```
 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
                             3        COPY  LOG5000                  ** MAP EC HISTORY **
                             4  ********************************************************************
                             5  *                                                                  *
                             6  *                     ***       PREREQUISITES         ***          *
                             7  *                                                                  *
                             8  *                                  NONE                            *
                             9  *                                                                  *
                            10  ********************************************************************
                            11  *                                                                  *
                            12  *                     ***       MODIFICATIONS         ***          *
                            13  *                                                                  *
                            14  *                   CHANGE MADE TO CORRECT 4952 PROBLEM            *
                            15  *                                                                  *
                            16  ********************************************************************
                            17  *                                                                  *
                            18  *                     ***     REA'S INCORPORATED      ***          *
                            19  *                                                                  *
                            20  *                                  NONE                            *
                            21  *                                                                  *
                            22  ********************************************************************
                            23  *                                                                  *
                            24  *                     ***    SPECIAL INSTRUCTIONS     ***          *
                            25  *                                                                  *
                            26  *                                  NONE                            *
                            27  *                                                                  *
                            28  ********************************************************************
                            29  *                                                                  *
                            30  *                     ***       E. C. HISTORY         ***          *
                            31  *                                                                  *
                            32  *        DATE 01OCT76  DATE 02DEC76  DATE 15MAR77  DATE 10JUN77    *
                            33  *        E.C. 578468   E.C. 578469   E.C. 578714   E.C. 578625     *
                            34  *                                                                  *
                            35  *        DATE 20JAN78  DATE 06NOV78  DATE 15JAN79  DATE           *
                            36  *        E.C. 755331   E.C. 755551   E.C. 375147   E.C.           *
                            37  *                                                                  *
                            38  ********************************************************************
002500                      40  I5000    START X'2500'          START ADDRESS OF ALL 'I' TYPE PROG
000100                      41  @QUES    EQU   X'0100'          EQUATED VALUE FOR MDI STATEMENT
000101                      42  @FIXT    EQU   X'0101'          EQUATED VALUE FOR MDI STATEMENT
000102                      43  @STOP    EQU   X'0102'          EQUATED VALUE FOR MDI STATEMENT
000200                      44  @GOTO    EQU   X'0200'          EQUATED VALUE FOR MDI STATEMENT
000201                      45  @CALL    EQU   X'0201'          EQUATED VALUE FOR MDI STATEMENT
000300                      46  @INPT    EQU   X'0300'          EQUATED VALUE FOR MDI STATEMENT
000400                      47  @QUXX    EQU   X'0400'          EQUATED VALUE FOR MDI STATEMENT
000500                      48  @TUXX    EQU   X'0500'          EQUATED VALUE FOR MDI STATEMENT
000600                      49  @NVLD    EQU   X'0600'          EQUATED VALUE FOR MDI STATEMENT
000000                      50  EQ       EQU   X'0000'          EQUATE FOR EQUAL
000004                      51  NE       EQU   X'0004'          EQUATE FOR NOT EQUAL
000008                      52  HI       EQU   X'0008'          EQUATE FOR HIGH
00000C                      53  NH       EQU   X'000C'          EQUATE FOR NOT HIGH
000010                      54  LO       EQU   X'0010'          EQUATE FOR LOW
000014                      55  NL       EQU   X'0014'          EQUATE FOR NOT LOW
000010                      56  LT       EQU   X'0010'          EQUATE FOR LESS THAN
00000C                      57  LE       EQU   X'000C'          EQUATE FOR LESS THAN OR EQUAL TO
000008                      58  GT       EQU   X'0008'          EQUATE FOR GREATER THAN
000014                      59  GE       EQU   X'0014'          EQUATE FOR GREATER THAN OR EQUAL TO
000200                      60  ON       EQU   X'0200'          EQUATE FOR ON
000202                      61  OF       EQU   X'0202'          EQUATE FOR OFF
000204                      62  MX       EQU   X'0204'          EQUATE FOR MIXED
000000                      63  EBC      EQU   X'0000'          EQUATE FOR EBCDIC DATA TRANSFER
000001                      64  HEX      EQU   X'0001'          EQUATE FOR HEX DATA TRANSFER
000001                      65  XTRNL    EQU   X'0001'          EQUATE FOR EXTERNAL REFERENCE
000000                      66  INTRNL   EQU   X'0000'          EQUATE FOR INTERNAL REFERENCE
000000                      67  PARM     EQU   X'0000'          EQUATE INDICATING PARAMETER
000001                      68  DA       EQU   X'0001'          EQUATE FOR DEVICE ADDRESS
000002                      69  UA       EQU   X'0002'          EQUATE FOR UNIT ADDRESS
000000                      70  DUMMY    EQU   X'0000'          DUMMY EQUATE
001800                      72  PID      EQU   *-X'0D00'        ADDRESS OF MDI HEADER
000232                      73  PTYPE    EQU   *-X'22CE'        ADDRESS OF PROCESSOR TYPE FIELD
00180C                      74  STEPNUM  EQU   PID+X'000C'      ADDRESS OF DECIMAL STEP NUMBER
00180E                      75  OPWD1    EQU   PID+X'000E'      ADDRESS OF OPTION WORD ONE
001810                      76  OPWD2    EQU   PID+X'0010'      ADDRESS OF OPTION WORD TWO
001818                      77  TUSTATUS EQU   PID+X'0018'      ADDRESS OF TU STATUS WORD
00181A                      78  TUWORK   EQU   PID+X'001A'      ADDRESS OF TU WORK AREA
00189A                      79  TUPARM1  EQU   PID+X'009A'      ADDRESS OF PARM 1 POINTER
00189C                      80  TUPARM2  EQU   PID+X'009C'      ADDRESS OF PARM 2 POINTER
00189E                      81  TUPARM3  EQU   PID+X'009E'      ADDRESS OF PARM 3 POINTER
0018A0                      82  TUPARM4  EQU   PID+X'00A0'      ADDRESS OF PARM 4 POINTER
0018A2                      83  TUPARM5  EQU   PID+X'00A2'      ADDRESS OF PARM 5 POINTER
0018A4                      84  TUPARM6  EQU   PID+X'00A4'      ADDRESS OF PARM 6 POINTER
0018A6                      85  TUPARM7  EQU   PID+X'00A6'      ADDRESS OF PARM 7 POINTER
0018A8                      86  TUPARM8  EQU   PID+X'00A8'      ADDRESS OF PARM 8 POINTER
0018AA                      87  TUPARM9  EQU   PID+X'00AA'      ADDRESS OF PARM 9 POINTER
0018AC                      88  TUPARM10 EQU   PID+X'00AC'      ADDRESS OF PARM 10 POINTER
0018AE                      89  TUPARM11 EQU   PID+X'00AE'      ADDRESS OF PARM 11 POINTER
0018B0                      90  TUPARM12 EQU   PID+X'00B0'      ADDRESS OF PARM 12 POINTER
0018B2                      91  TUPARM13 EQU   PID+X'00B2'      ADDRESS OF PARM 13 POINTER
0018B4                      92  TUPARM14 EQU   PID+X'00B4'      ADDRESS OF PARM 14 POINTER
0018B6                      93  TUPARM15 EQU   PID+X'00B6'      ADDRESS OF PARM 15 POINTER
0018B8                      94  TUPARM16 EQU   PID+X'00B8'      ADDRESS OF PARM 16 POINTER
0018BA                      95  TUMSGWTR EQU   PID+X'00BA'      ADDRESS OF -> TO COMMON MSG WRITER
0018BE                      96  TUUA     EQU   PID+X'00BE'      ADDRESS OF UNIT ADDRESS IN EBC
0018C0                      97  TUDA     EQU   PID+X'00C0'      ADDRESS OF DEVICE ADDRESS IN EBC
0018C2                      98  TUBUFF   EQU   PID+X'00C2'      ADDRESS OF LAST USED WORD IN MAP
0018C4                      99  TULAST   EQU   PID+X'00C4'      ADDRESS OF LAST ADDRESSABLE WORD
0018C6                     100  TURESULN EQU   PID+X'00C6'      ADDRESS OF LENGTH OF TU RESULTS
0018C8                     101  TURESUL  EQU   PID+X'00C8'      ADDRESS OF TU RESULTS FIELD
0018FC                     102  MAPNAME  EQU   PID+X'00FC'      ADDRESS OF MAP NAME FIELD IN HEX
001948                     103  TUINPT   EQU   PID+X'0148'      ADDRESS OF $INPT DATA
00196E                     104  PARMARA  EQU   PID+X'016E'      ADDRESS OF $INPT INPUT AREA
0019B8                     105  @DCADD1  EQU   PID+X'01B8'      MDI POINTER
0019BA                     106  @DCADD2  EQU   PID+X'01BA'      MDI POINTER
0019C4                     107  SUPSTAT  EQU   PID+X'01C4'      ADDRESS OF MDI STATUS
0019D0                     108  DEVADD   EQU   PID+X'01D0'      ADDRESS OF DEVICE ADDRESS TABLE 0
0019DA                     109  DEVADD1  EQU   PID+X'01DA'      ADDRESS OF DEVICE ADDRESS TABLE 1
0019E4                     110  DEVADD2  EQU   PID+X'01E4'      ADDRESS OF DEVICE ADDRESS TABLE 2
0019EE                     111  DEVADD3  EQU   PID+X'01EE'      ADDRESS OF DEVICE ADDRESS TABLE 3
0019F8                     112  DEVADD4  EQU   PID+X'01F8'      ADDRESS OF DEVICE ADDRESS TABLE 4
001A02                     113  DEVADD5  EQU   PID+X'02C2'      ADDRESS OF DEVICE ADDRESS TABLE 5
001A0C                     114  DEVADD6  EQU   PID+X'020C'      ADDRESS OF DEVICE ADDRESS TABLE 6
001A16                     115  DEVADD7  EQU   PID+X'0216'      ADDRESS OF DEVICE ADDRESS TABLE 7
                           116          PRINT OFF
```



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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
002500  2534               201          DC    A(ENTPT)          POINT TO MAP ENTRY POINT TABLE
                           202  ********************************************************************
                           203  ********************************************************************
                           204  **                                                                **
                           205  **   THE FOLLOWING TABLES ARE USED BY THE MDI SUPERVISOR (D3C00)  **
                           206  **   TO LOCATE THE CORRECT RULE TO INVOKE, TO OBTAIN THE PROPER   **
                           207  **   PARAMETERS TO PASS TO THE TU'S AND TO PASS TO THE OPERATOR   **
                           208  **   THE INDICATED MESSAGE(S). THERE ARE FOUR TABLES USED FOR THIS **
                           209  **   PURPOSE THEY ARE:                                            **
                           210  **                                                                **
                           211  **   STEP AND RULE ADDRESS TABLE                                  **
                           212  **        THIS TABLE GIVES THE ADDRESS OF THE RULE TO INVOKE AND   **
                           213  **        THE ASSOCIATED STEP DECIMAL STEP NUMBER OF THAT RULE.    **
                           214  **        ENTRIES ARE AS FOLLOWES                                 **
                           215  **                A)  AN ADDRESS OF THE RULE DC START AREA        **
                           216  **                B)  THE STEP NUMBER IN DECIMAL                  **
                           217  **                C)  AN EQUATE FOR THE STEP NUMBER               **
                           218  **                                                                **
                           219  **   RULE INFORMATION TABLE                                       **
                           220  **        THIS TABLE CONTAINES THE REQUIRED INFORMATION TO EXECUTE **
                           221  **        THE APPROPRIATE RULE UNDER MDI. EACH RULE HAS ITS OWN   **
                           222  **        UNIQUELY DEFINED AREA INDICATED BELOW. END OF TABLE IS  **
                           223  **        INDICATED WITH A X'0000' FOR THE RULE EQUATE.           **
                           224  **                                                                **
                           225  **        $QUES                                                   **
                           226  **                A) RULE EQUATE X'0100'                          **
                           227  **                B) ADDRESS OF THE YES LEG RULE                  **
                           228  **                                                                **
                           229  **        $FIXT                                                   **
                           230  **                A) RULE EQUATE X'0101'                          **
                           231  **                B) ADDRESS OF MESSAGE TO PRINT                  **
                           232  **                                                                **
                           233  **        $STOP                                                   **
                           234  **                A) RULE EQUATE X'0102'                          **
                           235  **                B) ADDRESS OF MESSAGE                           **
                           236  **                                                                **
                           237  **        $GOTO                                                   **
                           238  **                A) RULE EQUATE X'0200'                          **
                           239  **                B) ADDRESS OF MESSAGE                           **
                           240  **                C) NAME OF MAP TO GO TO                         **
                           241  **                D) ENTRY POINT WITHIN GO TO MAP TO USE          **
                           242  **                E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE **
                           244  **                                                                **
                           245  **        $CALL                                                   **
                           246  **                A) RULE EQUATE X'0201'                          **
                           247  **                B) ADDRESS OF MESSAGE                           **
                           248  **                C) NAME OF MAP TO CALL                          **
                           249  **                D) ENTRY POINT WITHIN CALLED MAP TO USE         **
                           250  **                E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE **
                           251  **                                                                **
                           252  **        $INPT                                                   **
                           253  **                A) RULE EQUATE X'0300'                          **
                           254  **                B) INPUT TYPE (EBCDIC OR HEX)                   **
                           255  **                C) ADDRESS OF YES LEG RULE                      **
                           256  **                D) DESTINATION LOCATION OF INPUT DATA           **
                           257  **                E) LENGTH OF INPUT DATA                         **
                           258  **                F) LOWER LIMIT OF GOOD DATA                     **
                           259  **                G) HIGHER LIMIT OF GOOD DATA                    **
                           260  **                                                                **
                           261  **        $QUXX                                                   **
                           262  **                A) RULE EQUATE X'0400'                          **
                           263  **                B) ADDRESS OF YES LEG RULE                      **
                           264  **                C) TU BRANCH TO ADDRESS (INITIAL)               **
                           265  **                D) TU BRANCH TO ADDRESS (SECONDARY)             **
                           266  **                E) LENGTH OF PARAMETER IN BYTES                 **
                           267  **                F) PARAMETER TO PASS TO TU                      **
                           268  **                G) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER **
                           269  **                                                                **
                           270  **        $TUXX                                                   **
                           271  **                A) RULE EQUATE X'0500'                          **
                           272  **                B) ADDRESS OF YES LEG RULE                      **
                           273  **                C) TU BRANCH TO ADDRESS                         **
                           274  **                D) TYPE OF COMPARE TO MAKE ON RESULTS           **
                           275  **                E) LENGTH OF COMPARED RESULTS                   **
                           276  **                F) MASK FIELD FOR COMPARE                       **
                           277  **                G) LENGTH OF PARAMETER IN BYTES                 **
                           278  **                H) PARAMETER TO PASS TO THE TU                  **
                           279  **                I) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER **
                           280  **                                                                **
                           281  **        $NVLD                                                   **
                           282  **                A) RULE EQUATE X'0600'                          **
                           284  **                                                                **
                           285  **   ENTRY POINT TABLE                                            **
                           286  **        THIS TABLE CONTAINS THE ENTRY POINTS WITHIN THE MAP THAT **
                           287  **        THE MAP CAN BE ENTERED FROM THESE ENTRY POINTS ARE       **
                           288  **        REFERENCED BY NAME AND ADDRESS. ENTRIES ARE AS FOLLOWES: **
                           289  **                                                                **
                           290  **            A) NAME OF ENTRY POINT                              **
                           291  **            B) ADDRESS OF ENTRY POINT RULE TABLE                **
                           292  **                                                                **
                           293  **        THE ENTRY POINT TABLE END IS INDICATED BY A X'0000'     **
                           294  **                                                                **
                           295  **   MESSAGE TABLE                                                **
                           296  **        THIS TABLE CONTAINES THE MESSAGE PASSED TO THE OPERATOR  **
                           297  **        VIA THE MDI SUPERVISOR. THE TABLE IS AS FOLLOWES:       **
                           298  **                                                                **
                           299  **            A) EQUATE FOR START OF MESSAGE BLOCK                **
                           300  **            B) NUMBER OF LINES OF MESSAGE                       **
                           301  **            C) LENGTH OF FOLLOWING LINE                         **
                           302  **            D) FIRST LINE OF MESSAGE                            **
                           303  **            E) LENGTH OF FOLLOWING LINE                         **
                           304  **            F) SECOND LINE OF MESSAGE                           **
                           305  **            G) ETC.                                             **
                           306  **                                                                **
                           307  ********************************************************************
                           308  ********************************************************************
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
                           311 ********************************************************************************
                           312 ********************************************************************************
                           313 **                                                                            **
                           314 **                    STEP AND RULE ADDRESS TABLE                             **
                           315 **                                                                            **
                           316 ********************************************************************************
                           317 ********************************************************************************
002502  2510               318          DC    AL2(N00001)
002504  0001               319          DC    XL2'0001'
000001                     320 EQN00001 EQU         0001
002506  2522               321          DC    AL2(N00002)
002508  0002               322          DC    XL2'0002'
000002                     323 EQN00002 EQU         0002
00250A  252E               324          DC    AL2(N00003)
00250C  0003               325          DC    XL2'0003'
000003                     326 EQN00003 EQU         0003
00250E  0000               327          DC    AL2(DUMMY)
                           328 ********************************************************************************
                           329 ********************************************************************************
                           330 **                                                                            **
                           331 **                        RULE INFORMATION TABLE                              **
                           332 **                                                                            **
                           333 ********************************************************************************
                           334 ********************************************************************************
                           335 N00001   $TUXX T5000,02,C000,EQ,QT=(Q00074),YES=N00003,CT=(C00060),    X
002510  0500               336+N00001   DC    A(@TUXX)
002512  252E               337+         DC    AL2(N00003)
002514  257C               338+         DC    A(T5000)
002516  0000               339+         DC    AL2(EQ)
002518  0002               340+         DC    AL2(02)
00251A  0000               341+         DC    X'0000'
                           342+         ALIGN WORD
00251C  0000               343+         DC    AL2(0)
00251E  C1C1               344+         DC    C'AA'
                           345+         ALIGN WORD
002520  196E               346+         DC     AL2(PARMARA)
                           347 N00002   $CALL TYPE=XTRNL,MAP=5002,EP=A,FT=(F00076),GTO=((5002,A))
002522  0201               348+N00002   DC    A(@CALL)
002524  253A               349+         DC    A(F00076)
002526  F5F0F0F2           350+         DC    CL4'5002'
00252A  C140               351+         DC    CL2'A'
00252C  0001               352+         DC    AL2(XTRNL)
                           353 N00003   $STOP FT=(F00080)
00252E  0102               354+N00003   DC    A(@STOP)
002530  2566               355+         DC    A(F00080)
002532  0000               356          DC    AL2(DUMMY)
002534                     357 ENTPT    EQU   *
                           358 ********************************************************************************
                           359 ********************************************************************************
                           360 **                                                                            **
                           361 **                          ENTRY POINT TABLE                                 **
                           362 **                                                                            **
                           363 ********************************************************************************
                           364 ********************************************************************************
                           365          ENTPT EP=A,STEP=00001
002534  C140               366+         DC    CL2'A'
002536  2510               367+         DC    A(N00001)
002538  0000               368          DC    AL2(DUMMY)
                           369 ********************************************************************************
                           370 ********************************************************************************
                           371 **                                                                            **
                           372 **                            MESSAGE TABLE                                   **
                           373 **                                                                            **
                           374 ********************************************************************************
                           375 ********************************************************************************
00253A                     376 F00076   EQU   *
00253A  0001               377          DC    AL2(0001)
00253C  0028               378          DC    A(0040)
00253E  E3C9D4C5D940C4C9C  379          DC    CL0040'TIMER DIAGNOSTIC DID NOT RUN CORRECTLY. '
002566                     380 F00080   EQU   *
002566  0001               381          DC    AL2(0001)
002568  0012               382          DC    A(0018)
00256A  C7D6D6C440C5D5C44  383          DC    CL0018'GOOD END THIS MAP.'
                           384        COPY  COMEQU
                           385 ********************************************************************************
                           386 *                                                                              *
                           387 *                EQUATED NAMES FOR SUPPORTED SVC'S                             *
                           388 *                                                                              *
                           389 ********************************************************************************
000000                     390 OUT    EQU   0                    OUT SVC
000001                     391 OUTIN  EQU   1                    OUTIN SVC
000002                     392 IDLE   EQU   2                    IDLE SVC
000003                     393 IDLE5  EQU   3                    IDLE SVC - INDEPENDENT OF CPU TYPE
000004                     394 CHNGE  EQU   4                    CHANGE LEVEL SVC
000005                     395 PGMCK  EQU   5                    ALLOW RETURN ON PROGRAM CHECK SVC
000006                     396 EXIT   EQU   6                    EXIT SVC
000007                     397 TERM   EQU   7                    TERMINATE SVC
000008                     398 RESET  EQU   8                    RESET DEVICE SVC
000009                     399 RID    EQU   9                    READ ID SVC
00000A                     400 START  EQU   10                   START CYCLE STEAL SVC
00000B                     401 STCSS  EQU   11                   START CYCLE STEAL STATUS SVC
00000C                     402 PREP   EQU   12                   PREPARE DEVICE SVC
00000D                     403 READ0  EQU   13                   READ WITH FUNCTION BIT 3 OFF SVC
00000E                     404 READ1  EQU   14                   READ WITH FUNCTION BIT 3 ON SVC
00000F                     405 RSTAT  EQU   15                   READ STATUS SVC
000010                     406 WRIT0  EQU   16                   WRITE WITH FUNCTION BIT 3 OFF SVC
000011                     407 WRIT1  EQU   17                   WRITE WITH FUNCTION BIT 3 ON SVC
000012                     408 CTRL   EQU   18                   CONTROL SVC
000013                     409 RICB   EQU   19                   RELEASE INTERUPT CONTROL BLOCK SVC
000014                     410 CICB   EQU   20                   CONNECT INTERUPT CONTROL BLOCK SVC
000015                     411 HIO    EQU   21                   HALT ALL I/O
000016                     412 REQSD  EQU   22                   REQUEST USE OF DCP DISK SVC
000017                     413 RELSD  EQU   23                   RELEASE USE OF DCP DISK SVC
000018                     414 HALT   EQU   24                   HALT SVC
000019                     415 ETOH   EQU   25                   EBCDIC TO HEX SVC (STRING)
00001A                     416 HTOE   EQU   26                   HEX TO EBCDIC SVC (STRING)
00001B                     417 ATOH   EQU   27                   ASCII TO HEX SVC (STRING)
00001C                     418 HTOA   EQU   28                   HEX TO ASCII SVC (STRING)
00001D                     419 ETOA   EQU   29                   EBCDIC TO ASCII SVC (STRING)
00001E                     420 ATOE   EQU   30                   ASCII TO EBCDIC SVC (STRING)
00001F                     421 READI  EQU   31                   READ DATA SETS FOR MDI/UTIL
000020                     422 WRITI  EQU   32                   WRITE DATA SETS FOR UTIL
                           423 ********************************************************************************
                           424 *                                                                              *
                           425 *
```



