LENGTH(6)
		2036
2049	T233	ADDRESS. HEX LOCATION(00003370) IN CSECT(I5001) LENGTH(4)
		2047
2053	T234	ADDRESS. HEX LOCATION(0000337E) IN CSECT(I5001) LENGTH(1)
		2051
547	T5001	ADDRESS. HEX LOCATION(000025F2) IN CSECT(I5001) LENGTH(1)
		368
704	UNSET	ADDRESS. HEX LOCATION(000026E2) IN CSECT(I5001) LENGTH(6)
		701

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