```
 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                                  COPYRIGHT IBM CORP 1976
                           426 *                                                                              *
                           427 *                EQUATES USED BY TU'S AS CONSTANTS                             *
                           428 ********************************************************************************
00004E                     429 PLUS   EQU   C'+'                PLUS CHAR
000060                     430 MINUS  EQU   C'-'                MINUS CHAR
000000                     432 ZERO   EQU   0
000001                     433 ONE    EQU   1
000002                     434 TWO    EQU   2
000003                     435 THREE  EQU   3
000004                     436 FOUR   EQU   4
000005                     437 FIVE   EQU   5
000006                     438 SIX    EQU   6
000007                     439 SEVEN  EQU   7
000008                     440 EIGHT  EQU   8
000009                     441 NINE   EQU   9
00000A                     442 TEN    EQU   10
00000B                     443 ELEVN  EQU   11                        11
00000C                     444 TWELV  EQU   12                        12
00000D                     445 THRTN  EQU   13                        13
00000F                     446 FIVTN  EQU   15                        15
000010                     447 SIXTN  EQU   16                        16
000020                     448 THRY2  EQU   32                        32
000040                     449 SIXT4  EQU   64                        64
000080                     450 ONE28  EQU   128                       128
000100                     451 TWO56  EQU   256                       256
000400                     452 ONEK   EQU   1024                      1024
000800                     453 TWOK   EQU   2048                      2048
000C00                     454 THREK  EQU   3072                      3072
001000                     455 FOURK  EQU   4096                      4096
FFFFFF                     457 M1     EQU   -1                        -1
FFFFFE                     458 M2     EQU   -2                        -2
FFFFFD                     459 M3     EQU   -3                        -3
FFFFFC                     460 M4     EQU   -4                        -4
                           462 ********************************************************************************
                           463 *
                           464 *     THE FOLLOWING ARE EQUATES FOR BIT DISPLACEMENTS FROM THE               *
                           465 *     BEGINNING OF THE BYTE TO EACH BIT IN THE WORD OF SWITCHES.             *
                           466 *                                                                            *
                           467 ********************************************************************************
000000                     468 BS0    EQU   0
000001                     469 BS1    EQU   1
000002                     470 BS2    EQU   2
000003                     471 BS3    EQU   3
000004                     472 BS4    EQU   4
000005                     473 BS5    EQU   5
000006                     474 BS6    EQU   6
000007                     475 BS7    EQU   7
000008                     476 BS8    EQU   8
000009                     477 BS9    EQU   9
00000A                     478 BS10   EQU   10
00000B                     479 BS11   EQU   11
00000C                     480 BS12   EQU   12
00000D                     481 BS13   EQU   13
00000E                     482 BS14   EQU   14
00000F                     483 BS15   EQU   15
                           485        COPY  T5000
00257C                     486 T5000  EQU   *
                           487 ********************************************************
                           488 ********************************************************
                           489 **                                                    **
                           490 **          T I M E R  D I A G N O S T I C             **
                           491 **             (BASIC FUNCTION TEST)                  **
                           492 **                                                    **
                           493 **                                                    **
                           494 **    THIS DIAGNOSTIC TESTS ALL THE FUNCTIONS OF THE  **
                           495 **    TIMER ATTACHMENT EXCEPT THE EXTERNAL GATE AND   **
                           496 **    THE EXTERNAL CLOCK CIRCUITRY.                   **
                           497 **                                                    **
                           498 **    DO NOT RUN WITH STOP ON ADDRESS ON, AS THIS     **
                           499 **    CAUSES ALL MACHINE LANGUAGE INSTRUCTIONS TO     **
                           500 **    TAKE MORE TIME TO EXECUTE, AND ANY ROUTINES     **
                           501 **    WHICH DEPEND UPON PRECISE SOFTWARE TIMING LOOPS  **
                           502 **    WILL DETECT FALSE ERRORS.                       **
                           503 **                                                    **
                           504 **    WHEN AN ERROR IS DETECTED, INSTRUCTIONS ARE     **
                           505 **    GIVEN TO REPLACE THE TIMER ATTACHMENT. A PRINTOUT**
                           506 **    GIVING THE FAILING INTERNAL ROUTINE/CHECKPOINT,  **
                           507 **    THE ADDRESS IN THE PROGRAM WHERE THE            **
                           508 **    ERROR WAS DETECTED, AND THE STATUS WORD IS      **
                           509 **    PRINTED.                                        **
                           510 **          THE STATUS WORD BITS SIGNIFIGANCE ARE-    **
                           511 **          BIT-00 TEST STARTED - TURNED ON AT        **
                           512 **                 BEGINNING, AND OFF AT END OF TEST. **
                           513 **          BIT-14 AN UNEXPECTED TIMER INTERRUPT      **
                           514 **                 OCCURED.                           **
                           515 **          BIT-15 ANY ERROR OCCURED BIT              **
                           516 **                                                    **
                           517 ********************************************************
                           518 ********************************************************
00257C  C925 18C8          520        MVWZ  TURESUL,R1            ZERO STATUS WORD
002580  6802 2CB4          521        B     T0                    BRANCH TO START TEST
                           522 *
                           523 *
                           524 ********************************************************
                           525 * NAME-             DELAY SUBROUTINE
                           526 *
                           527 * PURPOSE-          PROVIDE ANY NUMBER OF 10 USEC DELAYS
                           528 *                   BEFORE RETURNING TO THE CALLER. 'DEL1'
                           529 *                   CAN BE CHECKED ANYTIME FROM A HIGHER
                           530 *                   LEVEL TO DETERMINE WHAT THE REMAINING
                           531 *                   COUNT IS.
                           532 *
                           533 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDR.
                           534 *                   R5 MUST CONTAIN THE HEX NUMBER OF 10
                           535 *                   MICROSEC. DELAYS (MINUS 1).
                           536 *
                           537 * RETURN-           TO ADDRESS CONTAINED IN R6.
                           538 *
                           539 ********************************************************
002584                     540 DEL    EQU   *
002584  6D0D 259C          541        MVW   R5,DEL1               SET COUNT IN STORAGE
002588  6E0D 2594          542        MVW   R6,DEL2+2             SET UP RETURN
00258C  4029 259C FFFF     543 DELX   AWI   -1,DEL1               **
002592  6800 0000          544 DEL2   BZ    *-*                   RETURN   *  10 USEC-
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                COPYRIGHT IBM CORP 1976

002596  5000            545          NOP   ,
002598  5000            546          NOP   ,                                  *   PER-
00259A  50F8            547          J     DELX                               *  PASS. - ON 4955
00259C  0000            548 DEL1     DC    A(*-*)                     LOOP    **
00259E  0000            549 SI       DC    A(*-*)
0025A0  0023            550 AL       DC    X'0023'                    4953
0025A2  0025            551 CL       DC    X'0025'                    4955
                        552 *
                        553 ************************************************************
                        554 * NAME-     MACHINE CHECK SUBROUTINE
                        555 *
                        556 * PURPOSE-  TO FIELD MACHINE CHECKS WHEN THEY OCCUR,
                        557 *           TERMINATE THE PROGRAM, PRINT A MESSAGE, AND
                        558 *           RETURN TO THE DCP.
                        559 *
                        560 * CALLING SEQUENCE- VIA MACHINE CHECK XFER VECTOR.
                        561 *
                        562 * RETURN-   EVENTUALLY TO THE DCP.
                        563 ************************************************************
0025A4                  564 MK       EQU   *
0025A4  6301            565          DIS   1                                  DISABLE INTERRIPTS
0025A6  582F 260C       566          CPPSR SVPSW                              PUT PSW IN STORAGE
0025AA  8838 0008 26D8  567          MVW   X'0008'*,EA                        SET UP ER ADDR FOR INTER SUBR
0025B0  6F03 267C       568          BAL   INTER,R7                           PRINT INTERNAL RTN/CKPT MSSG
0025B4  8828 260C 2724  569          MVW   SVPSW,BADDR                        SET UP TO CONVERT PSW
0025BA  6A08 2724       570          MVW   BADDR,R2                           PUT PSW IN R2
0025BE  4020 272C 2728  571          MVA   DADDR,PARM3                        PUT DATA ADDR IN CNTL BLK
0025C4  4724 272A       572          MVA   PARM2,R7                           PUT CNTL BLK ADDR IN R7
0025C8  601A            573          SVC   HTOE                               HEX TO EBCDIC
0025CA  9028 2724 2750  574          MVD   BADDR,PSW                          PUT EBCDIC PSW IN MSSG
                        575 *
0025D0  6808 180A       576          MVW   PID+10,R0                          PUT STEP NUMBER IN R0
0025D4  4020 272C 180A  577          MVA   PID+10,PARM3                       PUT DATA ADDR IN CNTL BLK
0025DA  601A            578          SVC   HTOE                               HEX TO EBCDIC
0025DC  9028 2724 273C  579          MVD   BADDR,RTN                          PUT EBCDIC RTN IN MSSG
                        580 *
0025E2  6908 180C       581          MVW   PID+12,R1                          PUT ADDR. & TYPE CODE IN R1
0025E6  4020 272C 180C  582          MVA   PID+12,PARM3                       PUT DATA ADDR IN CNTL BLK
0025EC  601A            583          SVC   HTOE                               HEX TO EBCDIC
0025EE  9028 2724 2746  584          MVD   BADDR,CKPT                         PUT EBCDIC RTN IN MSSG
                        585 *
0025F4  6B08 26D8       586          MVW   EA,R3                              PUT SAVED IAR IN R3
0025F8  9028 26FE 275A  587          MVD   EEA,IAR                            PUT EBCDIC IAR IN MSSG
                        588 *
                        589 *
0025FE  4724 2722       590          MVA   PARM1,R7                           GET CNTL BLK ADDR
002602  6C08 259E       591          MVW   SI,R4                              PUT ADDR OF LAST IDCB USED IN R4
002606  6000            592          SVC   OUT                                PRINT MESSAGE
002608  6802 2658       593          B     EEND
00260C  0000            594 SVPSW    DC    A(*-*)
                        595 ************************************************************
                        596 * NAME-     ENDING SUBROUTINES
                        597 *
                        598 * PURPOSE-  END PROGRAM EXECUTION WHEN GOOD RUNS AND
                        599 *           ERRORS OCCUR.
                        600 *
                        601 * CALLING SEQUENCE- BRANCH TO THE CORRECT LABELS.
                        602 *
                        603 * RETURN-   TO THE DCP.
                        604 ************************************************************
00260E                  605 BBB      EQU   *
00260E  6301            606          DIS   1                                  DISABLE INTERRUPTS
002610  402C 18C8 0001  607          OWI   1,TURESUL                          SET ERROR CONDITION FOR MDI
002616  680C 2936       608          IO    RS0                                RESET EVEN TIMER
00261A  680C 293A       609          IO    RS1                                RESET ODD TIMER
00261E  6F03 2762       610          BAL   OFF,R7                             GET TO LVL 3
002622  6F03 267C       611          BAL   INTER,R7                           PRINT INTERNAL RTN/CKPT NUMBER
                        612 *                                                  THE ADDRESS THAT ERROR OCCURED
                        613 *                                                  AT, AND THE STATUS WORD-
                        614 *                                                  BIT 0= TEST STARTED BIT
                        615 *                                                  BIT 14= UNEXPECTED TIMER INT
                        616 *                                                  BIT 15= ERROR OCCURED BIT
002626  5018            617          J     EEND
                        618 *
                        619 * GOOD END ROUTINE
                        620 *
002628                  621 GEND     EQU   *
002628  6301            622          DIS   1
00262A  6F03 2762       623          BAL   OFF,R7                             GET TO LVL 3
00262E  4020 18C8 0000  624          MVWI  0,TURESUL                          SET STATUS WORD TO 0
002634                  625 CEND     EQU   *
002634  6908 2B00       626          MVW   SAVA,R1                            GET XFER VECTOR ADDRESS
002638  9060 2712       627          MVD   SDCP,(R1)                          RESTORE DCP XFER VECTORS
00263C  8828 271E 000A  628          MVW   SAVA1,X'000A'                      RESTORE DCP MCK RTN ADDR
002642  6201            629          EN    1
002644  4020 2BE0 2656  630          MVA   CEND1,LLSB                         GO TO LVL 0 AND THEN LEX VIA SVC -
00264A  4724 0000       631          MVWI  0,R7                               EXIT SO THAT THE DCP DOESNT GET-
00264E  5F26 2BE0       632          SELB  R7,LLSB                            MESSED UP.
                        633 *
002652  6802 0000       634 GOBCK B      *-*                                  RETURN TO DCP ON LEVEL 3
002656  6006            635 CEND1 SVC    EXIT                                 EXIT LEVEL 0, DROP TO LEVEL 3
                        636 * ERROR END ROUTINE - TURN ON ERROR BITS IN STATUS WORD
                        637 * BEFORE COMING HERE.
                        638 *
002658                  639 EEND     EQU   *
002658  6908 18C8       640          MVW   TURESUL,R1                         GET STATUS WORD
00265C  7920 7FFF       641          NWI   X'7FFF',R1                         TURN OFF TEST STARTED BIT
002660  690D 18C8       642          MVW   R1,TURESUL                         PUT STATUS WORD BACK
002664  50E7            643          J     CEND
                        644 *
002666                  645 ERTN     EQU   *
002666  4020 26D8 2666  646          MVA   ERTN,EA                            SET ADDR TO BE PRINTED
00266C  5003            647          J     UNSET
00266E                  648 ORTN     EQU   *
00266E  4020 26D8 266E  649          MVA   ORTN,EA                            SET ADDR TO BE PRINTED
002674  402C 18C8 0002  650 UNSET    OWI   X'0002',TURESUL                    SET UNEX INT BIT IN STAT WD
00267A  50C9            651          J     BBB
                        652 *
                        653 *
00267C                  654 INTER    EQU   *
00267C  6F0D 26D6       655          MVW   R7,RINTE+2                         SET UP RETURN
002680  4020 272C 26DA  656          MVA   IRTN,PARM3                         PUT DATA ADDR IN CNTL BLK
002686  4724 272A       657          MVA   PARM2,R7                           PUT ADDR OF CNTL BLK IN R7
00268A  601A            658          SVC   HTOE                               HEX TO EBCDIC
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                                COPYRIGHT IBM CORP 1976

00268C  9028 2724 26F0  659          MVD   BADDR,IRC                          PUT EBCDIC DATA IN MSSG
002692  4020 272C 26D8  660          MVA   EA,PARM3                           PUT DATA ADDR IN CNTL BLOCK
002698  601A            661          SVC   HTOE                               HEX TO EBCDIC
00269A  9028 2724 26FE  662          MVD   BADDR,EEA                          PUT EBCDIC DATA IN MSSG
0026A0  4020 272C 18C8  663          MVA   TURESUL,PARM3                      PUT DATA ADDR IN CNTL BLOCK
0026A6  601A            664          SVC   HTOE                               HEX TO EBCDIC
0026A8  9028 2724 270C  665          MVD   BADDR,STAT                         PUT EBCDIC DATA IN MSSG
0026AE  4724 2760       666          MVA   RCMSG,R7
0026B2  4424 180E       667          MVA   OPWD1,R4
0026B6  4C05            668          TBT   (R4,5)
0026B8  120D            669          JN    RINTE                              JUMP IF NO PRINT IS ON
0026BA  6C08 26DA       670          MVW   IRTN,R4                            PUT INTERNAL RTN/CKPT IN R4
0026BE  6B08 26D8       671          MVW   EA,R3                              * R3 HAS THE ADDRESS THAT THE-
0026C2  7B61 FFFC       672          AWI   -4,R3                              * FAILURE WAS DETECTED AT.
0026C6  4224 0000       673          MVWI  0,R2                               ZERO R2
0026CA  6908 180C       674          MVW   PID+12,R1                          PUT ADDR. & TYPE CODE IN R1
0026CE  6808 180A       675          MVW   PID+10,R0                          PUT STEP NUMBER IN R0
0026D2  6000            676          SVC   OUT                                PRINT MESSAGE
0026D4  6802 0000       677 RINTE B      *-*
                        678 *
0026D8  0000            679 EA       DC    A(*-*)
0026DA  0000            680 IRTN     DC    A(*-*)
0026DB                  681 ICKPT    EQU   IRTN+1
0026DC  0000            682          DC    A(*-*)
0026DE  C9D5E3C5D9D5C1D34 683 RCMS    DC    C'INTERNAL RTN/CKPT='
0026F0  00000000        684 IRC      DC    2A(*-*)
0026F4  6B40C5D940C1C4C4D 685        DC    C', ER ADDR='
0026FE  00000000        686 EEA      DC    2A(*-*)
002702  6B40E2E3C1E340E6C 687        DC    C', STAT WD='
00270C  00000000        688 STAT     DC    2A(*-*)
002710  0000            689          DC    X'0000'
                        690 *
002712  00000000        691 SDCP     DC    2A(*-*)                            DCP XFER VECTOR SAVE AREA
002716  271A            692 DUMVE    DC    A(IDCB)
002718  271C            693          DC    A(IDCB+2)
                        694 *
00271A  2666            695 IDCB     DC    A(ERTN)                            EVEN DDB
00271C  266E            696          DC    A(ORTN)                            ODD DDB
                        697 *
00271E  0000            698 SAVA1    DC    A(*-*)
002720  00C0            699          DC    X'00C0'
002722  2732            700 PARM1    DC    A(MKMSG)
002724  00000000        701 BADDR    DC    2A(*-*)
002728  0000            702 DADDR    DC    A(*-*)
00272A  0002            703 PARM2    DC    A(2)
00272C  0000            704 PARM3    DC    A(*-*)
00272E  2724            705 PARM4    DC    A(BADDR)
002730  3803            706          DC    X'3803'
002732  D4C3D2406040D4C1D 707 MKMSG    DC    C'MCK - MAP='
00273C  00000000        708 RTN      DC    2A(*-*)
002740  40E2E3C5D77E     709          DC    C' STEP='
002746  00000000        710 CKPT     DC    2A(*-*)
00274A  4040D7E2E67E     711          DC    C'  PSW='
002750  00000000        712 PSW      DC    2A(*-*)
002754  4040C9C1D97E     713          DC    C'  IAR='
00275A  00000000        714 IAR      DC    2A(*-*)
00275E  0000            715          DC    X'0000'
002760  26DE            716 RCMSG    DC    A(RCMS)
                        717 *
                        718 ************************************************************
                        719 * NAME-     GO TO LEVEL 3 SUBROUTINE
                        720 *
                        721 * PURPOSE-  GET CPU ON LEVEL 3.
                        722 *
                        723 * CALLING SEQUENCE-R7 MUST CONTAIN RETURN ADDRESS.
                        724 *
                        725 * RETURN-   TO ADDRESS CONTAINED IN R7.
                        726 ************************************************************
002762                  727 OFF      EQU   *
002762  6F0D 2788       728          MVW   R7,OFFR+2                          SET UP RETURN
002766  4020 2BE0 2786  729          MVA   OFFR,LLSB                          SET IARB
00276C  4724 0003       730          MVWI  3,R7
002770  5F26 2BE0       731          SELB  R7,LLSB                            SET LVL 3 PENDING
002774  4724 0002       732          MVWI  2,R7
002778  5F26 2BE6       733          SELB  R7,DLLSB                           TURN OFF LVL 2
00277C  4724 0001       734          MVWI  1,R7
002780  5F26 2BE6       735          SELB  R7,DLLSB                           TURN OFF LVL 1
002784  6100            736          LEX                                      EXIT LVL 0
002786  6802 0000       737 OFFR     B     *-*                                RETURN
                        738 ************************************************************
                        739 * NAME-     GO TO LVL 0 SUBROUTINE
                        740 *
                        741 * PURPOSE-  GET CPU ON LEVEL 0.
                        742 *
                        743 * CALLING SEQUENCE-R7 MUST CONTAIN RETURN ADDRESS.
                        744 *
                        745 * RETURN-   TO ADDRESS CONTAINED IN R7.
                        746 ************************************************************
00278A                  747 LV0      EQU   *
00278A  6F0D 27B6       748          MVW   R7,LV0R+2                          SET UP RETURN
00278E  4020 2BE0 279C  749          MVA   LV0A,LLSB                          SET IARB
002794  4724 0000       750          MVWI  0,R7
002798  5F26 2BE0       751          SELB  R7,LLSB                            GO TO LVL 0
00279C  4724 0001       752 LV0A     MVWI  1,R7
0027A0  5F26 2BE6       753          SELB  R7,DLLSB                           TURN OFF LVL 1
0027A4  4724 0002       754          MVWI  2,R7
0027A8  5F26 2BE6       755          SELB  R7,DLLSB                           TURN OFF LVL 2
0027AC  4724 0003       756          MVWI  3,R7
0027B0  5F26 2BE6       757          SELB  R7,DLLSB                           TURN OFF LVL 3
0027B4  6802 0000       758 LV0R     B     *-*                                RETURN
                        759 ************************************************************
                        760 * NAME-              START TIMER PERIODIC SUBROUTINE
                        761 *
                        762 * PURPOSE-           ISSUE START TIMER PERIODIC OIOS.
                        763 *
                        764 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDR.
                        765 *                    USE ENTRY POINT 'STPE0' FOR EVEN TIMER
                        766 *                    AND 'STPE1' FOR ODD TIMER.
                        767 *
                        768 * RETURN-            OCCURS ONLY IF CC7 RESULTS FROM IO CMMD.
                        769 ************************************************************
0027B8                  770 STPE0    EQU   *
0027B8  4020 259E 27E0  771          MVA   IDCB0,SI
0027BE  680C 27E0       772          IO    IDCB0                              START IO
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
0027C2  6F04 27DC           778         BCC   7,PERTN
0027C6  6F03 2A44           779         BAL   E,R7                   BAD C.C.
0027CA                      780 STPE1   EQU   *
0027CA  4020 259E 27E4      781         MVA   IDCB1,SI
0027D0  680C 27E4           782         IO    IDCB1                  START IO
0027D4  6F04 27DC           783         BCC   7,PERTN
0027D8  6F03 2A44           784         BAL   E,R7                   BAD C.C.
0027DC  68C2 0000           785 PERTN   B     (R6)                   RETURN
                            786 *
0027E0  6600                787 IDCB0   DC    X'6600'                START PERIODIC IDCB
0027E2  0000                788         DC    A(*-*)
0027E4  6600                789 IDCB1   DC    X'6600'                START PERIODIC IDCB
0027E6  0000                790         DC    A(*-*)
                            792 ************************************************************
                            793 * NAME-              INTERRUPT RTNS FOR TIMER ACCURACY TESTS
                            794 *
                            795 * PURPOSE           SERVICE INTERRUPTS AND CHECK FOR CC3,
                            796 *                    SAVE 'DEL1' IN 'DELS0' OR 'DELS1', STOP
                            797 *                    STOP THE TIMER, VERIFY THAT INTERRUPT ID
                            798 *                    AND INTERRUPTED TO LEVEL ARE OK, - LEX.
                            799 *
                            800 * CALLING SEQUENCE-SET UP DDBS BEFORE USING RTN. PUT THE
                            801 *                    ADDRESS (AIO FOR EVEN AND AI1 FOR ODD) IN
                            802 *                    THE APPROPRIATE DDBS. 'DELS0' - EVEN AND
                            803 *                    'DELS1' ODD MUST BE INITIALIZED TO -1 '
                            804 *                    BEFORE USING. 'SBCL0' AND 'SBCL1' MUST BE
                            805 *                    SET TO THE S/B CURRENT LEVEL VALUE FOR
                            806 *                    INTERRUPTS.
                            807 *
                            808 * RETURN-            TO A LOWER PENDING LEVEL.
                            809 ************************************************************
0027E8                      810 AIO     EQU   *
0027E8  6B04 27F0           811         BCC   3,AI01
0027EC  6F03 2A44           812         BAL   E,R7                   BAD C.C.
0027F0  8828 259C 2812      813 AI01    MVW   DEL1,DELS0             SAVE REMAINING DELAY VALUE
0027F6  6E03 28DE           814         BAL   STOP0,R6               STOP EVEN TMR
0027FA  CF24 2AFC           815         CW    IDO,R7
0027FE  1002                816         JE    AIO2
002800  6F03 2A44           817         BAL   E,R7                   BAD INT ID
002804  6D08 280E           818 AIO2    MVW   SBCLC,R5
002808  6E03 2A52           819         BAL   COPY,R6                VERIFY CORRECT LEVEL
00280C  6100                820         LEX   ,                      RETURN VIA LEVEL EXIT
                            821 *
00280E  0000                822 SBCL0   DC    A(*-*)
002810  0000                823 SBCL1   DC    A(*-*)
002812  0000                824 DELS0   DC    A(*-*)
002814  0000                825 DELS1   DC    A(*-*)
002816  27E8                826 ADIRN   DC    A(AIO)                 DDB
002818  281E                827         DC    A(AI1)                 DDB
00281A  2816                828 ADIR    DC    A(ADIRN)
00281C  2818                829         DC    A(ADIRN+2)
                            830 *
00281E                      831 AI1     EQU   *
00281E  6B04 2826           832         BCC   3,AI11
002822  6F03 2A44           833         BAL   E,R7                   BAD C.C.
002826  8828 259C 2814      834 AI11    MVW   DEL1,DELS1             SAVE REMAINING DEL VALUE
00282C  6E03 28F0           835         BAL   STOP1,R6               STOP ODD TIMER
002830  CF24 2AFE           836         CW    ID1,R7
002834  1002                837         JE    AI12                   JUMP IF INT ID IS OK
002836  6F03 2A44           838         BAL   E,R7                   BAD INT. ID
00283A  6D08 2810           839 AI12    MVW   SBCL1,R5
00283E  6E03 2A52           840         BAL   COPY,R6                VERIFY CURRENT LEVEL
002842  6100                841         LEX   ,                      RETURN VIA A LEVEL EXIT
                            843 ************************************************************
                            844 *
                            845 * NAME-              SET DEVICE ADDRESS SUBROUTINE
                            846 *
                            847 * PURPOSE-           SET UP ALL TIMER DDBS USED IN PROGRAM
                            848 *                    WITH THE TIMER DEVICE ADDRESSES.
                            849 *
                            850 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                            851 *                    R5 MUST CONTAIN THE RIGHT JUSTIFIED
                            852 *                    EVEN TIMER DEVICE ADDRESS.
                            853 *
                            854 * RETURN-            TO ADDRESS CONTAINED IN R6.
                            855 ************************************************************
002844                      856 SETT    EQU   *
002844  C528 28DB           857         MVB   R5,C10+1
002848  C528 2907           858         MVB   R5,ST0+1
00284C  C528 2937           859         MVB   R5,RS0+1
002850  C528 2973           860         MVB   R5,RV0+1
002854  C528 29AF           861         MVB   R5,RM0+1
002858  C528 29E7           862         MVB   R5,RD0+1
00285C  C528 2A1F           863         MVB   R5,SETV0+1
002860  C528 2A41           864         MVB   R5,IPREP+1
002864  C528 2A89           865         MVB   R5,STAP+1
002868  C528 2AFD           866         MVB   R5,IDO+1
00286C  C528 27E1           867         MVB   R5,IDCB0+1
002870  C528 28AB           868         MVB   R5,F13+1
                            869 *
002874  7DA1 0001           870         AWI   1,R5                   SET R5 TO THE ODD ADDR
002878  C528 290B           871         MVB   R5,ST1+1
00287C  C528 293B           872         MVB   R5,RS1+1
002880  C528 2977           873         MVB   R5,RV1+1
002884  C528 29B3           874         MVB   R5,RM1+1
002888  C528 29EB           875         MVB   R5,RD1+1
00288C  C528 2A23           876         MVB   R5,SETV1+1
002890  C528 2AB5           877         MVB   R5,STP+1
002894  C528 2AFF           878         MVB   R5,ID1+1
002898  C528 27E5           879         MVB   R5,IDCB1+1
00289C  C528 28A5           880         MVB   R5,F10+1
                            881 * ADD   MVB INSTS. AS REQUIRED
0028A0  68C2 0000           882         B     (R6)                   RETURN
                            884 *
0028A4  2000                885 F10     DC    X'2000'                READ ID IDCB - ODD
0028A6  0000                886 F11     DC    A(*-*)                 ID ENDS UP HERE
0028A8  0028                887 F12     DC    X'0028'                S/B TIMER ID
0028AA  2000                888 F13     DC    X'2000'                READ ID IDCB - EVEN
0028AC  0000                889 F14     DC    A(*-*)                 ID ENDS UP HERE
0028AE  FF00                890 XFF00   DC    X'FF00'
0028B0  FFFF                891 ZFFFF   DC    X'FFFF'
                            893 ************************************************************
                            894 * NAME-              COMMAND REJECT SUBROUTINE
                            895 *
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                            896 * PURPOSE           VERIFY THAT ALL MODIFIERS WITHIN THE
                            897 *                   LIMITS WILL CMD REJECT FROM BOTH TIMERS.
                            898 *
                            899 * CALLING SEQUENCE-R5 MUST CONTAIN THE RIGHT JUSTIFIED
                            900 *                   LAST MODIFIER.
                            901 *                   R6 MUST CONTAIN THE RETURN ADDRESS.
                            902 *                   R7 MUST CONTAIN THE RIGHT JUSTIFIED FIRST
                            903 *                   MODIFIER TO CHECK.
                            904 *
                            905 * RETURN-            IF ALL SPECIFIED VALUES CMD. REJECT
                            906 *                   CORRECTLY RETURN TO ADDRESS IN R6
                            907 *                   OCCURS.
                            908 ************************************************************
0028B2                      909 CMDR    EQU   *
0028B2  C728 28DA           910         MVB   R7,C10                 SET MODIFIER IN IDCB
0028B6  4020 259E 28DA      911         MVA   C10,SI
0028BC  680C 28DA           912         IO    C10
0028C0  6B04 28C8           913         BCC   3,C5                   BR IF CMD REJECT
0028C4  6F03 2A44           914         BAL   E,R7                   NO CMD REJECT
0028C8                      915 C5      EQU   *
0028C8  C524 28DA           916         CB    C10,R5                 LAST MOD. JUST CHECKED?
0028CC  68C0 0000           917         BZ    (R6)                   BR IF YES - RETURN - OK
0028D0  C720 28DA           918         MVB   C10,R7                 GET LAST MODIFIER
0028D4  7FE1 0001           919         AWI   X'0001',R7             INCREMENT MODIFIER
0028D8  50EC                920         J     CMDR                   DO IT AGAIN
                            921 *
0028DA  0000                922 C10     DC    X'0000'                IDCB - DA GOES IN 2D BYTE
0028DC  0000                923         DC    A(*-*)
                            925 ************************************************************
                            926 * NAME=              STOP SUBROUTINE
                            927 *
                            928 * PURPOSE-           ISSUE STOP COMMANDS TO TIMERS.
                            929 *
                            930 * CALLING SEQUENCE-R6 MUST CONTAIN RETURN ADDRESS.
                            931 *                   USE ENTRY POINT 'STOP0' FOR EVEN,
                            932 *                   AND 'STOP1' FOR ODD.
                            933 *
                            934 * RETURN-            TO ADDRESS CONTAINED IN R6.
                            935 ************************************************************
0028DE                      936 STOP0   EQU   *
0028DE  4020 259E 2906      937         MVA   ST0,SI
0028E4  680C 2906           938         IO    ST0                    STOP TIMER
0028E8  6F04 2902           939         BCC   7,STOPR
0028EC  6F03 2A44           940         BAL   E,R7                   BAD C.C.
0028F0                      941 STOP1   EQU   *
0028F0  4020 259E 290A      942         MVA   ST1,SI
0028F6  680C 290A           943         IO    ST1                    STOP TIMER
0028FA  6F04 2902           944         BCC   7,STOPR
0028FE  6F03 2A44           945         BAL   E,R7                   BAD CC
002902  68C2 0000           946 STOPR   B     (R6)                   RETURN
                            947 *
002906  6E00                948 ST0     DC    X'6E00'                EVEN ADDR STOP IDCB
002908  0000                949         DC    A(*-*)
00290A  6E00                950 ST1     DC    X'6E00'
00290C  0000                951         DC    A(*-*)
                            953 ************************************************************
                            954 * NAME-              DEVICE RESET ROUTINE
                            955 *
                            956 * PURPOSE-           ISSUE RESET COMMANDS TO TIMERS.
                            957 *
                            958 * CALLING SEQUENCE-R6 MUST CONTAIN RETURN ADDRESS.
                            959 *                   USE ENTRY POINT 'RSET0' FOR EVEN,
                            960 *                   AND 'RSET1' FOR ODD.
                            961 *
                            962 * RETURN-            TO ADDRESS CONTAINED IN R6.
                            963 ************************************************************
00290E                      964 RSET0   EQU   *
00290E  4020 259E 2936      965         MVA   RS0,SI
002914  680C 2936           966         IO    RS0                    RESET TIMER
002918  6F04 2932           967         BCC   7,RSETR
00291C  6F03 2A44           968         BAL   E,R7                   BAD CC
002920                      969 RSET1   EQU   *
002920  4020 259E 293A      970         MVA   RS1,SI
002926  680C 293A           971         IO    RS1                    RESET TIMER
00292A  6F04 2932           972         BCC   7,RSETR
00292E  6F03 2A44           973         BAL   E,R7                   BAD CC
002932  68C2 0000           974 RSETR   B     (R6)                   RETURN
                            975 *
002936  6F00                976 RS0     DC    X'6F00'                RESET EVEN TMR IDCB
002938  0000                977         DC    A(*-*)
00293A  6F00                978 RS1     DC    X'6F00'                RESET ODD TMR IDCB
00293C  0000                979         DC    A(*-*)
                            981 ************************************************************
                            982 * NAME-              READ TIMER VAUE SUBROUTINE
                            983 *
                            984 * PURPOSE-           READ TIMER VALUE REGISTERS
                            985 *
                            986 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                            987 *                   USE ENTRY POINT 'RDM0' FOR EVEN, AND,
                            988 *                   'RDM1' FOR ODD.
                            989 *
                            990 * RETURN-            TO ADDRESS CONTAINED IN R6 - R5 WILL
                            991 *                   CONTAIN THE DATA THAT WAS READ.
                            992 ************************************************************
00293E                      993 RDV0    EQU   *
00293E  4020 259E 2972      994         MVA   RV0,SI
002944  680C 2972           995         IO    RV0                    READ TIMER VALUE
002948  6F04 2950           996         BCC   7,RDV00
00294C  6F03 2A44           997         BAL   E,R7                   BAD CC
002950  6D08 2974           998 RDV00   MVW   RV2,R5                 GET READ DATA
002954  68C2 0000           999         B     (R6)                   RETURN
002958                     1000 RDV1    EQU   *
002958  4020 259E 2976     1001         MVA   RV1,SI
00295E  680C 2976          1002         IO    RV1                    READ TIMER VALUE
002962  6F04 296A          1003         BCC   7,RDV11
002966  6F03 2A44          1004         BAL   E,R7                   BAD CC
00296A  6D08 2978          1005 RDV11   MVW   RV3,R5                 GET TIMER DATA
00296E  68C2 0000          1006         B     (R6)                   RETURN
                           1007 *
002972  2400               1008 RV0     DC    X'2400'                READ TMR VAL IDCB
002974  0000               1009 RV2     DC    A(*-*)
002976  2400               1010 RV1     DC    X'2400'                READ TMR VAL IDCB
002978  0000               1011 RV3     DC    A(*-*)
                           1013 ************************************************************
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                           1014 * NAME-            READ TIMER MODE SUBROUTINE
                           1015 *
                           1016 * PURPOSE-         READ TIMER MODE REGISTERS.
                           1017 *
                           1018 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1019 *                   USE ENTRY POINT 'RDN0' FOR EVEN, AND
                           1020 *                   'RDM1' FOR ODD.
                           1021 *
                           1022 * RETURN-           TO ADDRESS CONTAINED IN R6 - R5 WILL
                           1023 *                   CONTAIN THE DATA THAT WAS READ.
                           1024 ************************************************************
00297A                     1025 RDM0  EQU   *
00297A 4020 259E 29AE      1026       MVA   RM0,SI
002980 680C 29AE           1027       IO    RM0                 READ TIMER MODE
002984 6F04 298C           1028       BCC   7,RDM00
002988 6F03 2A44           1029       BAL   E,R7                BAD CC
00298C 6D08 29B0           1030 RDM00 MVW   RM2,R5              GET MODE DATA
002990 68C2 0000           1031       B     (R6)                RETURN
002994                     1032 RDM1  EQU   *
002994 4020 259E 29B2      1033       MVA   RM1,SI
00299A 680C 29B2           1034       IO    RM1                 READ TMR MODE
00299E 6F04 29A6           1035       BCC   7,RDM11
0029A2 6F03 2A44           1036       BAL   E,R7                BAD CC
0029A6 6D08 29B4           1037 RDM11 MVW   RM3,R5              GET MODE DATA
0029AA 68C2 0000           1038       B     (R6)                RETURN
                           1039 *
0029AE 2500                1040 RM0   DC    X'2500'             READ TIMER MODE IDCB
0029B0 0000                1041 RM2   DC    A(*-*)
0029B2 2500                1042 RM1   DC    X'2500'             READ TIMER MODE IDCB
0029B4 0000                1043 RM3   DC    A(*-*)
                           1045 ************************************************************
                           1046 * NAME-            SET MODE SUBROUTINE
                           1047 *
                           1048 * PURPOSE-         WPITE TO THE TIMER MODE REGISTERS.
                           1049 *
                           1050 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1051 *                   R5 MUST CONTAIN THE DATA TO BE WRITTEN.
                           1052 *                   USE ENTRY POINT 'SETM0' FOR EVEN, AND
                           1053 *                   'SETM1' FOR ODD.
                           1054 *
                           1055 * RETURN-           TO ADDRESS CONTAINED IN R6.
                           1056 ************************************************************
0029B6                     1057 SETM0 EQU   *
0029B6 6D0D 29E8           1058       MVW   R5,RD2              PUT MODE DATA IN IDCB
0029BA 4020 259E 29E6      1059       MVA   RD0,SI
0029C0 680C 29E6           1060       IO    RD0                 SET MODE
0029C4 6F04 29E2           1061       BCC   7,SETMR
0029C8 6F03 2A44           1062       BAL   E,R7                BAD CC
0029CC                     1063 SETM1 EQU   *
0029CC 6D0D 29EC           1064       MVW   R5,RD3              PUT MODE DATA IN IDCB
0029D0 4020 259E 29EA      1065       MVA   RD1,SI
0029D6 680C 29EA           1066       IO    RD1                 SET MODE
0029DA 6F04 29E2           1067       BCC   7,SETMR
0029DE 6F03 2A44           1068       BAL   E,R7                BAD CC
0029E2 68C2 0000           1069 SETMR B     (R6)                RETURN
                           1070 *
0029E6 6500                1071 RD0   DC    X'6500'             EVEN ADDR SET MODE IDCB
0029E8 0000                1072 RD2   DC    A(*-*)
0029EA 6500                1073 RD1   DC    X'6500'             ODD ADDR SET MODE IDCB
0029EC 0000                1074 RD3   DC    A(*-*)
                           1076 ************************************************************
                           1077 * NAME-            SET TIMER VALUE SUBROUTINE
                           1078 *
                           1079 * PURPOSE-         WRITE TO TIMER VALUE REGISTERS.
                           1080 *
                           1081 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1082 *                   R5 MUST CONTAIN THE DATA TO BE WRITTEN.
                           1083 *                   USE ENTRY POINT 'SET0' FOR EVEN, AND
                           1084 *                   'SET1' FOR ODD.
                           1085 *
                           1086 * RETURN-           TO ADDRESS CONTAINED IN R6.
                           1087 ************************************************************
0029EE                     1088 SET0  EQU   *
0029EE 6D0D 2A20           1089       MVW   R5,SETV2            PUT TMR VAL DATA IN IDCB
0029F2 4020 259E 2A1E      1090       MVA   SETV0,SI
0029F8 680C 2A1E           1091       IO    SETV0               SET VALUE
0029FC 6F04 2A1A           1092       BCC   7,SETR
002A00 6F03 2A44           1093       BAL   E,R7                BAD CC
002A04                     1094 SET1  EQU   *
002A04 6D0D 2A24           1095       MVW   R5,SETV3            PUT TMR VAL DATA IN IDCB
002A08 4020 259E 2A22      1096       MVA   SETV1,SI
002A0E 680C 2A22           1097       IO    SETV1               SET VALUE
002A12 6F04 2A1A           1098       BCC   7,SETR
002A16 6F03 2A44           1099       BAL   E,R7                BAD CC
002A1A 68C2 0000           1100 SETR  B     (R6)                RETURN
                           1101 *
002A1E 6400                1102 SETV0 DC    X'6400'             EVEN ADDR SET VAL IDCB
002A20 0000                1103 SETV2 DC    A(*-*)
002A22 6400                1104 SETV1 DC    X'6400'             ODD ADDR SET VAL IDCB
002A24 0000                1105 SETV3 DC    A(*-*)
                           1107 ************************************************************
                           1108 * NAME-            PREPARE TIMERS SUBROUTINE
                           1109 *
                           1110 * PURPOSE-         ISSUE PREPARE COMMAND TO TIMERS.
                           1111 *
                           1112 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1113 *                   R5 MUST CONTAIN THE PREPARE DATA WORD.
                           1114 *
                           1115 * RETURN-           TO ADDRESS CONTAINED IN R6.
                           1116 ************************************************************
002A26                     1117 PRE   EQU   *
002A26 6D0D 2A42           1118       MVW   R5,PREPD            PUT PREP DATA IN IDCB
002A2A 4020 259E 2A40      1119       MVA   IPREP,SI
002A30 680C 2A40           1120       IO    IPREP               PREPARE
002A34 6F04 2A3C           1121       BCC   7,PRE1
002A38 6F03 2A44           1122       BAL   E,R7                BAD CC
002A3C 68C2 0000           1123 PRE1  B     (R6)
                           1124 *
002A40 6000                1125 IPREP DC    X'6000'             PREP IDCB
002A42 0000                1126 PREPD DC    A(*-*)
                           1128 ************************************************************
                           1129 * NAME-            ERROR DETECTED SUBROUTINE
                           1130 *
                           1131 * PURPOSE-         HANDLE PROGRAM DETECTED ERRORS
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                           1132 *
                           1133 * CALLING SEQUENCE-R7 MUST CONTAIN THE ADDRESS THAT THE
                           1134 *                   ERROR WAS DETECTED AT.
                           1135 *
                           1136 * RETURN-    EVENTUALLY TO THE DCP
                           1137 ************************************************************
002A44                     1138 E     EQU   *
002A44 6F0D 26D8           1139       MVW   R7,EA               SAVE ADDR IN R7
002A48 4029 26D8 FFFC      1140       AWI   -4,EA               SUBTRACT 4 BYTES FROM SAVED ADDR
002A4E 6802 260E           1141       B     BBB
                           1143 ************************************************************
                           1144 * NAME-            COPY CURRENT LEVEL SUBROUTINE
                           1145 *
                           1146 * PURPOSE-         TO VERIFY THAT CPU IS ON THE SPECIFIED
                           1147 *                   LEVEL.
                           1148 *
                           1149 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1150 *                   R5 MUST CONTAIN THE RIGHT JUSTIFIED S/B
                           1151 *                   CURRENT LEVEL DATA.
                           1152 *
                           1153 * RETURN-           OCCURS TO ADDRESS CONTAINED IN R6 ONLY IF
                           1154 *                   CURRENT LEVEL IS THE SAME AS IS SPECIFIED
                           1155 *                   IN R5.
                           1156 ************************************************************
002A52                     1157 COPY  EQU   *
002A52 78F9                1158       CPCL  R7
002A54 75B5                1159       CW    R5,R7               IS CPU ON THE RIGHT LEVEL?
002A56 1002                1160       JE    COPY1               JUMP IF YES
002A58 6F03 2A44           1161       BAL   E,R7                ON WRONG LEVEL
002A5C 68C2 0000           1162 COPY1 B     (R6)
                           1164 ************************************************************
                           1165 * NAME-            TIMER INTERRUPT TEST SUBROUTINE
                           1166 *
                           1167 * PURPOSE-         THE ADDRESSED TIMER IS STARTED APERIODIC
                           1168 *                   WITH THE VALUE SET TO 0. CONDITION CODES
                           1169 *                   ARE CHECKED AT OIO AND INTERRUPT TIMES.
                           1170 *                   STOPS OCCUR IF CC IS INCORRECT.
                           1171 *
                           1172 * CALLING SEQUENCE-R6 MUST CONTAIN THE RETURN ADDRESS.
                           1173 *                   TIMERS MUST BE PREPARED, AND MODE MUST BE
                           1174 *                   SET. THE TRANSFER VECTORS MUST BE ALREADY
                           1175 *                   SET UP. THESE ROUTINES CAN BE USED ON
                           1176 *                   ANY LEVEL.
                           1177 *
                           1178 * RETURN-           TO ADDRESS CONTAINED IN R6.
                           1179 ************************************************************
002A60                     1180 ITES0 EQU   *
002A60 6E0D 2A86           1181       MVW   R6,ITESR+2          SET UP RETURN
002A64 3581                1182       SLL   16,R5
002A66 6E03 29EE           1183       BAL   SET0,R6             SET EVEN TMR VAL TO 0
002A6A 4020 2AEE 2A84      1184       MVA   IT3,INTR0           SET INT EXP STATE
002A70 4020 259E 2A88      1185       MVA   STAP,SI
002A76 680C 2A88           1186       IO    STAP                START EVEN TIMER
002A7A 6F04 2A82           1187       BCC   7,IT2
002A7E 6F03 2A44           1188       BAL   E,R7                BAD CC
                           1189 *
002A82 6100                1190 IT2   LEX   ,
                           1191 *
002A84                     1192 IT3   EQU   *
002A84 6802 0000           1193 ITESR B     *-*                 RETURN
002A88 6700                1194 STAP  DC    X'6700'             START EVEN TMR - APERIODIC
002A8A 0000                1195       DC    A(*-*)
                           1196 *
002A8C                     1197 ITES1 EQU   *
002A8C 6E0D 2AB2           1198       MVW   R6,ITER+2           SET UP RETURN
002A90 3581                1199       SLL   16,R5
002A92 6E03 2A04           1200       BAL   SET1,R6             SET ODD TMR VAL TO 0
002A96 4020 2B2C 2AB0      1201       MVA   IT7,INTR1           SET INT EXP STATE
002A9C 4020 259E 2AB4      1202       MVA   STP,SI
002AA2 680C 2AB4           1203       IO    STP                 START ODD TMR
002AA6 6F04 2AAE           1204       BCC   7,IT6
002AAA 6F03 2A44           1205       BAL   E,R7                BAD CC
                           1206 *
002AAE 6100                1207 IT6   LEX   ,
                           1208 *
002AB0                     1209 IT7   EQU   *
002AB0 6802 0000           1210 ITER  B     *-*                 RETURN
                           1211 *
002AB4 6700                1212 STP   DC    X'6700'             START ODD TMR - APERIODIC
002AB6 0000                1213       DC    A(*-*)
002AB8 FFFF                1214 XFFFF DC    X'FFFF'
002ABA FFFC                1215 XFFFC DC    X'FFFC'
002ABC 0000                1216 EVENM DC    A(*-*)
002ABE 0000                1217 EVENV DC    A(*-*)
002AC0 0000                1218 ODDM  DC    A(*-*)
002AC2 0000                1219 ODDV  DC    A(*-*)
                           1221 ************************************************************
                           1222 * NAME-            TIMER INTERRUPT SERVICE SUBROUTINES.
                           1223 *
                           1224 * PURPOSE-         TO SERVICE TIMER INTERRUPTS, CHECK COND.
                           1225 *                   CODES, AND CHECK INTERRUPT IDS.
                           1226 *
                           1227 * CALLING SEQUENCE-PLACE ADDRESSES OF THESE ROUTINES ('INT0
                           1228 *                   FOR EVEN AND 'INT1' FOR ODD) IN THE
                           1229 *                   APPROPRIATE TRANSFER VECTORS. BEFORE
                           1230 *                   CAUSING AN INTERRUPT PUT THE RETURN ADDRESS
                           1231 *                   IN 'INTR0' FOR EVEN, 'INTR1' FOR ODD. IF
                           1232 *                   THESE POSITIONS ARE ZERO WHEN AN INTERRUPT
                           1233 *                   OCCURS, NO INTERRUPT IS EXPECTED, AND THAT
                           1234 *                   IS AN ERROR CONDITION. THE POSITIONS ARE
                           1235 *                   ZEROED JUST BEFORE RETURN OCCURS.
                           1236 *
                           1237 * RETURN-           TO ADDRESS CONTAINED IN 'INTR0' OR 'INTR1'.
                           1238 ************************************************************
002AC4                     1239 INT0  EQU   *
002AC4 6B04 2ACC           1240       BCC   3,INT00
002AC8 6F03 2A44           1241       BAL   E,R7                BAD CC AT INT TIME
002ACC 6E03 28DE           1242 INT00 BAL   STOP0,R6            STOP TIMER 0
002AD0 CF24 2AFC           1243 INT0A CW    IDO,R7
002AD4 1002                1244       JE    INT01
002AD6 6F03 2A44           1245       BAL   E,R7                BAD INTERRUPT ID
002ADA 402B 2AEE FFFF      1246 INT01 TWI   -1,INTR0            WAS INT EXPECTED?
002AE0 1802                1247       JNZ   INT02               JUMP IF YES
002AE2 6F03 2A44           1248       BAL   E,R7                UNEXPECTED INTERRUPT
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

002AE6  CF25 2AEE          1249 INT02  MVWZ  INTR0,R7              ZERO INT EXP FLAG
002AEA  68E2 0000          1250        B     (R7)                   RETURN
002AEE  0000               1251 INTR0  DC    A(*-*)
002AF0  2AF4               1252 AINT   DC    A(AINT0)
002AF2  2AF6               1253        DC    A(AINT1)
002AF4  2AC4               1254 AINT0  DC    A(INT0)                DDB
002AF6  2B02               1255 AINT1  DC    A(INT1)                DDB
002AF8  00000000           1256 ISAV   DC    2A(*-*)
002AFC  0000               1257 ID0    DC    A(*-*)
002AFE  0000               1258 ID1    DC    A(*-*)
002B00  0000               1259 SAVA   DC    A(*-*)
                           1260 *
002B02                     1261 INT1   EQU   *
002B02  6B04 2B0A          1262        BCC   3,INT10
002B06  6F03 2A44          1263        BAL   E,R7                   BAD CC
002B0A  6E03 28F0          1264 INT10  BAL   STOP1,R6               STOP TIMER 1
002B0E  CF24 2AFE          1265 INT1A  CW    ID1,R7
002B12  1002               1266        JE    INT11
002B14  6F03 2A44          1267        BAL   E,R7                   BAD INTERRUPT ID
002B18  402B 2B2C FFFF     1268 INT11  TWI   -1,INTR1               WAS INTERRUPT EXPECTED?
002B1E  1802               1269        JNZ   INT12                  JUMP IF YES
002B20  6F03 2A44          1270        BAL   E,R7                   UNEXPECTED INTERRUPT
002B24  CF25 2B2C          1271 INT12  MVWZ  INTR1,R7               ZERO INT EXP FLAG
002B28  68E2 0000          1272        B     (R7)                   RETURN
002B2C  0000               1273 INTR1  DC    A(*-*)
                           1274 *
002B2E  2B32               1275 CODE4  DC    A(EC4)
002B30  2B3A               1276        DC    A(OC4)
                           1277 *
002B32                     1278 EC4    EQU   *
002B32  6C04 2ACC          1279        BCC   4,INT00
002B36  6F03 2A44          1280        BAL   E,R7                   WRONG C.C.
                           1281 *
002B3A                     1282 OC4    EQU   *
002B3A  6C04 2B0A          1283        BCC   4,INT10
002B3E  6F03 2A44          1284        BAL   E,R7                   WRONG C.C.
                           1285 *
002B42  2B46               1286 C4     DC    A(E4)
002B44  2B4E               1287        DC    A(O4)
                           1288 *
002B46                     1289 E4     EQU   *
002B46  6C04 2AD0          1290        BCC   4,INT0A
002B4A  6F03 2A44          1291        BAL   E,R7                   WRONG C.C.
                           1292 *
002B4E                     1293 O4     EQU   *
002B4E  6C04 2B0E          1294        BCC   4,INT1A
002B52  6F03 2A44          1295        BAL   E,R7                   WRONG C.C.
                           1296 *
002B56  2B62               1297 CC2    DC    A(E2)
002B58  2B6A               1298        DC    A(O2)
                           1299 *
002B5A  2B72               1300 CC6    DC    A(E6)
002B5C  2B7A               1301        DC    A(O6)
                           1302 *
002B5E  2B82               1303 CC7    DC    A(E7)
002B60  2B8A               1304        DC    A(O7)
                           1305 *
002B62                     1306 E2     EQU   *
002B62  6A04 2AD0          1307        BCC   2,INT0A
002B66  6F03 2A44          1308        BAL   E,R7                   WRONG C.C.
                           1309 *
002B6A                     1310 O2     EQU   *
002B6A  6A04 2B0E          1311        BCC   2,INT1A
002B6E  6F03 2A44          1312        BAL   E,R7                   WRONG C.C.
                           1313 *
002B72                     1314 E6     EQU   *
002B72  6E04 2AD0          1315        BCC   6,INT0A
002B76  6F03 2A44          1316        BAL   E,R7                   WRONG C.C.
                           1317 *
002B7A                     1318 O6     EQU   *
002B7A  6E04 2B0E          1319        BCC   6,INT1A
002B7E  6F03 2A44          1320        BAL   E,R7                   WRONG C.C.
                           1321 *
002B82                     1322 E7     EQU   *
002B82  6F04 2AD0          1323        BCC   7,INT0A
002B86  6F03 2A44          1324        BAL   E,R7                   WRONG C.C.
                           1325 *
002B8A                     1326 O7     EQU   *
002B8A  6F04 2B0E          1327        BCC   7,INT1A
002B8E  6F03 2A44          1328        BAL   E,R7                   WRONG C.C.
                           1329 *
                           1330 ********************************************************
002B92  2BBA               1331 AEN    DC    A(EN)
002B94  0000               1332 ST     DC    X'0000'
002B96  FFFF               1333        DC    X'FFFF'
002B98  AAAA               1334        DC    X'AAAA'
002B9A  5555               1335        DC    X'5555'
002B9C  8001               1336        DC    X'8001'
002B9E  4002               1337        DC    X'4002'
002BA0  2004               1338        DC    X'2004'
002BA2  1008               1339        DC    X'1008'
002BA4  0180               1340        DC    X'0180'
002BA6  0240               1341        DC    X'0240'
002BA8  0420               1342        DC    X'0420'
002BAA  0810               1343        DC    X'0810'
002BAC  0101               1344        DC    X'0101'
002BAE  0202               1345        DC    X'0202'
002BB0  0404               1346        DC    X'0404'
002BB2  0808               1347        DC    X'0808'
002BB4  1010               1348        DC    X'1010'
002BB6  2020               1349        DC    X'2020'
002BB8  4040               1350        DC    X'4040'
002BBA  8080               1351 EN     DC    X'8080'
                           1352 *
002BBC  2BDC               1353 AENN   DC    A(ENN)
002BBE  0000               1354 STT    DC    X'0000'
002BC0  0001               1355        DC    X'0001'
002BC2  0002               1356        DC    X'0002'
002BC4  0003               1357        DC    X'0003'
002BC6  0004               1358        DC    X'0004'
002BC8  0005               1359        DC    X'0005'
002BCA  0006               1360        DC    X'0006'
002BCC  0007               1361        DC    X'0007'
002BCE  0008               1362        DC    X'0008'
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

002BD0  0009               1363        DC    X'0009'
002BD2  000A               1364        DC    X'000A'
002BD4  000B               1365        DC    X'000B'
002BD6  000C               1366        DC    X'000C'
002BD8  000E               1367        DC    X'000E'
002BDA  000F               1368        DC    X'000F'
002BDC  0000               1369 ENN    DC    X'0000'
                           1370 *
002BDE  0001               1371 X0001  DC    X'0001'
002BE0  00000000           1372 LLSB   DC    2A(*-*)                IAR-AKR
002BE4  00D0               1373        DC    X'00D0'                LSR
002BE6  00000000           1374 DLLSB  DC    2A(*-*)                R0&R1      OR  IAR-AKR
002BEA  0090               1375        DC    X'0090'                R2         OR  LSR
002BEC  00000000           1376        DC    8A(*-*)                R3-R7      OR  R0-R7
002BFC  00000000000000000  1377        DC    30A(*-*)               PATCH AREA
                           1378 *
                           1379 ********************************************************
                           1380 * NAME-          INTERRUPT ROUTINES TO RECORD THE
                           1381 *                SEQUENCE IN WHICH THE TIMERS INTERRUPT.
                           1382 *
                           1383 * PURPOSE-       SEE NAME OF ROUTINE.
                           1384 *
                           1385 * CALLING SEQUENCE-USE 'SETUP' ENTRY POINT TO SET UP THE
                           1386 *                INTERRUPT ROUTINES. R6 IS LINK REGISTER.
                           1387 *
                           1388 * RETURN-        AFTER INTERRUPTS OCCUR, A LEX IS ISSUED,
                           1389 *                SO A LOWER LEVEL MUST BE PENDING IN
                           1390 *                ORDER TO RESUME EXECUTION.
                           1391 ********************************************************
002C38  2C40               1392 CC3    DC    A(EC3)                 DDB
002C3A  2C6C               1393        DC    A(OC3)                 DDB
002C3C  0000               1394 EC3Z   DC    A(*-*)
002C3E  0000               1395 OC3Z   DC    A(*-*)
                           1396 *
002C40                     1397 EC3    EQU   *
002C40  6B04 2C48          1398        BCC   3,EC3A
002C44  6F03 2A44          1399        BAL   E,R7                   BAD C.C.
002C48  6E03 28DE          1400 EC3A   BAL   STOP0,R6               STOP EVEN
002C4C  402B 2AEE FFFF     1401        TWI   -1,INTR0               WAS INT EXPECTED?
002C52  1802               1402        JNZ   EC3B                   JUMP IF YES
002C54  6F03 2A44          1403        BAL   E,R7                   UNEXPECTED INTERRUPT
002C58  4020 2AEE 0000     1404 EC3B   MVWI  X'0000',INTR0          ZERO INT EXP FLAG
002C5E  8828 2C3E 2C3C     1405        MVW   OC3Z,EC3Z              * 1ST TIMER TO INT WILL-
002C64  4029 2C3C 0001     1406        AWI   1,EC3Z                 * HAVE A 1, 2D ONE WILL
002C6A  6100               1407        LEX   ,                      * HAVE A 2.
                           1408 *
002C6C                     1409 OC3    EQU   *
002C6C  6B04 2C74          1410        BCC   3,OC3A
002C70  6F03 2A44          1411        BAL   E,R7                   WRONG C.C.
002C74  6E03 28F0          1412 OC3A   BAL   STOP1,R6               STOP ODD
002C78  402B 2B2C FFFF     1413        TWI   -1,INTR1               WAS INT EXPECTED?
002C7E  1802               1414        JNZ   OC3B                   JUMP IF YES
002C80  6F03 2A44          1415        BAL   E,R7                   UNEXPECTED INTERRUPT
002C84  8828 0000 2B2C     1416 OC3B   MVW   X'0000',INTR1          ZERO INT EXP FLAG
002C8A  8828 2C3C 2C3E     1417        MVW   EC3Z,OC3Z              * 1ST TIMER TO INT WILL
002C90  4029 2C3E 0001     1418        AWI   1,OC3Z                 * HAVE A 1, 2D ONE WILL
002C96  6100               1419        LEX   ,                      * HAVE A 2.
                           1420 *
002C98  4020 2C3C 0000     1421 SETUP  MVWI  X'0000',EC3Z
002C9E  4020 2C3E 0000     1422        MVWI  X'0000',OC3Z
002CA4  4020 2AEE 1000     1423        MVWI  X'1000',INTR0
002CAA  4020 2B2C 1000     1424        MVWI  X'1000',INTR1
002CB0  68C2 0000          1425        B     (R6)                   RETURN
                           1426 ********************************************************
                           1427 * NAME-       BEGIN PROGRAM ROUTINE
                           1428 *
                           1429 * PURPOSE-    INITIALIZE POINTERS AND SET UP TO BEGIN
                           1430 *             TESTING THE TIMERS.
                           1431 *
                           1432 * METHOD-     SAVE DCP XFER VECTORS AND MACHINE CHECK POINTER.
                           1433 *             PUT IN TIMER VECTORS, ENALBE INTERRUPTS,
                           1434 *             AND INITIALIZE PROGRAM POINTERS
                           1435 ********************************************************
002CB4                     1436 T0     EQU   *
002CB4  6301               1437        DIS   1                      DISABLE INTERRUPTS
002CB6  4020 26DA 0000     1438        MVWI  0,IRTN                 SET RTN/CKPT 0 <<<<<<<<<<<<
002CBC  6D03 2654          1439        MVW   R7,GOBCK+2             SAVE RETURN ADDRESS
002CC0  4124 18C8          1440        MVA   TURESUL,R1             PUT STATUS WORD ADDR IN R1
002CC4  4940               1441        TBTS  (R1,0)                 TURN ON BIT 0 IF IT WASNT ON
002CC6  1211               1442        JN    E1                     JUMP IF BIT 0 WAS ALREADY ON
                           1443 * TEST STARTED BIT IS NOW ON IN THE STATUS WORD.
002CC8  C520 19D0          1444        MVB   DEVADD,R5              GET DEVICE ADDRESS
002CCC  7DA0 00FE          1445        NWI   X'00FE',R5             ZERO BITS 0-7, AND 15
002CD0  7584               1446        MVW   R5,R4                  SAVE EVEN DEVICE ADDRESS
002CD2  6E03 2844          1447        BAL   SETT,R6                SET UP DEVICE ADDRESS'S
002CD6  3409               1448        SLL   1,R4                   R5 TIMES 2
002CD8  7C81 0030          1449        AWI   X'0030',R4             R5 NOW HAS XFER VECTOR ADDR
002CDC  6C0D 2B00          1450        MVW   R4,SAVA                SAVE XFER VECTOR ADDRESS
002CE0  9408 2712          1451        MVD   (R4),SDCP              SAVE DCP XFER VECTORS
002CE4  8828 000A 271E     1452        MVW   X'000A',SAVA1          SAVE DCP MCK RTN ADDR
                           1453 *
002CEA  4020 000A 25A4     1454 E1     MVA   MK,X'000A'             PUT IN TMR MCK RTN ADDR
002CF0  6908 2B00          1455        MVW   SAVA,R1                GET XFER VECTOR ADDRESS
002CF4  9060 2716          1456        MVD   DUMVE,(R1)             PUT IN TIMER VECTOR ADDR
002CF8  6F03 278A          1457        BAL   LV0,R7                 GET ON LVL 0
002CFC  6201               1458 E1A    EN    1                      ENABLE INTERRUPTS
                           1459 * ON LVL 0 NOW
002CFE                     1460 E2X    EQU   *
002CFE  4029 26DA 0001     1461        AWI   1,IRTN                 >>>>>>>>> CKPT 1 <<<<<<<<<<
002D04  4020 259E 28AA     1462        MVA   F13,SI
002D0A  680C 28AA          1463        IO    F13                    READ EVEN ID
002D0E  6F04 2D16          1464        BCC   7,E3X
002D12  6F03 2A44          1465        BAL   E,R7
002D16  4020 259E 28A4     1466 E3X    MVA   F10,SI
002D1C  680C 28A4          1467        IO    F10                    READ ODD ID
002D20  6F04 2D28          1468        BCC   7,E4X
002D24  6F03 2A44          1469        BAL   E,R7
002D28                     1470 E4X    EQU   *
002D28  882B 28AC 28A8     1471        CW    F14,F12
002D2E  1002               1472        JZ    E5X                    JUMP IF CORRECT ID
002D30  6F03 2A44          1473        BAL   E,R7
002D34  882B 28A6 28A8     1474 E5X    CW    F11,F12
002D3A  1002               1475        JZ    E6X                    JUMP IF CORRECT ID
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

002D3C  6F03 2A44         1479        BAL   E,R7
002D40                    1480 E6X    EQU   *
                          1481 ********************************************************
                          1482 *
                          1483 * NAME-              COMMAND REJECT ROUTINE
                          1484 *
                          1485 * PURPOSE-           VERIFY THAT ALL INVALID MODIFIERS
                          1486 *                    WILL COMMAND REJECT ON BOTH TIMERS.
                          1487 *
                          1488 * METHOD-            ISSUE THE COMMANDS MENTIONED ABOVE.
                          1489 *
                          1490 ********************************************************
002D40                    1491 T3     EQU   *
002D40  4020 26DA 0100    1492        MVWI  X'0100',IRTN       SET RTN/CKPT 0 <<<<<<<<<<<<<<
002D46  4524 001F         1493        MVWI  X'001F',R5         SET LAST MOD.
002D4A  4724 0000         1494        MVWI  X'0000',R7         SET FIRST MOD.
002D4E  6E03 28B2         1495        BAL   CMDR,R6            GO TEST FOR CMD REJECT
                          1496 *
002D52                    1497 T4     EQU   *
002D52  4524 0023         1498        MVWI  X'0023',R5         SET LAST MOD.
002D56  4724 0021         1499        MVWI  X'0021',R7         SET FIRST MOD.
002D5A  6E03 28B2         1500        BAL   CMDR,R6            GO TEST FOR CMD REJECT
                          1501 *
002D5E                    1502 T5     EQU   *
002D5E  4524 005F         1503        MVWI  X'005F',R5         SET LAST MOD.
002D62  4724 0026         1504        MVWI  X'0026',R7         SET FIRST MOD.
002D66  6E03 28B2         1505        BAL   CMDR,R6            GO TEST FOR CMD REJECT
                          1506 *
002D6A                    1507 T6     EQU   *
002D6A  4524 0063         1508        MVWI  X'0063',R5         SET LAST MOD.
002D6E  4724 0061         1509        MVWI  X'0061',R7         SET FIRST MOD.
002D72  6E03 28B2         1510        BAL   CMDR,R6            GO TEST FOR CMD REJECT
                          1511 *
002D76                    1512 T7     EQU   *
002D76  4524 006D         1513        MVWI  X'006D',R5         SET LAST MOD.
002D7A  4724 0068         1514        MVWI  X'0068',R7         SET FIRST MOD.
002D7E  6E03 28B2         1515        BAL   CMDR,R6            GO TEST FOR CMD REJECT
                          1516 *
002D82                    1517 T8     EQU   *
002D82  4524 00EF         1518        MVWI  X'00EF',R5         SET LAST MOD.
002D86  4724 0070         1519        MVWI  X'0070',R7         SET FIRST MOD.
002D8A  6E03 28B2         1520        BAL   CMDR,R6            GO TEST FOR CMD REJECT
                          1521 *
                          1522 *
002D8E                    1523 T10    EQU   *
002D8E  4724 28DB         1524        MVA   C10+1,R7           GET ADDR OF D.A. IN R7
002D92  4F47              1525        TBTS  (R7,7)             * IF TIMER 0 LOOP BACK -
002D94  1001              1526        JZ    T11                * STEST TIMER 1, OTHERWISE-
                          1527 *                               * FALL THROUGH.
002D96  5015              1528        J     T20                CONTINUE TESTING
002D98                    1529 T11    EQU   *
002D98  4029 26DA 0001    1530        AWI   1,IRTN             >>>>>>>>>>>>> CKPT 1 <<<<<<<<<
002D9E  CF25 28A6         1531        MVWZ  F11,R7             ZERO DEVICE ID FIELD
002DA2  4020 259E 28A4    1532        MVA   F10,SI
002DA8  680C 28A4         1533        IO    F10                READ DEVICE ID
002DAC  6F04 2DB4         1534        BCC   7,T12
002DB0  6F03 2A44         1535        BAL   E,R7               BAD C.C. ON READ ID
002DB4                    1536 T12    EQU   *
002DB4  882B 28A8 28A6    1537        CW    F12,F11            DID A TIMER RESPOND
002DBA  6800 2D40         1538        BZ    T3                 TEST INV MOD FOR ODD TIMER
002DBE  6F03 2A44         1539        BAL   E,R7               BAD DEVICE ID
                          1540 ********************************************************
                          1541 *
                          1542 * NAME-              READ VALUE AND MODE ROUTINE
                          1543 *
                          1544 * PURPOSE-           READ VALUE AND MODE OF BOTH TIMERS
                          1545 *                    AND SAVE THE DATA FOR LATER USE.
                          1546 *
                          1547 * METHOD-            ISSUE THE COMMANDS MENTIONED ABOVE.
                          1548 *
                          1549 ********************************************************
002DC2                    1550 T20    EQU   *
002DC2  4020 26DA 0200    1551        MVWI  X'0200',IRTN       SET RTN/CKPT 0 <<<<<<<<<<<<<
002DC8  4324 0000         1552        MVWI  0,R3               SET R3 TO 0
                          1553 *
002DCC  6E03 293E         1554        BAL   RDV0,R6            GO READ TMR 0 VAL
002DD0  6D0D 2ABE         1555        MVW   R5,EVENV           SAVE EVEN TMR VALUE
                          1556 *
002DD4  6E03 297A         1557 T22    BAL   RDM0,R6            GO READ TMR 0 MODE
002DD8  6D0D 2ABC         1558        MVW   R5,EVENM           SAVE EVEN TMR MODE
                          1559 *
002DDC                    1560 T23    EQU   *
002DDC  4029 26DA 0001    1561        AWI   1,IRTN             >>>>>>>>>>>>> CKPT 1 <<<<<<<<<
002DE2  6E03 2958         1562        BAL   RDV1,R6            GO READ TMR 1 VAL
002DE6  6D0D 2AC2         1563        MVW   R5,ODDV            SAVE ODD TMR VALUE
                          1564 *
002DEA  6E03 2994         1565 T24    BAL   RDM1,R6            GO READ TMR 1 MODE
002DEE  6D0D 2AC0         1566        MVW   R5,ODDM            SAVE ODD TMR MODE
                          1567 *
                          1568 ********************************************************
                          1569 *
                          1570 * NAME-              RESET AND STOP COMMANDS ROUTINE
                          1571 *
                          1572 * PURPOSE-           VERIFY THAT RESET AND STOP COMMANDS WORK
                          1573 *                    PROPERLY AND THAT THEY DONT DISTURB THE
                          1574 *                    VALUE REGISTERS. RESET COMMANDS SHOULD
                          1575 *                    ZERO THE MODE REGISTERS.
                          1576 *
                          1577 * METHOD-            ISSUE THE REQUIRED COMMANDS.
                          1578 *
                          1579 ********************************************************
002DF2                    1580 T25    EQU   *
002DF2  4020 26DA 0300    1581        MVWI  X'0300',IRTN       SET RTN/CKPT 0 <<<<<<<<<<<<<
002DF8  6E03 290E         1582        BAL   RSET0,R6           RESET TMR 0
002DFC  6E03 28F0         1583        BAL   STOP1,R6           STOP TMR 1
                          1584 *
002E00  6E03 297A         1585        BAL   RDM0,R6            GO READ TMR 0 MODE
002E04  73A5              1586        CW    R3,R5
002E06  1002              1587        JE    T26
002E08  6F03 2A44         1588        BAL   E,R7               TMR 0 MODE WASNT ZERO
                          1589 *
002E0C  6E03 2994         1590 T26    BAL   RDM1,R6            GO READ TMR 1 MODE
002E10  CD24 2AC0         1591        CW    ODDM,R5
002E14  1002              1592        JE    T27
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002E16  6F03 2A44         1593        BAL   E,R7               TMR 1 MODE WAS CHANGED
                          1594 *
002E1A  6E03 2958         1595 T27    BAL   RDV1,R6            GO READ TMR 1 VAL
002E1E  CD24 2AC2         1596        CW    ODDV,R5
002E22  1002              1597        JE    T28
002E24  6F03 2A44         1598        BAL   E,R7               TMR 1 VAL WAS CHANGED
                          1599 *
002E28  6E03 293E         1600 T28    BAL   RDV0,R6            GO READ TMR 0 VAL
002E2C  CD24 2ABE         1601        CW    EVENV,R5
002E30  1002              1602        JE    T29
002E32  6F03 2A44         1603        BAL   E,R7               TMR 0 VAL WAS CHANGED
                          1604 *
002E36  6E03 2920         1605 T29    BAL   RSET1,R6           RESET TMR 1
002E3A  6E03 28DE         1606        BAL   STOP0,R6           STOP TMR 0
                          1607 *
002E3E  4029 26DA 0001    1608        AWI   1,IRTN             >>>>>>>>>>> CKPT 1 <<<<<<<<<<<
002E44  6E03 2994         1609        BAL   RDM1,R6            GO READ TMR 1 MODE
002E48  73A5              1610        CW    R3,R5
002E4A  1002              1611        JE    T30
002E4C  6F03 2A44         1612        BAL   E,R7               TMR 1 MODE WASNT 0
                          1613 *
002E50  6E03 293E         1614 T30    BAL   RDV0,R6            READ TMR 0 VAL
002E54  CD24 2ABE         1615        CW    EVENV,R5
002E58  1002              1616        JE    T31
002E5A  6F03 2A44         1617        BAL   E,R7               TMR 0 VAL WAS CHANGED
                          1618 *
002E5E  6E03 297A         1619 T31    BAL   RDM0,R6            GO READ TMR 0 MODE
002E62  73A5              1620        CW    R3,R5
002E64  1002              1621        JE    T32
002E66  6F03 2A44         1622        BAL   E,R7               TMR 0 MODE WASNT 0
                          1623 *
002E6A  6E03 2958         1624 T32    BAL   RDV1,R6            GO READ TMR 1 VAL
002E6E  CD24 2AC2         1625        CW    ODDV,R5
002E72  1002              1626        JE    T33
002E74  6F03 2A44         1627        BAL   E,R7               TMR 1 VAL WAS CHANGED
                          1628 ********************************************************
                          1629 *
                          1630 * NAME-              VALUE REGISTER DATA CHECK
                          1631 *
                          1632 * PURPOSE-           VERIFY THAT DIFFERENT DATA PATTERNS CAN
                          1633 *                    BE WRITTEN AND READ TO AND FROM THE VALUE
                          1634 *                    REGISTERS.
                          1635 *
                          1636 * METHOD-            ISSUE THE REQUIRED COMMANDS.
                          1637 *
                          1638 ********************************************************
002E78                    1639 T33    EQU   *
002E78  4020 26DA 0400    1640        MVWI  X'0400',IRTN       SET RTN/CKPT 0 <<<<<<<<<<<<<
002E7E  4324 2B94         1641        MVA   ST,R3              START ADDR-INCR-TMR0
002E82  4224 2BBA         1642        MVA   EN,R2              START ADDR-DECR-TMR1
                          1643 *
002E86  CDC0              1644 T34    MVW   (R3),R5            PUT WRITE DATA IN R5
002E88  6E03 29EE         1645        BAL   SET0,R6            WRITE TMR 0 VALUE
002E8C  CD80              1646        MVW   (R2),R5            PUT WRITE DATA IN R5
002E8E  6E03 2A04         1647        BAL   SET1,R6            WRITE TMR 1 VALUE
                          1648 *
002E92  6E03 293E         1649        BAL   RDV0,R6            READ TMR 0 VALUE
002E96  CDC4              1650        CW    (R3),R5
002E98  1002              1651        JE    T35
002E9A  6F03 2A44         1652        BAL   E,R7               INCORRECT TMR 0 VALUE
                          1653 *
002E9E  6E03 2958         1654 T35    BAL   RDV1,R6            READ TMR 1 VALUE
002EA2  CD84              1655        CW    (R2),R5
002EA4  1002              1656        JE    T36
002EA6  6F03 2A44         1657        BAL   E,R7               INCORRECT TMR 1 VALUE
                          1658 *
002EAA  CB24 2B92         1659 T36    CW    AEN,R3             END OF LOOP?
002EAE  1005              1660        JE    T37                JUMP IF YES
002EB0  7B61 0002         1661        AWI   2,R3               INCR R3
002EB4  7A41 FFFE         1662        AWI   -2,R2              DECR R2
002EB8  50E6              1663        J     T34                LOOP
                          1664 ********************************************************
                          1665 *
                          1666 * NAME-              MODE REGISTER DATA TEST
                          1667 *
                          1668 * PURPOSE-           VERIFY THAT DIFFERENT DATA PATTERNS CAN
                          1669 *                    BE WRITTEN AND READ TO AND FROM THE MODE
                          1670 *                    REGISTERS.
                          1671 *
                          1672 * METHOD-            ISSUE THE REQUIRED COMMANDS.
                          1673 *
                          1674 ********************************************************
002EBA                    1675 T37    EQU   *
002EBA  4020 26DA 0500    1676        MVWI  X'0500',IRTN       SET RTN/CKPT 0 <<<<<<<<<<<<<
002EC0  4324 2BBE         1677        MVA   STT,R3             START ADDR-TMR 0
002EC4  4224 2BDC         1678        MVA   ENN,R2             START ADDR - DECR - TMR1
                          1679 *
002EC8  CDC0              1680 T38    MVW   (R3),R5            PUT MODE DATA IN R5
002ECA  6E03 29B6         1681        BAL   SETM0,R6           WRITE TMR 0 MODE
002ECE  CD80              1682        MVW   (R2),R5            PUT MODE DATA IN R5
002ED0  6E03 29CC         1683        BAL   SETM1,R6           WRITE TMR1 MODE
                          1684 *
002ED4  6E03 297A         1685        BAL   RDM0,R6            READ TMR 0 MODE
002ED8  CDC4              1686        CW    (R3),R5
002EDA  1002              1687        JE    T39
002EDC  6F03 2A44         1688        BAL   E,R7               INCORRECT TMR 0 MODE
                          1689 *
002EE0  6E03 2994         1690 T39    BAL   RDM1,R6            READ TMR 1 MODE
002EE4  CD84              1691        CW    (R2),R5
002EE6  1002              1692        JE    T40
002EE8  6F03 2A44         1693        BAL   E,R7               INCORRECT TMR 1 MODE DATA
                          1694 *
002EEC  CB24 2BBC         1695 T40    CW    AENN,R3            END OF LOOP?
002EF0  1005              1696        JE    T41                JUMP IF YES
002EF2  7B61 0002         1697        AWI   2,R3               INCR R3
002EF6  7A41 FFFE         1698        AWI   -2,R2              DECR R2
002EFA  50E6              1699        J     T38                LOOP
                          1700 ********************************************************
                          1701 *
                          1702 * NAME-              INTERRUPT ON ALL LEVELS TEST
                          1703 *
                          1704 * PURPOSE-           VERIFY THAT BOTH TIMERS WILL INTERRUPT
                          1705 *                    PROPERLY ON ALL INTERRUPT LEVELS.
                          1706 *
                          1707 * METHOD-            PREPARE TIMERS TO A LEVEL, SET MODE TO A
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                           1713 *          TIME BASE, LET EACH TIMER INTERRUPT IN
                           1714 *          TURN, CHANGE TIME BASE AND LET EACH
                           1715 *          INTERRUPT AGAIN. DO THIS SEQUENCE FOR
                           1716 *          ALL TIME BASES ON ALL LEVELS FOR BOTH TIMERS.
                           1717 ************************************************************
002EFC                     1718 T41    EQU   *
002EFC  4020 26DA 0600     1719         MVWI  X'0600',IRTN          SET RTN/CKPT 0 <<<<<<<<<<<<
002F02  6808 2B00          1720         MVW   SAVA,R0               GET VECTOR ADDRESS
002F06  9008 2AF8          1721         MVD   (R0),ISAV             SAVE WHAT IS IN THERE
002F0A  9020 2AFC          1722         MVD   AINT,(R0)             SET UP NEW POINTERS
002F0E  4524 0001          1723         MVWI  X'0001',R5
002F12  6E03 2A26          1724         BAL   PRE,R6                PREPARE TIMERS - LVL 0
002F16  3581               1725         SLL   16,R5
002F18  6E03 29B6          1726         BAL   SETM0,R6              SET MODE - EVEN - 50 USEC
002F1C  6E03 29CC          1727         BAL   SETM1,R6              SET MODE - ODD - 50 USEC
                           1728 *
002F20  6E03 2A60          1729 T42    BAL   ITES0,R6              LET EVEN TMR INT.
002F24  3581               1730         SLL   16,R5
002F26  6E03 2A52          1731         BAL   COPY,R6               VERIFY CPU IS ON LVL 0
002F2A  6E03 2A8C          1732         BAL   ITES1,R6              LET ODD TMR INT.
002F2E  3581               1733         SLL   16,R5
002F30  6E03 2A52          1734         BAL   COPY,R6               VERIFY CPU ON LVL 0
                           1735 *
002F34  4524 0007          1736 T43    MVWI  X'0007',R5
002F38  6E03 2A26          1737         BAL   PRE,R6                PREPARE TMRS - LVL 3
002F3C  6E03 2A8C          1738         BAL   ITES1,R6              LET ODD TMR INT.
002F40  4524 0003          1739         MVWI  X'0003',R5
002F44  6E03 2A52          1740         BAL   COPY,R6               VERIFY CPU ON LVL 3
002F48  6E03 2A60          1741         BAL   ITES0,R6              LET EVEN TMR INT.
002F4C  4524 0003          1742         MVWI  X'0005',R5
002F50  6E03 2A52          1743         BAL   COPY,R6               VERIFY CPU ON LVL 3
                           1744 *
002F54  4524 0003          1745 T44    MVWI  X'0003',R5
002F58  6E03 2A26          1746         BAL   PRE,R6                PREPARE TO LVL 1
002F5C  6E03 2A60          1747         BAL   ITES0,R6              LET EVEN TMR INT.
002F60  4524 0001          1748         MVWI  X'0001',R5
002F64  6E03 2A52          1749         BAL   COPY,R6               VERIFY CPU ON LVL 1
002F68  6E03 2A8C          1750         BAL   ITES1,R6              LET ODD TMR INT
002F6C  4524 0001          1751         MVWI  X'0001',R5
002F70  6E03 2A52          1752         BAL   COPY,R6               VERIFY CPU ON LVL 1
                           1753 *
002F74  4524 0005          1754 T45    MVWI  X'0005',R5
002F78  6E03 2A26          1755         BAL   PRE,R6                PREPARE TO LVL 2
002F7C  6E03 2A60          1756         BAL   ITES0,R6              LET EVEN TMR INT.
002F80  4524 0002          1757         MVWI  X'0002',R5
002F84  6E03 2A52          1758         BAL   COPY,R6               VERIFY CPU ON LVL 2
002F88  6E03 2A8C          1759         BAL   ITES1,R6              LET ODD TMR INT.
002F8C  4524 0002          1760         MVWI  X'0002',R5
002F90  6E03 2A52          1761         BAL   COPY,R6               VERIFY CPU ON LVL 2
                           1762 *
002F94                     1763 T46    EQU   *
002F94  4029 26DA 0001     1764         AWI   1,IRTN                >>>>>>>>>>>> CKPT 1 <<<<<<<<<<
002F9A  4524 0008          1765         MVWI  X'0008',R5
002F9E  6E03 29CC          1766         BAL   SETM1,R6              SET MODE - ODD - 5 USEC
002FA2  6E03 29B6          1767         BAL   SETM0,R6              SET MODE - EVEN - 5 USEC
002FA6  6E03 2A60          1768         BAL   ITES0,R6              LET EVEN TMR INT.
002FAA  4524 0002          1769         MVWI  X'0002',R5
002FAE  6E03 2A52          1770         BAL   COPY,R6               VERIFY CPU ON LVL 2
002FB2  6E03 2A8C          1771         BAL   ITES1,R6              LET ODD TMR INT.
002FB6  4524 0002          1772         MVWI  X'0002',R5
002FBA  6E03 2A52          1773         BAL   COPY,R6               VERIFY CPU ON LVL 2
                           1774 *
002FBE  4524 0003          1775 T47    MVWI  X'0003',R5
002FC2  6E03 2A26          1776         BAL   PRE,R6                PREPARE TO LVL 1
002FC6  6E03 2A8C          1777         BAL   ITES1,R6              LET ODD TMR INT.
002FCA  4524 0001          1778         MVWI  X'0001',R5
002FCE  6E03 2A52          1779         BAL   COPY,R6               VERIFY CPU ON LVL 1
002FD2  6E03 2A60          1780         BAL   ITES0,R6              LET EVEN TMR INT.
002FD6  4524 0001          1781         MVWI  X'0001',R5
002FDA  6E03 2A52          1782         BAL   COPY,R6               VERIFY CPU ON LVL 1
                           1783 *
002FDE  4524 0001          1784 T48    MVWI  X'0001',R5
002FE2  6E03 2A26          1785         BAL   PRE,R6                PREPARE TO LVL 0
002FE6  6E03 2A60          1786         BAL   ITES0,R6              LET EVEN TMR INT.
002FEA  3581               1787         SLL   16,R5
002FEC  6E03 2A52          1788         BAL   COPY,R6               VERIFY CPU ON LVL 0
002FF0  6E03 2A8C          1789         BAL   ITES1,R6              LET ODD TMR INT.
002FF4  3581               1790         SLL   16,R5
002FF6  6E03 2A52          1791         BAL   COPY,R6               VERIFY CPU ON LVL 0
                           1792 *
002FFA  4524 0007          1793 T49    MVWI  X'0007',R5
002FFE  6E03 2A26          1794         BAL   PRE,R6                PREPARE TO LVL 3
003002  6E03 2A60          1795         BAL   ITES0,R6              LET EVEN TMR INT.
003006  4524 0003          1796         MVWI  X'0003',R5
00300A  6E03 2A52          1797         BAL   COPY,R6               VERIFY CPU ON LVL 3
00300E  6E03 2A8C          1798         BAL   ITES1,R6              LET ODD TMR INT.
003012  4524 0003          1799         MVWI  X'0003',R5
003016  6E03 2A52          1800         BAL   COPY,R6               VERIFY CPU ON LVL 3
                           1801 *
00301A                     1802 T50    EQU   *
00301A  4029 26DA 0001     1803         AWI   1,IRTN                >>>>>>>>>>>> CKPT 2 <<<<<<<<<<
003020  4524 000C          1804         MVWI  X'000C',R5
003024  6E03 29CC          1805         BAL   SETM1,R6              SET ODD TMR - 1 USEC
003028  6E03 29B6          1806         BAL   SETM0,R6              SET EVEN TMR - 1 USEC
00302C  6E03 2A8C          1807         BAL   ITES1,R6              LET ODD TMR INT.
003030  4524 0003          1808         MVWI  X'0003',R5
003034  6E03 2A52          1809         BAL   COPY,R6               VERIFY CPU ON LVL 3
003038  6E03 2A60          1810         BAL   ITES0,R6              LET EVEN TMR INT.
00303C  4524 0003          1811         MVWI  X'0003',R5
003040  6E03 2A52          1812         BAL   COPY,R6               VERIFY CPU ON LVL 3
                           1813 *
003044  4524 0001          1814 T51    MVWI  X'0001',R5
003048  6E03 2A26          1815         BAL   PRE,R6                PREPARE TO LVL 0
00304C  6E03 2A8C          1816         BAL   ITES1,R6              LET ODD TMR INT.
003050  3581               1817         SLL   16,R5
003052  6E03 2A52          1818         BAL   COPY,R6               VERIFY CPU ON LVL 0
003056  6E03 2A60          1819         BAL   ITES0,R6              LET EVEN TMR INT.
00305A  3581               1820         SLL   16,R5
00305C  6E03 2A52          1821         BAL   COPY,R6               VERIFY CPU ON LVL 0
                           1822 *
003060  4524 0005          1823 T52    MVWI  X'0005',R5
003064  6E03 2A26          1824         BAL   PRE,R6                PREPARE TO LVL 2
003068  6E03 2A60          1825         BAL   ITES0,R6              LET EVEN TMR INT.
00306C  4524 0002          1826         MVWI  X'0002',R5
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
003070  6E03 2A52          1827         BAL   COPY,R6               VERIFY CPU ON LVL 2
003074  6E03 2A8C          1828         BAL   ITES1,R6              LET ODD TMR INT.
003078  4524 0002          1829         MVWI  X'0002',R5
00307C  6E03 2A52          1830         BAL   COPY,R6               VERIFY CPU ON LVL 2
                           1831 *
003080  4524 0003          1832 T53    MVWI  X'0003',R5
003084  6E03 2A26          1833         BAL   PRE,R6                PREPARE TO LVL 1
003088  6E03 2A60          1834         BAL   ITES0,R6              LET EVEN TMR INT.
00308C  4524 0001          1835         MVWI  X'0001',R5
003090  6E03 2A52          1836         BAL   COPY,R6               VERIFY CPU ON LVL 1
003094  6E03 2A8C          1837         BAL   ITES1,R6              LET ODD TMR INT.
003098  4524 0001          1838         MVWI  X'0001',R5
00309C  6E03 2A52          1839         BAL   COPY,R6               VERIFY CPU ON LVL 1
                           1840 *
0030A0                     1841 T54    EQU   *
0030A0  4029 26DA 0001     1842         AWI   1,IRTN                >>>>>>>>>>>> CKPT 3 <<<<<<<<<<<<
0030A6  4524 0004          1843         MVWI  X'0004',R5
0030AA  6E03 29B6          1844         BAL   SETM0,R6              SET ODD TMR - 25 USEC
0030AE  6E03 29CC          1845         BAL   SETM1,R6              SET EVEN TMR - 25 USEC
0030B2  6E03 2A8C          1846         BAL   ITES1,R6              LET ODD TMR INT.
0030B6  4524 0001          1847         MVWI  X'0001',R5
0030BA  6E03 2A52          1848         BAL   COPY,R6               VERIFY CPU ON LVL 1
0030BE  6E03 2A60          1849         BAL   ITES0,R6              LET EVEN TMR INT.
0030C2  4524 0001          1850         MVWI  X'0001',R5
0030C6  6E03 2A52          1851         BAL   COPY,R6               VERIFY CPU ON LVL 1
                           1852 *
0030CA  4524 0005          1853 T55    MVWI  X'0005',R5
0030CE  6E03 2A26          1854         BAL   PRE,R6                PREPARE TO LVL 2
0030D2  6E03 2A60          1855         BAL   ITES0,R6              LET EVEN TMR INT.
0030D6  4524 0002          1856         MVWI  X'0002',R5
0030DA  6E03 2A52          1857         BAL   COPY,R6               VERIFY CPU ON LVL 2
0030DE  6E03 2A8C          1858         BAL   ITES1,R6              LET ODD TMR INT.
0030E2  4524 0002          1859         MVWI  X'0002',R5
0030E6  6E03 2A52          1860         BAL   COPY,R6               VERIFY CPU ON LVL 2
                           1861 *
0030EA  4524 0007          1862 T56    MVWI  X'0007',R5
0030EE  6E03 2A26          1863         BAL   PRE,R6                PREPARE TO LVL 3
0030F2  6E03 2A8C          1864         BAL   ITES1,R6              LET ODD TMR INT.
0030F6  4524 0003          1865         MVWI  X'0003',R5
0030FA  6E03 2A52          1866         BAL   COPY,R6               VERIFY CPU ON LVL 3
0030FE  6E03 2A60          1867         BAL   ITES0,R6              LET EVEN TMR INT.
003102  4524 0003          1868         MVWI  X'0003',R5
003106  6E03 2A52          1869         BAL   COPY,R6               VERIFY CPU ON LVL 3
                           1870 *
00310A  4524 0001          1871 T57    MVWI  X'0001',R5
00310E  6E03 2A26          1872         BAL   PRE,R6                PREPARE TO LVL 0
003112  6E03 2A60          1873         BAL   ITES0,R6              LET EVEN TMR INT.
003116  3581               1874         SLL   16,R5
003118  6E03 2A52          1875         BAL   COPY,R6               VERIFY CPU ON LVL 0
00311C  6E03 2A8C          1876         BAL   ITES1,R6              LET ODD TMR INT.
003120  3581               1877         SLL   16,R5
003122  6E03 2A52          1878         BAL   COPY,R6               VERIFY CPU ON LVL 0
                           1879 *
                           1880 * AT THIS TIME, BOTH TIMERS HAVE INTERRUPTED ON EVERY
                           1881 * LEVEL IN EVERY INTERNAL TIME BASE, APERIODIC, AND
                           1882 * THE EXTERNAL GATE WAS DISABLED.
                           1883 *
                           1884 ************************************************************
                           1885 *
                           1886 * NAME-          AUTO LOAD TEST.
                           1887 *
                           1888 * PURPOSE-       TEST AUTO LOAD FUNCTION FOR BOTH TIMERS.
                           1889 *
                           1890 * METHOD-        SET TIMER VALUE, START IT, STOP IT WHEN
                           1891 *                IT INTERRUPTS. READ VALUE REGISTER AND
                           1892 *                VERIFY THAT IT WAS RELOADED WITH THE RIGHT
                           1893 *                VALUE. DO THIS WITH BOTH TIMERS IS BOTH
                           1894 *                PERIODIC AND APERIODIC MODES OF OPERATION.
                           1895 *
                           1896 ************************************************************
003126                     1897
003126  4020 26DA 0700     1898 T99    EQU   *
00312C  6808 2B00          1899         MVWI  X'0700',IRTN          SET RTN/CKPT 0 <<<<<<<<<<<<
003130  9020 2AF0          1900         MVW   SAVA,R0
003134  4524 0000          1901         MVD   AINT,(R0)             SET UP FOR CC3 INTS
003138  6E03 29B6          1902         MVWI  0,R5
00313C  6E03 29CC          1903         BAL   SETM0,R6              * SET BOTH TO-
003140  4524 0004          1904         BAL   SETM1,R6              * 50 USEC MODE.
003144  6E03 29EE          1905         MVWI  4,R5
003148  6E03 2A04          1906         BAL   SET0,R6               * SET VALUE TO-
                           1907         BAL   SET1,R6               * 4 IN BOTH.
                           1908 *
00314C  4020 2AEE 3158     1909 T99A   MVA   T99B,INTR0            SET INT EXP
003152  6E03 27B8          1910         BAL   STPE0,R6              START EVEN PERIODIC
003156  6100               1911         LEX   ,
                           1912 *
003158                     1913 T99B   EQU   *
003158  4029 26DA 0001     1914         AWI   1,IRTN                >>>>>>>>>>>> CKPT 1 <<<<<<<<<<
00315E  6E03 293E          1915         BAL   RDV0,R6               READ VALUE
003162  7D06 0004          1916         CWI   4,R5
003166  1005               1917         JE    T99C
003168  7D06 0003          1918         CWI   3,R5
00316C  1002               1919         JE    T99C
00316E  6F03 2A44          1920         BAL   E,R7                  WRONG VALUE
003172  4020 2AEE 318C     1921 T99C   MVA   T99E,INTR0            SET INT EXP
003178  4020 259E 2A88     1922         MVA   STAP,SI
00317E  680C 2A88          1923         IO    STAP                  START EVEN APERIODIC
003182  6F04 318A          1924         BCC   7,T99D
003186  6F03 2A44          1925         BAL   E,R7
00318A  6100               1926 T99D   LEX   ,
                           1927 *
00318C                     1928 T99E   EQU   *
00318C  4029 26DA 0001     1929         AWI   1,IRTN                >>>>>>>>>>>> CKPT 2 <<<<<<<<<<<<
003192  6E03 293E          1930         BAL   RDV0,R6               READ VALUE
003196  7D06 FFFF          1931         CWI   -1,R5
00319A  1005               1932         JE    T99F
00319C  7D06 FFFE          1933         CWI   X'FFFE',R5
0031A0  1002               1934         JE    T99F
0031A2  6F03 2A44          1935         BAL   E,R7                  WRONG VALUE
                           1936 *
                           1937 * TEST AUTO LOAD FUNCTION IN PERIODIC AND APERIODIC
                           1938 * MODES ON THE ODD TIMER.
                           1939 *
0031A6                     1940
0031A6  4029 26DA 0001     1941 T99F   EQU   *
                           1942         AWI   1,IRTN                >>>>>>>>>>>> CKPT 3 <<<<<<<<<<
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 LOCTR  OBJECT TEXT       STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
00031AC 4020 2B2C 31B8    1943         MVA   T99G,INTR1            SET INT EXP
00031B2 6E03 27CA         1944         BAL   STPE1,R6              START ODD PERIODIC
00031B6 6100              1945         LEX   ,
00031B8                   1946 T99G    EQU   *
00031B8 4029 26DA 0001    1947         AWI   1,IRTN                >>>>>>>>> CKPT 4 <<<<<<<<<<<<
00031BE 6E03 2958         1948         BAL   RDV1,R6               READ VALUE
00031C2 7D06 0004         1949         CWI   4,R5
00031C6 1005              1950         JE    T99H
00031C8 7D06 0003         1951         CWI   3,R5
00031CC 1002              1952         JE    T99H
00031CE 6F03 2A44         1953         BAL   E,R7                  WRONG VALUE
00031D2 4020 2B2C 31EC    1954 T99H    MVA   T99J,INTR1            SET INT EXP
00031D8 4020 259E 2AB4    1955         MVA   STP,SI
00031DE 680C 2AB4         1956         IO    STP                   START ODD APERIODIC
00031E2 6F04 31EA         1957         BCC   7,T99I
00031E6 6F03 2A44         1958         BAL   E,R7
00031EA 6100              1959 T99I    LEX   ,
                          1960 *
00031EC                   1961 T99J    EQU   *
00031EC 4029 26DA 0001    1962         AWI   1,IRTN                >>>>>>>>>> CKPT 5 <<<<<<<<<<<
00031F2 6E03 2958         1963         BAL   RDV1,R6               READ VALUE
00031F6 7D06 FFFF         1964         CWI   -1,R5
00031FA 1005              1965         JE    T99K
00031FC 7D06 FFFE         1966         CWI   X'FFFE',R5
003200  1002              1967         JE    T99K
003202  6F03 2A44         1968         BAL   E,R7                  WRONG VALUE
003206                    1969 T99K    EQU   *
003206  6808 2B00         1970         MVW   SAVA,R0               GET ADDR OF XFER VECTORS
00320A  9020 2AF8         1971         MVD   ISAV,(R0)             RESTORE OLD VECTORS
                          1972 *
00320E                    1973 T80     EQU   *
00320E  4020 2BE0 321E    1974         MVA   T81,LLSB              SET UP IARB
003214  4724 0001         1975         MVWI  X'0001',R7
003218  5F26 2BE0         1976         SELB  R7,LLSB               SET LVL 1 PENDING
00321C  6100              1977         LEX   ,                     EXIT LVL 0
                          1978 *
00321E                    1979 T81     EQU   *
00321E  4029 26DA 0001    1980         AWI   1,IRTN                >>>>>>>>>> CKPT 6 <<<<<<<<<<<
003224  4524 0001         1981         MVWI  X'0001',R5            SET S/B CURRENT LVL DATA
003228  6E03 2A52         1982         BAL   COPY,R6               VERIFY LVL 1
00322C  4524 0001         1983         MVWI  X'0001',R5
003230  6E03 2A26         1984         BAL   PRE,R6                PREPARE TO LVL 0
                          1986 ************************************************************
                          1987 *
                          1988 * NAME-              CC AND PREPARE ROUTINE
                          1989 *
                          1990 * PURPOSE-           VERIFY THAT EACH TIMER RETURNS CORRECT CC
                          1991 *                     AT OIO TIMES FOR DIFFERENT CONDITIONS, AND
                          1992 *                     VERIFY THAT PREPARE COMMAND CAUSES TIMERS
                          1993 *                     TO REACT AS THEY SHOULD.
                          1994 *
                          1995 * METHOD-            SET UP REQUIRED CONDITIONS AND VERIFY THAT
                          1996 *                     TIMERS RETURN THE EXPECTED CONDITION CODES
                          1997 *                     FOR THESE CONDITIONS. CHANGE 'INTERRUPT TO'
                          1998 *                     LEVELS WITH PREPARE COMMAND AND VERIFY
                          1999 *                     PROPER OPERATION. ALSO VERIFY THAT I-BIT
                          2000 *                     IN PREPARE FIELD OPERATES OK.
                          2001 *
                          2002 ************************************************************
                          2003 *
                          2004 * NOW VERIFY CC1 (BUSY) IS RETURNED WHEN IT SHOULD BE.
                          2005 *
003234                    2006 T100    EQU   *
003234  6E03 290E         2007         BAL   RSET0,R6
003238  6E03 2920         2008         BAL   RSET1,R6
00323C  6F03 278A         2009         BAL   LV0,R7                GET ON LEVEL 0
003240  4020 26DA 0800    2010         MVWI  X'0800',IRTN          SET RTN/CKPT 0 <<<<<<<<<<<<<<<
003246  6808 2B00         2011         MVW   SAVA,R0
00324A  9020 2AF0         2012         MVD   AINT,(R0)             POINT TO OTHER INT. RTN.
003244  4020 2ABE 0000    2013         MVWI  0,INTR0               * SET INTERRUPT ROUTINES-
003254  4020 2B2C 0000    2014         MVWI  0,INTR1               * TO NO INT. EXPECTED.
                          2015 *
00325A  4524 000C         2016         MVWI  X'000C',R5
00325E  6E03 29B6         2017         BAL   SETM0,R6              1 USEC
003262  4524 0001         2018         MVWI  1,R5
003266  6E03 29EE         2019         BAL   SET0,R6               COUNT = 1
00326A  6E03 27B8         2020         BAL   STPE0,R6              START EVEN TIMER
                          2021 *
00326E  4524 0002         2022         MVWI  2,R5
003272  6E03 2584         2023         BAL   DEL,R6                DELAY, ALLOW INT.
003276  4020 259E 2A1E    2024 T101    MVA   SETV0,SI
00327C  680C 2A1E         2025         IO    SETV0                 SET EVEN VALUE
003280  6904 3288         2026         BCC   1,T102
003284  6F03 2A44         2027         BAL   E,R7                  WRONG C.C.
003288  4020 259E 29E6    2028 T102    MVA   RD0,SI
00328E  680C 29E6         2029         IO    RD0                   SET EVEN MODE
003292  6904 329A         2030         BCC   1,T103
003296  6F03 2A44         2031         BAL   E,R7                  WRONG C.C.
00329A  4020 259E 27E0    2032 T103    MVA   IDCB0,SI
0032A0  680C 27E0         2033         IO    IDCB0                 START EVEN PER.
0032A4  6904 32AC         2034         BCC   1,T104
0032A8  6F03 2A44         2035         BAL   E,R7                  WRONG C.C.
0032AC  4020 259E 2A88    2036 T104    MVA   STAP,SI
0032B2  680C 2A88         2037         IO    STAP                  START EVEN APER.
0032B6  6904 32BE         2038         BCC   1,T105
0032BA  6F03 2A44         2039         BAL   E,R7                  WRONG C.C.
                          2040 *
                          2041 * NOW VERIFY THAT COMMANDS THAT SHOULD GET CC=7, WHEN AN
                          2042 * INTERRUPT IS PENDING, WORK OK.
                          2043 *
0032BE                    2044 T105    EQU   *
0032BE  4029 26DA 0001    2045         AWI   1,IRTN                >>>>>>>>>>> CKPT 1 <<<<<<<<<<<
0032C4  4020 259E 28A4    2046         MVA   F10,SI
0032CA  680C 28A4         2047         IO    F10                   READ ID
0032CE  6F04 32D6         2048         BCC   7,T106
0032D2  6F03 2A44         2049         BAL   E,R7                  WRONG C.C.
0032D6  882B 28A8 28A6    2050 T106    CW    F12,F11
0032DC  1002              2051         JZ    T107                  JUMP IF RIGHT I.D.
0032DE  6F03 2A44         2052         BAL   E,R7                  WRONG ID
0032E2  6E03 293E         2053 T107    BAL   RDV0,R6               READ EVEN VALUE
0032E6  6E03 297A         2054 T108    BAL   RDM0,R6               READ EVEN MODE
0032EA  7D06 000C         2055         CWI   X'000C',P5
0032EE  1002              2056         JZ    T109                  JUMP IF CORRECT MODE
0032F0  6F03 2A44         2057         BAL   E,R7                  WRONG MODE DATA
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 LOCTR  OBJECT TEXT       STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                          2059 *
                          2060 * VERIFY THAT STOP CMD GETS BUSY.
                          2061 *
0032F4                    2062 T109    EQU   *
0032F4  4029 26DA 0001    2063         AWI   1,IRTN                >>>>>>>>>>> CKPT 2 <<<<<<<<<<<
0032FA  4020 259E 2906    2064         MVA   STO,SI
003300  680C 2906         2065         IO    STO                   STOP EVEN TIMER
003304  6904 330C         2066         BCC   1,T110
003308  6F03 2A44         2067         BAL   E,R7                  WRONG C.C.
00330C  6E03 290E         2068 T110    BAL   RSET0,R6              RESET EVEN TIMER
                          2069 *
                          2070 * NOW SET LVL1 PENDING, LEX, AND VERIFY THAT NO INTERRUPT
                          2071 * OCCURS.
                          2072 *
003310                    2073 T111    EQU   *
003310  4020 2BE0 3320    2074         MVA   T112,LLSB             SET RETURN ADDR.
003316  4724 0001         2075         MVWI  1,R7
00331A  5F26 2BE0         2076         SELB  R7,LLSB               SET LVL1 PENDING
00331E  6100              2077         LEX   ,
                          2078 *
                          2079 * SHOULD BE ON LVL 1 NOW
                          2080 *
003320                    2081 T112    EQU   *
003320  4029 26DA 0001    2082         AWI   1,IRTN                >>>>>>>>>> CKPT 3 <<<<<<<<<<<
003326  4524 0001         2083         MVWI  1,R5                  SET S/B CURRENT LVL DATA
00332A  6E03 2A52         2084         BAL   COPY,R6               VERIFY LVL 1
00332E  4524 0003         2085 T113    MVWI  3,R5
003332  6E03 2A26         2086         BAL   PRE,R6                PERPARE TIMERS TO LVL 1
                          2087 *
                          2088 * NOW VERIFY THAT ODD TIMER GETS CC1 WHEN IT SHOULD
                          2089 *
003336  4524 000C         2090 T115    MVWI  X'000C',R5
00333A  6E03 29CC         2091         BAL   SETM1,R6              1 USEC
00333E  4524 0001         2092         MVWI  1,R5
003342  6E03 2A04         2093         BAL   SET1,R6               COUNT = 1
003346  6E03 27CA         2094         BAL   STPE1,R6              START ODD PER.
                          2095 *
00334A  4524 0002         2096         MVWI  2,R5
00334E  6E03 2584         2097         BAL   DEL,R6                ALLOW TIME FOR INTERRUPT
003352  4020 259E 2A22    2098 T116    MVA   SETV1,SI
003358  680C 2A22         2099         IO    SETV1                 SET ODD VALUE
00335C  6904 3364         2100         BCC   1,T117
003360  6F03 2A44         2101         BAL   E,R7                  WRONG C.C.
003364  4020 259E 29EA    2102 T117    MVA   RD1,SI
00336A  680C 29EA         2103         IO    RD1                   SET ODD MODE
00336E  6904 3376         2104         BCC   1,T118
003372  6F03 2A44         2105         BAL   E,R7                  WRONG C.C.
003376  4020 259E 27E4    2106 T118    MVA   IDCB1,SI
00337C  680C 27E4         2107         IO    IDCB1                 START ODD PER.
003380  6904 3388         2108         BCC   1,T119
003384  6F03 2A44         2109         BAL   E,R7                  WRONG C.C.
003388  4020 259E 2AB4    2110 T119    MVA   STP,SI
00338E  680C 2AB4         2111         IO    STP                   START ODD PER.
003392  6904 339A         2112         BCC   1,T120
003396  6F03 2A44         2113         BAL   E,R7                  BAD C.C.
                          2115 *
                          2116 * NOW VERIFY THAT CC 7 OCCURS, WITH AN INTERRUPT PENDING,
                          2117 * WHEN IT SHOULD
                          2118 *
00339A                    2119 T120    EQU   *
00339A  4029 26DA 0001    2120         AWI   1,IRTN                >>>>>>>>>> CKPT 4 <<<<<<<<<<<<
0033A0  4020 259E 28A4    2121         MVA   F10,SI
0033A6  680C 28A4         2122         IO    F10                   READ ID
0033AA  6F04 33B2         2123         BCC   7,T121
0033AE  6F03 2A44         2124         BAL   E,R7                  WRONG C.C.
0033B2  882B 28A8 28A6    2125 T121    CW    F12,F11
0033B8  1002              2126         JZ    T122                  JUMP IF CORRECT ID
0033BA  6F03 2A44         2127         BAL   E,R7                  WRONG I.D.
0033BE  6E03 2958         2128 T122    BAL   RDV1,R6               READ ODD VALUE
0033C2  6E03 2994         2129 T123    BAL   RDM1,R6               READ ODD MODE
0033C6  7D06 000C         2130         CWI   X'000C',R5
0033CA  1002              2131         JZ    T124                  JUMP IF CORRECT MODE READ
0033CC  6F03 2A44         2132         BAL   E,R7                  WRONG MODE DATA
                          2133 *
                          2134 * VERIFY THAT STOP CMD GETS BUSY.
                          2135 *
0033D0  4020 259E 290A    2136 T124    MVA   ST1,SI
0033D6  680C 290A         2137         IO    ST1                   STOP ODD TIMER
0033DA  6904 33E2         2138         BCC   1,T125
0033DE  6F03 2A44         2139         BAL   E,R7                  WRONG C.C.
0033E2  6E03 2920         2140 T125    BAL   RSET1,R6              RESET ODD TIMER
                          2141 *
                          2142 * NOW SET LVL 2 PENDING, LEX, AND VERIFY THAT NO INT. OCCURS.
                          2143 *
0033E6                    2144 T126    EQU   *
0033E6  4029 26DA 0001    2145         AWI   1,IRTN                >>>>>>>>>>>> CKPT 5 <<<<<<<<<<<<
0033EC  4020 2BE0 33FC    2146         MVA   T127,LLSB             SET RETURN ADDRESS
0033F2  4724 0002         2147         MVWI  2,R7
0033F6  5F26 2BE0         2148         SELB  R7,LLSB               SET LVL 2 PENDING
0033FA  6100              2149         LEX   ,
                          2150 *
                          2151 * SHOULD BE ON LVL 2 NOW
                          2152 *
0033FC  4524 0002         2153 T127    MVWI  2,R5                  SET S/B CURRENT LVL DATA
003400  6E03 2A52         2154         BAL   COPY,R6
                          2156 *
                          2157 * NOW GET AN INTERRUPT PENDING ON LVL 2, THEN REPREPARE
                          2158 * TO LVL 1 WITH THE I-BIT ON.
                          2159 *
003404                    2160 T130    EQU   *
003404  4029 26DA 0001    2161         AWI   1,IRTN                >>>>>>>>>> CKPT 6 <<<<<<<<<<<
00340A  4524 000C         2162         MVWI  X'000C',R5
00340E  6E03 29B6         2163         BAL   SETM0,R6              SET MODE - 1 USEC
003412  4524 0030         2164         MVWI  X'30',R5
003416  6E03 29EE         2165         BAL   SET0,R6               SET COUNT TO VALUE OF X'30'
00341A  4020 2ABE 343C    2166         MVA   T132,INTR0            SET INT EXP FLAG
003420  4524 0003         2167         MVWI  3,R5
003424  6E03 2A26         2168         BAL   PRE,R6                PREPARE, LVL 1, I-BIT ON
003428  4020 259E 2A88    2169         MVA   STAP,SI
00342E  680C 2A88         2170         IO    STAP                  START EVEN APERIODIC
003432  6F04 343A         2171         BCC   7,T131
003436  6F03 2A44         2172         BAL   E,R7                  BAD C.C.
00343A  6100              2173 T131    LEX   ,
                          2174 *
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                         2175 * SHOULD BE ON LVL 1 NOW
                         2176 *
00343C                   2177 T132  EQU   *
00343C 4029 26DA 0001    2178       AWI   1,IRTN                  >>>>>>>>>>>> CKPT 7 <<<<<<<<<<<
003442 402F 2AEE 0000    2179       CWI   X'0000',INTRO           DID INT. OCCUR OK?
003448 1002              2180       JZ    T133                    JUMP IF YES
00344A 6F03 2A44         2181       BAL   E,R7
00344E 4524 00C1         2182 T133  MVWI  1,R5
003452 6E03 2A52         2183       BAL   COPY,R6                 VERIFY SYSTEM IS ON LVL 1
                         2184 *
003456 4020 259E 2A88    2185       MVA   STAP,SI
00345C 680C 2A88         2186       IO    STAP                    START EVEN APERIODIC
003460 6F04 3468         2187       BCC   7,T134
003464 6F03 2A44         2188       BAL   E,R7                    BAD C.C.
003468 4020 2AEE 3478    2189 T134  MVA   T135A,INTRO              SET INT EXP FLAG
00346E 4524 0005         2190       MVWI  5,R5
003472 6E03 2A26         2191       BAL   PRE,R6                  PREPARE, LVL 2, I-BIT ON
003476 6100              2192 T135  LEX   ,
                         2193 *
                         2194 * SHOULD BE ON LVL 2 NOW.
                         2195 *
003478                   2196 T135A EQU   *
003478 4029 26DA 0001    2197       AWI   1,IRTN                  >>>>>>>>>>>> CKPT 8 <<<<<<<<<<<
00347E 402F 2AEE 0000    2198       CWI   X'0000',INTRO           DID INT OCCUR OK?
003484 1002              2199       JZ    T136                    JUMP IF YES
003486 6F03 2A44         2200       BAL   E,R7
00348A 4524 0002         2201 T136  MVWI  2,R5
00348E 6E03 2A52         2202       BAL   COPY,R6                 VERIFY SYSTEM ON LVL 2
                         2204 *
                         2205 * NOW VERIFY THAT THE I-BIT OF THE PREPARE FIELD WORKS OK.
                         2206 *
003492 4020 2BE0 34BC    2207       MVA   T138,LLSB               SET UP IARB
003498 4724 0003         2208       MVWI  3,R7
00349C 5F26 2BE0         2209       SELB  R7,LLSB                 SET LVL 3 PENDING
                         2210 *
0034A0 4020 259E 2A88    2211       MVA   STAP,SI
0034A6 680C 2A88         2212       IO    STAP                    START EVEN APERIODIC
0034AA 6F04 34B2         2213       BCC   7,T137
0034AE 6F03 2A44         2214       BAL   E,R7                    BAD C.C.
0034B2 4524 0004         2215 T137  MVWI  4,R5
0034B6 6E03 2A26         2216       BAL   PRE,R6                  PREPARE, LVL 2, I-BIT OFF
0034BA 6100              2217       LEX   ,
                         2218 *
                         2219 * SHOULD BE ON LVL 3 NOW, AND NO INTERRUPT SHOULD HAVE
                         2220 * OCCURED.
                         2221 *
0034BC                   2222 T138  EQU   *
0034BC 4029 26DA 0001    2223       AWI   1,IRTN                  >>>>>>>>>>>> CKPT 9 <<<<<<<<<<<<<
0034C2 4524 0003         2224       MVWI  3,R5
0034C6 6E03 2A52         2225       BAL   COPY,R6                 VERIFY SYSTEM IS ON LVL 3
0034CA 4020 2AEE 34DA    2226       MVA   T139,INTRO              SET INT EXP STATE
0034D0 4524 0005         2227       MVWI  5,R5
0034D4 6E03 2A26         2228       BAL   PRE,R6                  PREPARE, LVL 2, I-BIT ON
0034D8 6100              2229       LEX   ,
                         2231 *
                         2232 * SHOULD BE ON LVL 2 NOW, INTERRUPT SHOULD HAVE OCCURED, AND
                         2233 * LVL 3 SHOULD BE PENDING.
                         2234 *
0034DA 402F 2AEE 0000    2235 T139  CWI   X'0000',INTR0           DID INT OCCUR?
0034E0 1002              2236       JZ    T140                    JUMP IF YES
0034E2 6F03 2A44         2237       BAL   E,R7
0034E6 4524 0002         2238 T140  MVWI  2,R5
0034EA 6E03 2A52         2239       BAL   COPY,R6                 VERIFY CPU IS ON LVL 2
                         2240 *
                         2241 * VERIFY TIMER 0 GETS CC2, WHEN IT SHOULD.
                         2242 *
0034EE                   2243 T141  EQU   *
0034EE 4029 26DA 0001    2244       AWI   1,IRTN                  >>>>>>>>>>>> CKPT A <<<<<<<<<<<
0034F4 6808 2B00         2245       MVW   SAVA,R0
0034F8 4000 2B56         2246       MVA   CC2,(R0)                SET EVEN FOR CC2 INTS
0034FC 4524 000C         2247       MVWI  X'000C',R5
003500 6E03 29B6         2248       BAL   SETM0,R6                SET MODE - 1 USEC
003504 6E03 29CC         2249       BAL   SETM1,R6                SET MODE - 1 USEC
003508 4524 0001         2250       MVWI  1,R5
00350C 6E03 29EE         2251       BAL   SET0,R6                 SET VALUE TO 1
003510 6E03 2A04         2252       BAL   SET1,R6                 SET VALUE TO 1
                         2253 *
003514 4020 2AEE 3528    2254 T142  MVA   T143,INTR0              SET INT EXP
00351A 6E03 27B8         2255       BAL   STPE0,R6                START EVEN PERIODIC
00351E 4524 0002         2256       MVWI  2,R5
003522 6E03 2584         2257       BAL   DEL,R6                  GO DELAY AWHILE
003526 6100              2258       LEX   ,
                         2259 *
003528                   2260 T143  EQU   *
003528 6E03 290E         2261       BAL   RSET0,R6
                         2262 *
                         2263 * VERIFY TIMER 1 GETS CC2 WHEN IT SHOULD.
                         2264 *
00352C                   2265 T144  EQU   *
00352C 4029 26DA 0001    2266       AWI   1,IRTN                  >>>>>>>>> CKPT B <<<<<<<<<<<<<
003532 6908 2B00         2267       MVW   SAVA,R1
003536 4060 0002 2B58    2268       MVA   CC2+2,(R1,2)            SET FOR CC2 INTS
00353C 4020 2B2C 3550    2269       MVA   T145,INTR1              SET INT EXP
003542 6E03 27CA         2270       BAL   STPE1,R6                START ODD PERIODIC
003546 4524 0002         2271       MVWI  2,R5
00354A 6E03 2584         2272       BAL   DEL,R6                  GO DELAY AWHILE
00354E 6100              2273       LEX   ,
                         2274 *
003550                   2275 T145  EQU   *
003550 6E03 2920         2276       BAL   RSET1,R6
003554 6E03 290E         2277       BAL   RSET0,R6
003558 6F03 278A         2278       BAL   LV0,R7                  GO TO LVL 0, TURN OFF OTHERS
                         2280 ************************************************************
                         2281 *
                         2282 * NAME-              TIMER ACCURACY TESTS
                         2283 *
                         2284 * PURPOSE-           VERIFY THAT TIMERS ARE ABLE TO PROVIDE
                         2285 *                    CORRECT DELAYS BEFORE INTERRUPTING.
                         2286 *
                         2287 * METHOD-            N O T E - THIS TEST WILL NOT RUN WITH
                         2288 *                              STOP ON ADDRESS ON!!!
                         2289 *                    SET A VALUE IN THE TIMER, START IT, DELAY
                         2290 *                    WITH A SOFTWARE LOOP, SERVICE INTERRUPT
                         2291 *                    WHEN IT OCCURS, READ REMAINING DELAY VALUE
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976
                         2292 *                    OF SOFTWARE LOOP AND VERIFY THAT TIMER
                         2293 *                    TOOK PROPER TIME BEFORE INTERRUPTING.
                         2294 *                    DO THIS FOR ALL TIME BASES ON BOTH TIMERS.
                         2295 *
                         2296 ************************************************************
00355C                   2297 T82   EQU   *
00355C 4020 26DA 0900    2298       MVWI  X'0900',IRTN            SET RTN/CKPT 0 <<<<<<<<<<<<<<<
003562 4524 0001         2299       MVWI  1,R5
003566 6E03 2A26         2300       BAL   PRE,R6                  PREP. TO LVL 0
00356A 4020 2BB0 357A    2301       MVA   T82A,LLSB               SET UP IARB
003570 4724 0001         2302       MVWI  1,R7
003574 5F26 2BE0         2303       SELB  R7,LLSB                 SET LEVEL 1 PENDING
003578 6100              2304       LEX                           EXIT LVL 0
00357A                   2305 T82A  EQU   *
00357A 6808 2B00         2306       MVW   SAVA,R0                 POINT TO XFER VECTORS
00357E 9008 2AF8         2307       MVD   (R0),ISAV               SAVE OLD VECTORS
003582 9020 281A         2308       MVD   ADIR,(R0)               SET NEW VECTORS
003586 4524 0000         2309       MVWI  0,R5
00358A 6E03 29B6         2310       BAL   SETM0,R6                SET EVEN TMR TO 50USEC
00358E 6E03 29CC         2311       BAL   SETM1,R6                SET ODD TMR TO 50USEC
003592 4524 0008         2312       MVWI  X'0008',R5
003596 6E03 29EE         2313       BAL   SET0,R6                 SET EVEN TMR VALUE
00359A 6E03 2A04         2314       BAL   SET1,R6                 SET ODD TMR VALUE
00359E 4020 2812 FFFF    2315       MVWI  -1,DELS0                INIT EVEN DEL CTR SAVE AREA
0035A4 4020 2810 0000    2316       MVWI  0,SBCL1                 SET S/B CURRENT LVL DATA
0035AA 4020 280E 0000    2317       MVWI  0,SBCL0                 SET S/B CURRENT LVL DATA
                         2318 *
0035B0 802B 0232 25A3    2319       CB    PTYPE,CL+1              4955?
0035B6 100A              2320       JE    T82A1                   YES
0035B8 802B 0232 25A1    2321       CB    PTYPE,AL+1              4953?
0035BE 1803              2322       JNE   T82AX                   JUMP IF NO
0035C0 4524 0019         2323       MVWI  X'0019',R5
0035C4 5005              2324       J     T82A2
0035C6 4524 0012         2325 T82AX MVWI  X'0012',R5
0035CA 5002              2326       J     T82A2
                         2327 *
0035CC 4524 0031         2328 T82A1 MVWI  49,R5                   SET # OF CNTS FOR 'DEL'
0035D0 4020 259E 2A88    2329 T82A2 MVA   STAP,SI
0035D6 680C 2A88         2330       IO    STAP                    START EVEN TMR
0035DA 6F04 35E2         2331       BCC   7,T83
0035DE 6F03 2A44         2332       BAL   E,R7                    BAD C.C.
                         2333 *
0035E2 6E03 2584         2334 T83   BAL   DEL,R6                  GO DELAY
0035E6 6E03 28DE         2335       BAL   STOP0,R6                STOP EVEN TMR
0035EA 882B 28B0 2812    2336       CW    ZFFFF,DELS0
0035F0 1802              2337       JNE   T83A
0035F2 6F03 2A44         2338       BAL   E,R7                    TIMER DIDNT INTERRUPT
0035F6                   2339 T83A  EQU   *
0035F6 6908 2812         2340       MVW   DELS0,R1                GET REMAINING COUNT
0035FA 7906 000B         2341       CWI   11,R1                   TOO MUCH COUNT LEFT?
0035FE 1602              2342       JLLE  T83C                    JUMP IF NO
003600 6F03 2A44         2343 T83B  BAL   E,R7                    WRONG DELAY FROM TIMER
003604 7906 0001         2344 T83C  CWI   1,R1                     TOO LITTLE COUNT LEFT?
003608 14FB              2345       JLT   T83B                    JUMP IF YES
                         2346 *
00360A 802B 0232 25A3    2347 T833  CB    PTYPE,CL+1              4955?
003610 100A              2348       JE    T833A                   YES
003612 802B 0232 25A1    2349       CB    PTYPE,AL+1              4953?
003618 1803              2350       JNE   T833C                   JUMP IF NO
00361A 4524 0019         2351       MVWI  X'0019',R5
00361E 5005              2352       J     T833B
003620 4524 0012         2353 T833C MVWI  X'0012',R5
003624 5002              2354       J     T833B
                         2355 *
003626 4524 0031         2356 T833A MVWI  49,R5                   SET # OF COUNTS FOR 'DEL'
00362A 4020 2814 FFFF    2357 T833B MVWI  -1,DELS1                INIT ODD DEL CTR SAVE AREA
003630 4020 259E 2AB4    2358       MVA   STP,SI
003636 680C 2AB4         2359       IO    STP                     START ODD TIMER
00363A 6F04 3642         2360       BCC   7,T84
00363E 6F03 2A44         2361       BAL   E,R7                    BAD C.C.
                         2362 *
003642 6E03 2584         2363 T84   BAL   DEL,R6                  GO DELAY
003646 6E03 28F0         2364       BAL   STOP1,R6                STOP ODD TIMER
00364A 882B 28B0 2814    2365       CW    ZFFFF,DELS1
003650 1802              2366       JNE   T84A
003652 6F03 2A44         2367       BAL   E,R7                    TIMER DIDNT INTERRUPT
003656                   2368 T84A  EQU   *
003656 6908 2814         2369       MVW   DELS1,R1                GET REMAINING COUNT
00365A 7906 000B         2370       CWI   11,R1                   TOO MUCH COUNT LEFT?
00365E 1602              2371       JLLE  T84C                    JUMP IF NO
003660 6F03 2A44         2372 T84B  BAL   E,R7                    WRONG TIME DELAY
003664 7906 0001         2373 T84C  CWI   1,R1                     TOO LITTLE COUNT LEFT?
003668 14FB              2374       JLT   T84B                    JUMP IF YES
                         2376 *
                         2377 * NOW TRY 25USEC TIME BASE
                         2378 *
00366A                   2379 T85   EQU   *
00366A 4029 26DA 0001    2380       AWI   1,IRTN                  >>>>>>>>>>>> CKPT 1 <<<<<<<<<<<
003670 4524 0004         2381       MVWI  X'0004',R5
003674 6E03 29B6         2382       BAL   SETM0,R6                SET EVEN TMR TO 25USEC
003678 6E03 29CC         2383       BAL   SETM1,R6                SET ODD TMR TO 25USEC
00367C 4524 0080         2384       MVWI  X'0080',R5
003680 6E03 29EE         2385       BAL   SET0,R6                 SET EVEN TMR VALUE
003684 6E03 2A04         2386       BAL   SET1,R6                 SET ODD TMR VALUE
003688 4020 2814 FFFF    2387       MVWI  -1,DELS1                INIT DEL CTR SAVE AREA-ODD
                         2388 *
00368E 802B 0232 25A3    2389       CB    PTYPE,CL+1              4955?
003694 100A              2390       JE    T85A                    YES
003696 802B 0232 25A1    2391       CB    PTYPE,AL+1              4953?
00369C 1803              2392       JNE   T85AX                   JUMP IF NO
00369E 4524 007F         2393       MVWI  X'007F',R5              FOR 4953
0036A2 5005              2394       J     T85B
0036A4 4524 0052         2395 T85AX MVWI  X'0052',R5
0036A8 5002              2396       J     T85B
                         2397 *
0036AA 4524 0141         2398 T85A  MVWI  321,R5                  SET # OF COUNTS FOR 'DEL'
0036AE 4020 259E 2AB4    2399 T85B  MVA   STP,SI
0036B4 680C 2AB4         2400       IO    STP                     START ODD TMR
0036B8 6F04 36C0         2401       BCC   7,T86
0036BC 6F03 2A44         2402       BAL   E,R7                    BAD C.C.
                         2403 *
0036C0 6E03 2584         2404 T86   BAL   DEL,R6                  GO DELAY
0036C4 6E03 28F0         2405       BAL   STOP1,R6                STOP ODD TIMER
0036C8 882B 28B0 2814    2406       CW    ZFFFF,DELS1
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

0036CE  1802                2407         JNE   T86A
0036D0  6F03 2A44           2408         BAL   E,R7                TIMER DIDNT INTERRUPT
0036D4                      2409 T86A    EQU   *
0036D4  6908 2814           2410         MVW   DELS1,R1            GET REMAINING COUNT
0036D8  7906 0006           2411         CWI   6,R1                TOO MUCH COUNT LEFT?
0036DC  1602                2412         JLLE  T86C                JUMP IF NO
0036DE  6F03 2A44           2413 T86B    BAL   E,R7                WRONG DELAY FROM TMR
0036E2  7906 0002           2414 T86C    CWI   2,R1                TOO LITTLE COUNT LEFT?
0036E6  14FB                2415         JLT   T86B                JUMP IF YES
                            2416 *
0036E8  4020 2812 FFFF      2417 T87     MVWI  -1,DELS0            INIT EVEN CTR DEL SAVE AREA
                            2418 *
0036EE  802B 0232 25A3      2419         CB    PTYPE,CL+1          4955?
0036F4  100A                2420         JE    T87A                YES
0036F6  802B 0232 25A1      2421         CB    PTYPE,AL+1          4953?
0036FC  1803                2422         JNE   T87AX               JUMP IF NO
0036FE  4524 007F           2423         MVWI  X'007F',R5          FOR 4953
003702  5005                2424         J     T87B
003704  4524 0052           2425 T87AX   MVWI  X'0052',R5
003708  5002                2426         J     T87B
                            2427 *
00370A  4524 0141           2428 T87A    MVWI  321,R5              SET # OF COUNTS OF 'DEL'
00370E  4020 259E 2A88      2429 T87B    MVA   STAP,SI
003714  680C 2A88           2430         IO    STAP                START EVEN TMR
003718  6F04 3720           2431         BCC   7,T88
00371C  6F03 2A44           2432         BAL   E,R7                BAD C.C.
                            2433 *
003720  6E03 2584           2434 T88     BAL   DEL,R6              GO DELAY
003724  6E03 28DE           2435         BAL   STOP0,R6            STOP EVEN TMR
003728  882B 28B0 2812      2436         CW    ZFFFF,DELS0
00372E  1802                2437         JNE   T88A
003730  6F03 2A44           2438         BAL   E,R7                TIMER DIDNT INTERRUPT
003734                      2439 T88A    EQU   *
003734  6908 2812           2440         MVW   DELS0,R1            GET REMAINING COUNT
003738  7906 0006           2441         CWI   6,R1                TOO MUCH COUNT LEFT?
00373C  1602                2442         JLLE  T88C                JUMP IF NO
00373E  6F03 2A44           2443 T88B    BAL   E,R7                WRONG DELAY INTERVAL
003742  7906 0002           2444 T88C    CWI   2,R1                TOO LITTLE COUNT LEFT?
003746  14FB                2445         JLT   T88B                JUMP IF YES
                            2447 *
                            2448 * NOW TRY 5USEC TIME BASE
                            2449 *
003748                      2450 T89     EQU   *
003748  4029 26DA 0001      2451         AWI   1,IRTN              >>>>>>>>>> CKPT 2 <<<<<<<<<<<<
00374E  4524 0008           2452         MVWI  X'0008',R5
003752  6E03 29B6           2453         BAL   SETM0,R6            SET EVEN TMR TO 5USEC
003756  6E03 29CC           2454         BAL   SETM1,R6            SET ODD TMR TO 5MSEC
00375A  4524 0800           2455         MVWI  X'0800',R5
00375E  6E03 29EE           2456         BAL   SET0,R6             SET EVEN TMR VALUE
003762  6E03 2A04           2457         BAL   SET1,R6             SET ODD TMR VALUE
003766  4020 2812 FFFF      2458         MVWI  -1,DELS0            INIT EVEN CTR DEL SAVE AREA
                            2459 *
00376C  802B 0232 25A3      2460         CB    PTYPE,CL+1          4955?
003772  100A                2461         JE    T89A                YES
003774  802B 0232 25A1      2462         CB    PTYPE,AL+1          4953?
00377A  1803                2463         JNE   T89AX               NO
00377C  4524 018F           2464         MVWI  X'018F',R5          FOR 4953
003780  5005                2465         J     T89B
003782  4524 0106           2466 T89AX   MVWI  X'0106',R5
003786  5002                2467         J     T89B
                            2468 *
003788  4524 03FA           2469 T89A    MVWI  1018,R5             SET # OF COUNTS FOR 'DEL'
00378C  4020 259E 2A88      2470 T89B    MVA   STAP,SI
003792  680C 2A88           2471         IO    STAP                START EVEN TIMER
003796  6F04 379E           2472         BCC   7,T90
00379A  6F03 2A44           2473         BAL   E,R7                BAD C.C.
                            2474 *
00379E  6E03 2584           2475 T90     BAL   DEL,R6              GO DELAY
0037A2  6E03 28DE           2476         BAL   STOP0,R6            STOP EVEN TMR
0037A6  882B 28B0 2812      2477         CW    ZFFFF,DELS0
0037AC  1802                2478         JNE   T90A
0037AE  6F03 2A44           2479         BAL   E,R7                TIMER DIDNT INTERRUPT
0037B2                      2480 T90A    EQU   *
0037B2  6908 2812           2481         MVW   DELS0,R1            GET REMAINING COUNT
0037B6  7906 0008           2482         CWI   8,R1                TOO MUCH COUNT LEFT?
0037BA  1602                2483         JLLE  T90C                JUMP IF NO
0037BC  6F03 2A44           2484 T90B    BAL   E,R7                WRONG DELAY INTERVEL
0037C0  7906 0005           2485 T90C    CWI   5,R1                TOO LITTLE COUNT LEFT?
0037C4  14FB                2486         JLT   T90B                JUMP IF YES
                            2487 *
0037C6  4020 2814 FFFF      2488 T91     MVWI  -1,DELS1            INIT ODD CTR DEL SAVE AREA
                            2489 *
0037CC  802B 0232 25A3      2490         CB    PTYPE,CL+1          4955?
0037D2  100A                2491         JE    T91A                YES
0037D4  802B 0232 25A1      2492         CB    PTYPE,AL+1          4953?
0037DA  1803                2493         JNE   T91AX               JUMP IF NO
0037DC  4524 018F           2494         MVWI  X'018F',R5          FOR 4953
0037E0  5005                2495         J     T91B
0037E2  4524 0106           2496 T91AX   MVWI  X'0106',R5
0037E6  5002                2497         J     T91B
                            2498 *
0037E8  4524 03FA           2499 T91A    MVWI  1018,R5             SET # OF CNTS FOR 'DEL'
0037EC  4020 259E 2AB4      2500 T91B    MVA   STP,SI
0037F2  680C 2AB4           2501         IO    STP                 START ODD TMR
0037F6  6F04 37FE           2502         BCC   7,T92
0037FA  6F03 2A44           2503         BAL   E,R7                BAD C.C.
                            2504 *
0037FE  6E03 2584           2505 T92     BAL   DEL,R6              GO DELAY
003802  6E03 28F0           2506         BAL   STOP1,R6            STOP ODD TMR
003806  882B 28B0 2814      2507         CW    ZFFFF,DELS1
00380C  1802                2508         JNE   T92A
00380E  6F03 2A44           2509         BAL   E,R7                TIMER DIDNT INTERRUPT
003812                      2510 T92A    EQU   *
003812  6908 2814           2511         MVW   DELS1,R1            GET REMAINING COUNT
003816  7906 0008           2512         CWI   8,R1                TOO MUCH COUNT LEFT?
00381A  1602                2513         JLLE  T92C                JUMP IF NO
00381C  6F03 2A44           2514 T92B    BAL   E,R7                WRONG DELAY INTERVAL
003820  7906 0005           2515 T92C    CWI   5,R1                TOO LITTLE COUNT LEFT?
003824  14FB                2516         JLT   T92B                JUMP IF YES
                            2518 *
                            2519 * NOW TRY 1USEC TIMEBASE
                            2520 *
003826                      2521 T93     EQU   *
003826  4029 26DA 0001      2522         AWI   1,IRTN              >>>>>>>>> CKPT 3 <<<<<<<<<<<<<
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

00382C  4524 000C           2523         MVWI  X'000C',R5
003830  6E03 29CC           2524         BAL   SETM1,R6            SET ODD TMR TO 1USEC
003834  6E03 29B6           2525         BAL   SETM0,R6            SET EVEN TMR TO 1USEC
003838  4524 FFFF           2526         MVWI  X'FFFF',R5
00383C  6E03 29EE           2527         BAL   SET0,R6             SET EVEN TMR VALUE
003840  6E03 2A04           2528         BAL   SET1,R6             SET ODD TMR VALUE
003844  4020 2812 FFFF      2529         MVWI  -1,DELS0            INIT EVEN CTR DEL SAVE AREA
                            2530 *
00384A  802B 0232 25A3      2531         CB    PTYPE,CL+1          4955?
003850  100A                2532         JE    T93A                YES
003852  802B 0232 25A1      2533         CB    PTYPE,AL+1          4953?
003858  1803                2534         JNE   T93BX               JUMP IF NO
00385A  4524 09DD           2535         MVWI  X'09DD',R5          FOR 4953
00385E  5005                2536         J     T93B
003860  4524 066B           2537 T93BX   MVWI  X'066B',R5
003864  5002                2538         J     T93B
                            2539 *
003866  4524 1950           2540 T93A    MVWI  X'1950',R5          SET # OF COUNTS FOR 'DEL'
00386A  4020 259E 2A88      2541 T93B    MVA   STAP,SI
003870  680C 2A88           2542         IO    STAP                START EVEN TMR
003874  6F04 387C           2543         BCC   7,T94
003878  6F03 2A44           2544         BAL   E,R7                BAD C.C.
                            2545 *
00387C  6E03 2584           2546 T94     BAL   DEL,R6              GO DELAY
003880  6E03 28DE           2547         BAL   STOP0,R6            STOP EVEN TMR
003884  882B 28B0 2812      2548         CW    ZFFFF,DELS0
00388A  1802                2549         JNE   T94A
00388C  6F03 2A44           2550         BAL   E,R7                TIMER DIDNT INTERRUPT
003890                      2551 T94A    EQU   *
003890  6908 2812           2552         MVW   DELS0,R1            GET REMAINING COUNT
003894  7906 0006           2553         CWI   6,R1                TOO MUCH COUNT LEFT?
003898  1602                2554         JLLE  T94C                JUMP IF NO
00389A  6F03 2A44           2555 T94B    BAL   E,R7                WRONG DELAY INTERVAL
00389E  7906 0004           2556 T94C    CWI   4,R1                TOO LITTLE COUNT LEFT?
0038A2  14FB                2557         JLT   T94B                JUMP IF YES
                            2558 *
0038A4  4020 2814 FFFF      2559 T95     MVWI  -1,DELS1            INIT ODD CTR DEL SAVE AREA
                            2560 *
0038AA  802B 0232 25A3      2561         CB    PTYPE,CL+1          4955?
0038B0  100A                2562         JE    T95A                YES
0038B2  802B 0232 25A1      2563         CB    PTYPE,AL+1          4953?
0038B8  1803                2564         JNE   T95BX               JUMP IF NO
0038BA  4524 09DD           2565         MVWI  X'09DD',R5          FOR 4953
0038BE  5005                2566         J     T95B
0038C0  4524 066B           2567 T95BX   MVWI  X'066B',R5
0038C4  5002                2568         J     T95B
                            2569 *
0038C6  4524 1950           2570 T95A    MVWI  X'1950',R5          SET # OF CNTS FOR 'DEL'
0038CA  4020 259E 2AB4      2571 T95B    MVA   STP,SI
0038D0  680C 2AB4           2572         IO    STP                 START ODD TMR
0038D4  6F04 38DC           2573         BCC   7,T96
0038D8  6F03 2A44           2574         BAL   E,R7                BAD C.C.
                            2575 *
0038DC  6E03 2584           2576 T96     BAL   DEL,R6              GO DELAY
0038E0  6E03 28F0           2577         BAL   STOP1,R6            STOP ODD TMR
0038E4  882B 28B0 2814      2578         CW    ZFFFF,DELS1
0038EA  1802                2579         JNE   T96A
0038EC  6F03 2A44           2580         BAL   E,R7                TIMER DIDNT INTERRUPT
0038F0                      2581 T96A    EQU   *
0038F0  6908 2814           2582         MVW   DELS1,R1            GET REMAINING COUNT
0038F4  7906 0006           2583         CWI   6,R1                TOO MUCH COUNT LEFT?
0038F8  1602                2584         JLLE  T96C                JUMP IF NO
0038FA  6F03 2A44           2585 T96B    BAL   E,R7                WRONG DELAY INTERVEL
0038FE  7906 0004           2586 T96C    CWI   4,R1                TOO LITTLE COUNT LEFT?
003902  14FB                2587         JLT   T96B                JUMP IF YES
003904                      2588 T97     EQU   *
003904  4020 2BE0 3914      2589         MVA   T98,LLSB            SET RETURN
00390A  4724 0000           2590         MVWI  0,R7
00390E  5F26 2BE0           2591         SELB  R7,LLSB             GO TO LVL 0
003912  6100                2592         LEX
003914                      2593 T98     EQU   $
                            2594 *
                            2595 *   S/B ON LVL 0 NOW.
                            2596 *
                            2598 ************************************************************
                            2599 *
                            2600 * NAME-             INTERRUPT SEQUENCE TESTS
                            2601 *
                            2602 * PURPOSE-          VERIFY THAT INTERRUPTS ARE PRESENTED
                            2603 *                   CORRECTLY AND IN THE RIGHT SEQUENCE WHEN
                            2604 *                   BOTH TIMERS HAVE INTERRUPTS PENDING
                            2605 *                   BEFORE EITHER IS SERVICED.
                            2606 *
                            2607 * MEHTOD-           N O T E -- THESE ROUTINES WILL NOT RUN
                            2608 *                               WITH STOP ON ADDRESS ON!!!
                            2609 *                   SET UP THE ABOVE MENTIONED CONDITIONS
                            2610 *                   AND VERIFY PROPER OPERATION.
                            2611 *
                            2612 ************************************************************
003914                      2613 T58     EQU   *
003914  4020 26DA 0A00      2614         MVWI  X'0A00',IRTN        SET RTN/CKPT 0 <<<<<<<<<<<<<<<
                            2615 *
00391A  6E03 2920           2616         BAL   PSET1,R6
00391E  6E03 290E           2617         BAL   RSET0,R6
                            2618 *
003922  4524 0000           2619         MVWI  0,R5
003926  6E03 29B6           2620         BAL   SETM0,R6            50 USEC
00392A  6E03 29CC           2621         BAL   SETM1,R6            50 USEC
00392E  4524 0003           2622         MVWI  3,R5
003932  6E03 29EE           2623         BAL   SET0,R6             VALUE = 3
003936  4524 0002           2624         MVWI  2,R5
00393A  6E03 2A04           2625         BAL   SET1,R6             VALUE = 2
                            2626 *
00393E  6908 2B00           2627         MVW   SAVA,R1
003942  4040 2C38           2628         MVA   CC3,(R1)            *SET-
003946  4060 0002 2C3A      2629         MVA   CC3+2,(R1,2)        *VECTORS.
                            2630 *
00394C  802B 0232 25A3      2631         CB    PTYPE,CL+1          4955?
003952  104A                2632         JE    T58B                JUMP IF YES
003954  802B 0232 25A1      2633         CB    PTYPE,AL+1          4953?
00395A  1023                2634         JE    T58A                JUMP IF YES
                            2635 *
00395C                      2636 ************************************************************
                            2637 B58A    EQU   *                   NO                                B
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

00395C  4524 0003        2638         MVWI  3,R5                                        B
003960  6E03 2A04        2639         BAL   SET1,R6              SET ODD'S VALUE AGAIN  B
003964  4020 2BE0 3990   2640         MVA   B61A,LLSB                                   B
00396A  4724 0001        2641         MVWI  1,R7                                        B
00396E  5F26 2BE0        2642         SELB  R7,LLSB              SET LVL 1 PENDING      B
003972  6E03 2C98        2643         BAL   SETUP,R6             SET UP INT. RTNS       B
003976  6E03 27B8        2644         BAL   STPE0,R6             START EVEN PER.        B
00397A  4524 0001        2645         MVWI  1,R5                                        B
00397E  6E03 2584        2646         BAL   DEL,R6                                      B
003982  6E03 27CA        2647         BAL   STPE1,R6             START ODD PER          B
003986  4524 0002        2648         MVWI  2,R5                                        B
00398A  5000             2649         NOP   ,                    DELAY                  B
00398C  5000             2650         NOP   ,                    DELAY                  B
00398E  6100             2651         LEX   ,                                           B
003990                   2652 B61A    EQU   *                                           B
003990  4524 000A        2653         MVWI  10,R5                                       B
003994  6E03 2584        2654         BAL   DEL,R6                                      B
003998  4524 0001        2655         MVWI  1,R5                                        B
00399C  6E03 2A52        2656         BAL   COPY,R6              VERIFY LEVEL 1         B
0039A0  5041             2657         J     T62                                         B
                         2658 ************************************************************
0039A2                   2659 T58A    EQU   *                                           A
0039A2  4524 0003        2660         MVWI  3,R5                                        A
0039A6  6E03 2A04        2661         BAL   SET1,R6              SET ODD'S VALUE AGAIN  A
0039AA  4020 2BE0 39D6   2662         MVA   T61B,LLSB                                   A
0039B0  4724 0001        2663         MVWI  1,R7                                        A
0039B4  5F26 2BE0        2664         SELB  R7,LLSB              SET LVL 1 PENDING      A
0039B8  6E03 2C98        2665         BAL   SETUP,R6             SET UP INT. RTNS       A
0039BC  6E03 27B8        2666         BAL   STPE0,R6             START EVEN PER.        A
0039C0  4524 0002        2667         MVWI  2,R5                                        A
0039C4  6E03 2584        2668         BAL   DEL,R6                                      A
0039C8  6E03 27CA        2669         BAL   STPE1,R6             START ODD PER          A
0039CC  4524 0004        2670         MVWI  4,R5                                        A
0039D0  6E03 2584        2671         BAL   DEL,R6               DELAY - ?              A
0039D4  6100             2672         LEX   ,                                           A
0039D6                   2673 T61A    EQU   *                                           A
0039D6  4524 000A        2674         MVWI  10,R5                                       A
0039DA  6E03 2584        2675         BAL   DEL,R6                                      A
0039DE  4524 0001        2676         MVWI  1,R5                                        A
0039E2  6E03 2A52        2677         BAL   COPY,R6              VERIFY LEVEL 1         A
0039E6  501E             2678         J     T62                                         A
                         2679 ************************************************************
                         2680 *
0039E8  4020 2BE0 3A14   2681 T58B    MVA   T61,LLSB
0039EE  4724 0001        2682         MVWI  1,R7
0039F2  5F26 2BE0        2683         SELB  R7,LLSB              SET LVL 1 PENDING
                         2684 *
0039F6  6E03 2C98        2685         BAL   SETUP,R6             SET UP INT. RTNS.
0039FA  6E03 27B8        2686         BAL   STPE0,R6             START EVEN PER.
0039FE  4524 0009        2687         MVWI  9,R5
003A02  6E03 2584        2688         BAL   DEL,R6
003A06  6E03 27CA        2689         BAL   STPE1,R6             START ODD PER.
003A0A  4524 000F        2690         MVWI  15,R5
003A0E  6E03 2584        2691         BAL   DEL,R6               DELAY 150 USEC.
003A12  6100             2692         LEX   ,
                         2693 *
003A14                   2694 T61     EQU   *
003A14  4524 000A        2695         MVWI  10,R5
003A18  6E03 2584        2696         BAL   DEL,R6               DELAY
003A1C  4524 0001        2697         MVWI  1,R5
003A20  6E03 2A52        2698         BAL   COPY,R6              VERIFY LVL 1
                         2699 *
003A24  882B 2BC0 2C3C   2700 T62     CW    STT+2,EC3Z           S/B 0001
003A2A  1002             2701         JZ    T63
003A2C  6F03 2A44        2702         BAL   E,R7                 EVEN DIDNT INT FIRST
                         2703 *
003A30  882B 2BC2 2C3E   2704 T63     CW    STT+4,OC3Z           OC3Z SB 0002
003A36  1002             2705         JZ    T64
003A38  6F03 2A44        2706         BAL   E,R7                 ODD DIDNT INT LAST
003A3C  4724 0000        2707 T64     MVWI  0,R7
003A40  4020 2BE0 3A4A   2708         MVA   T64A,LLSB
003A46  5F26 2BE0        2709         SELB  R7,LLSB              GO TO LVL 0
                         2710 *
                         2711 *
                         2712 *
003A4A                   2713 T64A    EQU   *
003A4A  4029 26DA 0001   2714         AWI   1,IRTN               >>>>>>>>> CKPT 1 <<<<<<<<<<<
003A50  4524 0002        2715         MVWI  2,R5                 ON LVL 0 NOW
003A54  6E03 29EE        2716         BAL   SET0,R6              VALUE = 2
003A58  4524 0003        2717         MVWI  3,R5
003A5C  6E03 2A04        2718         BAL   SET1,R6              VALUE = 3
003A60  802B 0232 25A3   2719         CB    PTYPE,CL+1           4955?
003A66  104A             2720         JE    T64C                 JUMP IF YES
003A68  802B 0232 25A1   2721         CB    PTYPE,AL+1           4953?
003A6E  1023             2722         JE    T64B                 JUMP IF YES
                         2723 *
                         2724 ************************************************************
003A70                   2725 B64B    EQU   *                    NO
003A70  4524 0003        2726         MVWI  3,R5                                        B
003A74  6E03 29EE        2727         BAL   SET0,R6              SET EVEN'S VALUE AGAIN B
003A78  4020 2BE0 3AA4   2728         MVA   B66A,LLSB                                   B
003A7E  4724 0001        2729         MVWI  1,R7                                        B
003A82  5F26 2BE0        2730         SELB  R7,LLSB              SET LVL 1 IARB         B
003A86  6E03 2C98        2731         BAL   SETUP,R6             SET UP INT RTNS        B
003A8A  6E03 27CA        2732 B65     BAL   STPE1,R6             START ODD PER          B
003A8E  4524 0001        2733         MVWI  1,R5                                        B
003A92  6E03 2584        2734         BAL   DEL,R6                                      B
003A96  6E03 27B8        2735         BAL   STPE0,R6             START EVEN PER         B
003A9A  4524 0001        2736         MVWI  1,R5                                        B
003A9E  5000             2737         NOP   ,                    DELAY                  B
003AA0  5000             2738         NOP   ,                    DELAY                  B
003AA2  6100             2739         LEX   ,                                           B
003AA4  4524 000A        2740 B66A    MVWI  10,R5                                       B
003AA8  6E03 2584        2741         BAL   DEL,R6                                      B
003AAC  4524 0001        2742         MVWI  1,R5                                        B
003AB0  6E03 2A52        2743         BAL   COPY,R6              VERIFY LVL 1           B
003AB4  5041             2744         J     T66AA                                       B
                         2745 ************************************************************
003AB6                   2746 T64B    EQU   *                                           A
003AB6  4524 0003        2747         MVWI  3,R5                                        A
003ABA  6E03 29EE        2748         BAL   SET0,R6              SET EVEN'S VALUE AGAIN A
003ABE  4020 2BE0 3AEA   2749         MVA   T66A,LLSB                                   A
003AC4  4724 0001        2750         MVWI  1,R7                                        A
003AC8  5F26 2BE0        2751         SELB  R7,LLSB              SET LVL 1 IARB         A
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 LOCTR  OBJECT TEXT      STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

003ACC  6E03 2C98        2752         BAL   SETUP,R6             SET UP INT RTNS        A
003AD0  6E03 27CA        2753 T65     BAL   STPE1,R6             START ODD PER          A
003AD4  4524 0002        2754         MVWI  2,R5                                        A
003AD8  6E03 2584        2755         BAL   DEL,R6                                      A
003ADC  6E03 27B8        2756         BAL   STPE0,R6             START EVEN PER         A
003AE0  4524 0004        2757         MVWI  4,R5                                        A
003AE4  6E03 2584        2758         BAL   DEL,R6               DELAY - ?              A
003AE8  6100             2759         LEX   ,                                           A
003AEA  4524 000A        2760 T66A    MVWI  10,R5                                       A
003AEE  6E03 2584        2761         BAL   DEL,R6                                      A
003AF2  4524 0001        2762         MVWI  1,R5                                        A
003AF6  6E03 2A52        2763         BAL   COPY,R6              VERIFY LVL 1           A
003AFA  501E             2764         J     T66AA                                       A
                         2765 ************************************************************
003AFC  4020 2BE0 3B28   2766 T64C    MVA   T66,LLSB
003B02  4724 0001        2767         MVWI  1,R7
003B06  5F26 2BE0        2768         SELB  R7,LLSB              SET LVL 1 IARB
003B0A  6E03 2C98        2769         BAL   SETUP,R6             SET UP INT RTNS.
003B0E                   2770 T65A    EQU   *
003B0E  6E03 27CA        2771         BAL   STPE1,R6             START ODD PER.
003B12  4524 0009        2772         MVWI  9,R5
003B16  6E03 2584        2773         BAL   DEL,R6
003B1A  6E03 27B8        2774         BAL   STPE0,R6             START EVEN PER.
003B1E  4524 000F        2775         MVWI  15,R5
003B22  6E03 2584        2776         BAL   DEL,R6               DELAY 150 USEC
003B26  6100             2777         LEX   ,
                         2778 *
003B28  4524 000A        2779 T66     MVWI  10,R5
003B2C  6E03 2584        2780         BAL   DEL,R6               DELAY AWHILE
003B30  4524 0001        2781         MVWI  1,R5
003B34  6E03 2A52        2782         BAL   COPY,R6              VFRIFY LVL 1
                         2783 *
003B38  882B 2BC0 2C3E   2784 T66AA   CW    STT+2,OC3Z           SB 0001
003B3E  1002             2785         JZ    T67
003B40  6F03 2A44        2786         BAL   E,R7                 TMR 1 DIDNT INT FIRST
                         2787 *
003B44  882B 2BC2 2C3C   2788 T67     CW    STT+4,EC3Z           SB 0002
003B4A  1002             2789         JZ    T68
003B4C  6F03 2A44        2790         BAL   E,R7                 TMR 0  DIDNT INT LAST
003B50  4724 0000        2791 T68     MVWI  0,R7
003B54  4020 2BE0 3B5E   2792         MVA   T69,LLSB
003B5A  5F26 2BE0        2793         SELB  R7,LLSB              GO TO LVL 0
                         2794 *
                         2795 *
                         2796 *
003B5E                   2797 T69     EQU   *
003B5E  4029 26DA 0001   2798         AWI   1,IRTN               >>>>>>>>>>> CKPT 2 <<<<<<<<<<<
003B64  4524 0002        2799         MVWI  2,R5                 ON LVL 0 NOW
003B68  6E03 29EE        2800         BAL   SET0,R6              VALUE = 2
003B6C  6E03 2A04        2801         BAL   SET1,R6              VALUE = 2
003B70  802B 0232 25A3   2802         CB    PTYPE,CL+1           4955?
003B76  105E             2803         JE    T69X                 JUMP IF YES
003B78  802B 0232 25A1   2804         CB    PTYPE,AL+1           4953?
003B7E  102D             2805         JE    T69A                 JUMP IF YES
                         2806 *
                         2807 ************************************************************
003B80                   2808 B69A    EQU   *                    NO
003B80  4020 2BE0 3BC8   2809         MVA   B73A,LLSB                                   B
003B86  4724 0001        2810         MVWI  1,R7                                        B
003B8A  5F26 2BE0        2811         SELB  R7,LLSB              SET LVL 1 PENDING      B
003B8E  6E03 2C98        2812         BAL   SETUP,R6             SET UP INT RTNS        B
003B92  4020 259E 2A88   2813         MVA   STAP,SI                                     B
003B98  680C 2A88        2814         IO    STAP                 START EVEN APER        B
003B9C  6F04 3BA4        2815         BCC   7,B71A                                      B
003BA0  6F03 2A44        2816         BAL   E,R7                                        B
003BA4  4524 0004        2817 B71A    MVWI  4,R5                                        B
003BA8  6E03 2584        2818         BAL   DEL,R6                                      B
003BAC  4020 259E 2AB4   2819         MVA   STP,SI                                      B
003BB2  680C 2AB4        2820         IO    STP                  START ODD APER         B
003BB6  6F04 3BBE        2821         BCC   7,B72A                                      B
003BBA  6F03 2A44        2822         BAL   E,R7                                        B
003BBE  4524 000F        2823 B72A    MVWI  15,R5                                       B
003BC2  6E03 2584        2824         BAL   DEL,R6                                      B
003BC6  6100             2825         LEX   ,                                           B
003BC8  4524 000A        2826 B73A    MVWI  10,R5                                       B
003BCC  6E03 2584        2827         BAL   DEL,R6                                      B
003BD0  4524 0001        2828         MVWI  1,R5                                        B
003BD4  6E03 2A52        2829         BAL   COPY,R6              VERIFY LEVEL 1         B
003BD8  5059             2830         J     T74                                         B
                         2831 ************************************************************
003BDA                   2832 T69A    EQU   *
003BDA  4020 2BE0 3C22   2833         MVA   T73A,LLSB                                   A
003BE0  4724 0001        2834         MVWI  1,R7                                        A
003BE4  5F26 2BE0        2835         SELB  R7,LLSB              SET LVL 1 PENDING      A
003BE8  6E03 2C98        2836         BAL   SETUP,R6             SET UP INT RTNS        A
003BEC  4020 259E 2A88   2837         MVA   STAP,SI                                     A
003BF2  680C 2A88        2838         IO    STAP                 START EVEN APER        A
003BF6  6F04 3BFE        2839         BCC   7,T71A                                      A
003BFA  6F03 2A44        2840         BAL   E,R7                                        A
003BFE  4524 0006        2841 T71A    MVWI  6,R5                                        A
003C02  6E03 2584        2842         BAL   DEL,R6                                      A
003C06  4020 259E 2AB4   2843         MVA   STP,SI                                      A
003C0C  680C 2AB4        2844         IO    STP                  START ODD APER         A
003C10  6F04 3C18        2845         BCC   7,T72A                                      A
003C14  6F03 2A44        2846         BAL   E,R7                                        A
003C18  4524 000F        2847 T72A    MVWI  15,R5                                       A
003C1C  6E03 2584        2848         BAL   DEL,R6                                      A
003C20  6100             2849         LEX   ,                                           A
003C22  4524 000A        2850 T73A    MVWI  10,R5                                       A
003C26  6E03 2584        2851         BAL   DEL,R6                                      A
003C2A  4524 0001        2852         MVWI  1,R5                                        A
003C2E  6E03 2A52        2853         BAL   COPY,R6              VERIFY LEVEL 1         A
003C32  502C             2854         J     T74                                         A
                         2855 ************************************************************
003C34  4020 2BE0 3C7C   2856 T69X    MVA   T73,LLSB
003C3A  4724 0001        2857         MVWI  1,R7
003C3E  5F26 2BE0        2858         SELB  R7,LLSB              SET LVL 1 PENDING
003C42  6E03 2C98        2859         BAL   SETUP,R6             SET UP INT RTNS
003C46  4020 259E 2A88   2860 T70     MVA   STAP,SI
003C4C  680C 2A88        2861         IO    STAP                 START EVEN APER
003C50  6F04 3C58        2862         BCC   7,T71
003C54  6F03 2A44        2863         BAL   E,R7                 WRONG C.C.
003C58  4524 0006        2864 T71     MVWI  6,R5
003C5C  6E03 2584        2865         BAL   DEL,R6
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

                           2866 *
003C60  4020 259E 2AB4     2867        MVA   STP,SI
003C66  680C 2AB4          2868        IO    STP                    START ODD APER
003C6A  6F04 3C72          2869        BCC   7,T72
003C6E  6F03 2A44          2870        BAL   E,R7                   WRONG C.C.
003C72  4524 000F          2871 T72    MVWI  15,R5
003C76  6E03 2584          2872        BAL   DEL,R6                 DELAY 150 USEC
003C7A  6100               2873        LEX   ,
                           2874 *
003C7C  4524 000A          2875 T73    MVWI  10,R5
003C80  6E03 2584          2876        BAL   DEL,R6                 DELAY
003C84  4524 0001          2877        MVWI  1,R5
003C88  6E03 2A52          2878        BAL   COPY,R6                VERIFY LVL 1
                           2879 *
003C8C  882B 2BC0 2C3C     2880 T74    CW    STT+2,EC3Z             S/B 0001
003C92  1002               2881        JZ    T75
003C94  6F03 2A44          2882        BAL   E,R7                   EVEN DIDNT INT FIRST
                           2883 *
003C98  882B 2BC2 2C3E     2884 T75    CW    STT+4,OC3Z             S/B 0002
003C9E  1002               2885        JZ    T76
003CA0  6F03 2A44          2886        BAL   E,R7                   ODD DIDNT INT LAST
                           2887 *
003CA4  4724 0000          2888 T76    MVWI  0,R7
003CA8  4020 2BE0 3CB2     2889        MVA   T77,LLSB
003CAE  5F26 2BE0          2890        SELB  R7,LLSB                GO TO LVL 0
                           2891 *
                           2892 *
                           2893 *
003CB2                     2894 T77    EQU   *
003CB2  4029 26DA 0001     2895        AWI   1,IRTN                 >>>>>>>>>> CKPT 3 <<<<<<<<<<
003CB8  4524 0002          2896        MVWI  2,R5                   ON LVL 0 NOW
003CBC  6E03 29EE          2897        BAL   SET0,R6                VALUE = 2
003CC0  6E03 2A04          2898        BAL   SET1,R6                VALUE = 2
003CC4  802B 0232 25A3     2899        CB    PTYPE,CL+1             49557
003CCA  105E               2900        JE    T77A                   JUMP IF YES
003CCC  802B 0232 25A1     2901        CB    PTYPE,AL+1             49537
003CD2  102D               2902        JE    T77AX                  JUMP IF YES
                           2903 *
                           2904 ************************************************************
003CD4  4020 2BE0 3D1C     2905 B77AX  MVA   B79BA,LLSB               NO                      B
003CDA  4724 0001          2906        MVWI  1,R7                                           B
003CDE  5F26 2BE0          2907        SELB  R7,LLSB                SET LVL 1 PENDING       B
003CE2  6E03 2C98          2908        BAL   SETUP,R6               SET UP INT RTNS         B
003CE6  4020 259E 2AB4     2909 B78A   MVA   STP,SI                                         B
003CEC  680C 2AB4          2910        IO    STP                    START ODD APER          B
003CF0  6F04 3CF8          2911        BCC   7,B79X                                         B
003CF4  6F03 2A44          2912        BAL   E,R7                                           B
003CF8  4524 0004          2913 B79X   MVWI  4,R5                                           B
003CFC  6E03 2584          2914        BAL   DEL,R6                                         B
003D00  4020 259E 2A88     2915        MVA   STAP,SI                                        B
003D06  680C 2A88          2916        IO    STAP                   START EVEN APER         B
003D0A  6F04 3D12          2917        BCC   7,B79AA                                        B
003D0E  6F03 2A44          2918        BAL   E,R7                                           B
003D12  4524 000F          2919 B79AA  MVWI  15,R5                                          B
003D16  6E03 2584          2920        BAL   DEL,R6                                         B
003D1A  6100               2921        LEX   ,                                              B
003D1C  4524 000A          2922 B79BA  MVWI  10,R5                                          B
003D20  6E03 2584          2923        BAL   DEL,R6                                         B
003D24  4524 0001          2924        MVWI  1,R5                                           B
003D28  6E03 2A52          2925        BAL   COPY,R6                VERIFY LEVEL 1          B
003D2C  5059               2926        J     T79C                                           B
                           2927 ************************************************************
003D2E  4020 2BE0 3D76     2928 T77AX  MVA   T79BA,LLSB                                     A
003D34  4724 0001          2929        MVWI  1,R7                                           A
003D38  5F26 2BE0          2930        SELB  R7,LLSB                SET LVL 1 PENDING       A
003D3C  6E03 2C98          2931        BAL   SETUP,R6               SET UP INT RTNS         A
003D40  4020 259E 2AB4     2932 T78A   MVA   STP,SI                                         A
003D46  680C 2AB4          2933        IO    STP                    START ODD APER          A
003D4A  6F04 3D52          2934        BCC   7,T79X                                         A
003D4E  6F03 2A44          2935        BAL   E,R7                                           A
003D52  4524 0006          2936 T79X   MVWI  6,R5                                           A
003D56  6E03 2584          2937        BAL   DEL,R6                                         A
003D5A  4020 259E 2A88     2938        MVA   STAP,SI                                        A
003D60  680C 2A88          2939        IO    STAP                   START EVEN APER         A
003D64  6F04 3D6C          2940        BCC   7,T79AA                                        A
003D68  6F03 2A44          2941        BAL   E,R7                                           A
003D6C  4524 000F          2942 T79AA  MVWI  15,R5                                          A
003D70  6E03 2584          2943        BAL   DEL,R6                                         A
003D74  6100               2944        LEX   ,                                              A
003D76  4524 000A          2945 T79BA  MVWI  10,R5                                          A
003D7A  6E03 2584          2946        BAL   DEL,R6                                         A
003D7E  4524 0001          2947        MVWI  1,R5                                           A
003D82  6E03 2A52          2948        BAL   COPY,R6                VERIFY LEVEL 1          A
003D86  502C               2949        J     T79C                                           A
                           2950 ************************************************************
003D88  4020 2BE0 3DD0     2951 T77A   MVA   T79B,LLSB
003D8E  4724 0001          2952        MVWI  1,R7
003D92  5F26 2BE0          2953        SELB  R7,LLSB                SET LVL 1 IARB
003D96  6E03 2C98          2954        BAL   SETUP,R6               SET UP INT RTNS
                           2955 *
003D9A  4020 259E 2AB4     2956 T78    MVA   STP,SI
003DA0  680C 2AB4          2957        IO    STP                    START ODD APER
003DA4  6F04 3DAC          2958        BCC   7,T79
003DA8  6F03 2A44          2959        BAL   E,R7                   WRONG C.C.
003DAC  4524 0006          2960 T79    MVWI  6,R5
003DB0  6E03 2584          2961        BAL   DEL,R6
003DB4  4020 259E 2A88     2962        MVA   STAP,SI
003DBA  680C 2A88          2963        IO    STAP                   START EVEN APER
003DBE  6F04 3DC6          2964        BCC   7,T79A
003DC2  6F03 2A44          2965        BAL   E,R7                   BAD C.C.
003DC6  4524 000F          2966 T79A   MVWI  15,R5
003DCA  6E03 2584          2967        BAL   DEL,R6                 DELAY 150 USEC
003DCE  6100               2968        LEX   ,
                           2969 *
003DD0  4524 000A          2970 T79B   MVWI  10,R5
003DD4  6E03 2584          2971        BAL   DEL,R6                 DELAY
003DD8  4524 0001          2972        MVWI  1,R5
003DDC  6E03 2A52          2973        BAL   COPY,R6                VERIFY LVL 1
                           2974 *
003DE0  882B 2BC0 2C3E     2975 T79C   CW    STT+2,OC3Z             S/B 0001
003DE6  1002               2976        JZ    T79D
003DE8  6F03 2A44          2977        BAL   E,R7                   TMR 1 DIDNT INT FIRST
                           2978 *
003DEC  882B 2BC2 2C3C     2979 T79D   CW    STT+4,EC3Z             S/B 0002
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 LOCTR  OBJECT TEXT        STMT SOURCE STATEMENT                    COPYRIGHT IBM CORP 1976

003DF2  1002               2980        JZ    T79E
003DF4  6F03 2A44          2981        BAL   E,R7                   EVEN DIDNT INT FIRST
                           2982 *
003DF8  4020 2BE0 3E0E     2983 T79E   MVA   T79F,LLSB              SET IAR
003DFE  4020 2BE4 00D0     2984        MVWI  X'00D0',LLSB+4
003E04  4724 0003          2985        MVWI  3,R7
003E08  5F26 2BE0          2986        SELB  R7,LLSB                SET L3 PENDING
003E0C  6100               2987        LEX   ,
003E0E                     2988 T79F   EQU   *
003E0E  4524 0003          2989        MVWI  3,R5
003E12  6E03 2A52          2990        BAL   COPY,R6                VERIFY LEVEL 3
003E16  6802 2628          2991        B     GEND                   GO TO END OF TEST ROUTINES
003E1A  00000000000000000  2992        DC    30A(*-*)               PATCH AREA
                           2993 *
                           2994 *
000000                     2995        END
```

CROSS-REFERENCE LISTING

```
DECLARED  NAME     ATTRIBUTES AND REFERENCES
      45  @CALL      ABSOLUTE. HEX VALUE(00000201)
                     348
      43  @STOP      ABSOLUTE. HEX VALUE(00000102)
                     354
      48  @TUXX      ABSOLUTE. HEX VALUE(00000500)
                     336
     828  ADIR       ADDRESS. HEX LOCATION(0000281A) IN CSECT(I5000   ) LENGTH(2)
                    2308
     826  ADIRN      ADDRESS. HEX LOCATION(00002816) IN CSECT(I5000   ) LENGTH(2)
                     828   829
    1331  AEN        ADDRESS. HEX LOCATION(00002B92) IN CSECT(I5000   ) LENGTH(2)
                    1663
    1353  AENN       ADDRESS. HEX LOCATION(00002BBC) IN CSECT(I5000   ) LENGTH(2)
                    1700
    1252  AINT       ADDRESS. HEX LOCATION(00002AF0) IN CSECT(I5000   ) LENGTH(2)
                    1722  1901  2012
    1254  AINT0      ADDRESS. HEX LOCATION(00002AF4) IN CSECT(I5000   ) LENGTH(2)
                    1252
    1255  AINT1      ADDRESS. HEX LOCATION(00002AF6) IN CSECT(I5000   ) LENGTH(2)
                    1253
     810  AI0        ADDRESS. HEX LOCATION(000027E8) IN CSECT(I5000   ) LENGTH(1)
                     826
     813  AI01       ADDRESS. HEX LOCATION(000027F0) IN CSECT(I5000   ) LENGTH(6)
                     811
     818  AI02       ADDRESS. HEX LOCATION(00002804) IN CSECT(I5000   ) LENGTH(4)
                     816
     831  AI1        ADDRESS. HEX LOCATION(0000281E) IN CSECT(I5000   ) LENGTH(1)
                     827
     834  AI11       ADDRESS. HEX LOCATION(00002826) IN CSECT(I5000   ) LENGTH(6)
                     832
     839  AI12       ADDRESS. HEX LOCATION(0000283A) IN CSECT(I5000   ) LENGTH(4)
                     837
     550  AL         ADDRESS. HEX LOCATION(000025A0) IN CSECT(I5000   ) LENGTH(2)
                    2321  2349  2391  2421  2462  2492  2533  2563  2633
                    2721  2804  2901
     703  BADDR      ADDRESS. HEX LOCATION(00002724) IN CSECT(I5000   ) LENGTH(2)
                     570   571   575   580   585   661   664   667   707
     607  BBB        ADDRESS. HEX LOCATION(0000260E) IN CSECT(I5000   ) LENGTH(1)
                     653  1141
    2652  B61A       ADDRESS. HEX LOCATION(00003990) IN CSECT(I5000   ) LENGTH(1)
                    2640
    2740  B66A       ADDRESS. HEX LOCATION(00003AA4) IN CSECT(I5000   ) LENGTH(4)
                    2728
    2817  B71A       ADDRESS. HEX LOCATION(00003BA4) IN CSECT(I5000   ) LENGTH(4)
                    2815
    2823  B72A       ADDRESS. HEX LOCATION(00003BBE) IN CSECT(I5000   ) LENGTH(4)
                    2821
    2826  B73A       ADDRESS. HEX LOCATION(00003BC8) IN CSECT(I5000   ) LENGTH(4)
                    2809
    2919  B79AA      ADDRESS. HEX LOCATION(00003D12) IN CSECT(I5000   ) LENGTH(4)
                    2917
    2922  B79BA      ADDRESS. HEX LOCATION(00003D1C) IN CSECT(I5000   ) LENGTH(4)
                    2905
    2913  B79X       ADDRESS. HEX LOCATION(00003CF8) IN CSECT(I5000   ) LENGTH(4)
                    2911
    1297  CC2        ADDRESS. HEX LOCATION(00002B56) IN CSECT(I5000   ) LENGTH(2)
                    2246  2268
    1393  CC3        ADDRESS. HEX LOCATION(00002C38) IN CSECT(I5000   ) LENGTH(2)
                    2628  2629
     627  CEND       ADDRESS. HEX LOCATION(00002634) IN CSECT(I5000   ) LENGTH(1)
                     645
     637  CEND1      ADDRESS. HEX LOCATION(00002656) IN CSECT(I5000   ) LENGTH(2)
                     632
     712  CKPT       ADDRESS. HEX LOCATION(00002746) IN CSECT(I5000   ) LENGTH(2)
                     585
     551  CL         ADDRESS. HEX LOCATION(000025A2) IN CSECT(I5000   ) LENGTH(2)
                    2319  2347  2389  2419  2460  2490  2531  2561  2631
                    2719  2802  2899
     909  CMDR       ADDRESS. HEX LOCATION(000028B2) IN CSECT(I5000   ) LENGTH(1)
                     920  1496  1501  1506  1511  1516  1521
    1157  COPY       ADDRESS. HEX LOCATION(00002A52) IN CSECT(I5000   ) LENGTH(1)
                     819   840  1731  1734  1740  1743  1749  1752  1758
                    1761  1770  1773  1779  1782  1788  1791  1797  1800
                    1809  1812  1818  1821  1827  1830  1836  1839  1848
                    1851  1857  1860  1866  1869  1875  1878  1982  2084
                    2154  2183  2202  2225  2239  2656  2677  2698  2743
                    2763  2782  2829  2853  2878  2925  2948  2973  2990
    1162  COPY1      ADDRESS. HEX LOCATION(00002A5C) IN CSECT(I5000   ) LENGTH(4)
                    1160
     922  C10        ADDRESS. HEX LOCATION(000028DA) IN CSECT(I5000   ) LENGTH(2)
                     857   910   911   912   916   918  1525
     915  C5         ADDRESS. HEX LOCATION(000028C8) IN CSECT(I5000   ) LENGTH(1)
                     913
     704  DADDR      ADDRESS. HEX LOCATION(00002728) IN CSECT(I5000   ) LENGTH(2)
                     572
     540  DEL        ADDRESS. HEX LOCATION(00002584) IN CSECT(I5000   ) LENGTH(1)
                    2023  2097  2257  2272  2334  2363  2404  2434  2475
                    2505  2546  2576  2646  2654  2668  2671  2675  2688
                    2691  2696  2734  2741  2755  2758  2761  2773  2776
                    2780  2818  2824  2827  2842  2848  2851  2865  2872
                    2876  2914  2920  2923  2937  2943  2946  2961  2967
                    2971
     824  DELS0      ADDRESS. HEX LOCATION(00002812) IN CSECT(I5000   ) LENGTH(2)
                     913  2315  2336  2340  2417  2436  2440  2458  2477
                    2481  2529  2548  2552
     825  DELS1      ADDRESS. HEX LOCATION(00002814) IN CSECT(I5000   ) LENGTH(2)
                     834  2357  2365  2369  2387  2406  2410  2488  2507
                    2511  2559  2578  2582
     543  DELX       ADDRESS. HEX LOCATION(0000258C) IN CSECT(I5000   ) LENGTH(6)
                     547
     548  DEL1       ADDRESS. HEX LOCATION(0000259C) IN CSECT(I5000   ) LENGTH(2)
                     541   543   813   834
     544  DEL2       ADDRESS. HEX LOCATION(00002592) IN CSECT(I5000   ) LENGTH(4)
                     542
     108  DEVADD     ADDRESS. HEX LOCATION(000019D0) IN CSECT(I5000   ) LENGTH(1)
                    1447
    1374  DLLSB      ADDRESS. HEX LOCATION(00002BE6) IN CSECT(I5000   ) LENGTH(2)
                     736   738   757   759   761
      70  DUMMY      ABSOLUTE. HEX VALUE(00000000)
                     327   356   368
     694  DUMVE      ADDRESS. HEX LOCATION(00002716) IN CSECT(I5000   ) LENGTH(2)
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CROSS-REFERENCE LISTING

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DECLARED  NAME     ATTRIBUTES AND REFERENCES
                    1459
    1138  E          ADDRESS. HEX LOCATION(00002A44) IN CSECT(I5000   ) LENGTH(1)
                     779   784   812   817   833   838   914   940   945
                     968   973   997  1004  1029  1036  1062  1068  1093
                    1099  1122  1161  1188  1205  1241  1245  1248  1263
                    1267  1270  1280  1284  1291  1295  1308  1312  1316
                    1320  1324  1328  1400  1404  1413  1417  1468  1472
                    1476  1479  1536  1540  1591  1596  1601  1606  1615
                    1620  1625  1630  1656  1661  1693  1698  1920  1925
                    1935  1953  1958  1968  2027  2031  2035  2039  2049
                    2052  2057  2067  2101  2105  2109  2113  2124  2127
                    2132  2139  2172  2181  2188  2200  2214  2237  2332
                    2338  2343  2361  2367  2372  2402  2408  2413  2432
                    2438  2443  2473  2479  2484  2503  2509  2514  2544
                    2550  2555  2574  2580  2585  2702  2706  2786  2790
                    2816  2822  2840  2846  2863  2870  2882  2886  2912
                    2918  2935  2941  2959  2965  2977  2981
     681  EA         ADDRESS. HEX LOCATION(000026D8) IN CSECT(I5000   ) LENGTH(2)
                     568   587   648   651   662   673  1139  1140
    1398  EC3        ADDRESS. HEX LOCATION(00002C40) IN CSECT(I5000   ) LENGTH(1)
                    1393
    1401  EC3A       ADDRESS. HEX LOCATION(00002C48) IN CSECT(I5000   ) LENGTH(4)
                    1399
    1405  EC3B       ADDRESS. HEX LOCATION(00002C58) IN CSECT(I5000   ) LENGTH(6)
                    1403
    1395  EC3Z       ADDRESS. HEX LOCATION(00002C3C) IN CSECT(I5000   ) LENGTH(2)
                    1406  1407  1419  1423  2700  2788  2880  2979
    1278  EC4        ADDRESS. HEX LOCATION(00002B32) IN CSECT(I5000   ) LENGTH(1)
                    1275
     688  EEA        ADDRESS. HEX LOCATION(000026FE) IN CSECT(I5000   ) LENGTH(2)
                     588   664
     641  EEND       ADDRESS. HEX LOCATION(00002658) IN CSECT(I5000   ) LENGTH(1)
                     594   619
    1351  EN         ADDRESS. HEX LOCATION(00002BBA) IN CSECT(I5000   ) LENGTH(2)
                    1331  1646
    1369  ENN        ADDRESS. HEX LOCATION(00002BDC) IN CSECT(I5000   ) LENGTH(2)
                    1353  1683
     357  ENTPT      ADDRESS. HEX LOCATION(00002534) IN CSECT(I5000   ) LENGTH(1)
                     201
      50  EQ         ABSOLUTE. HEX VALUE(00000000)
                     339
     647  ERTN       ADDRESS. HEX LOCATION(00002666) IN CSECT(I5000   ) LENGTH(1)
                     648   697
    1216  EVENM      ADDRESS. HEX LOCATION(00002ABC) IN CSECT(I5000   ) LENGTH(2)
                    1560
    1217  EVENV      ADDRESS. HEX LOCATION(00002ABE) IN CSECT(I5000   ) LENGTH(2)
                    1557  1604  1618
     396  EXIT       ABSOLUTE. HEX VALUE(00000006)
                     637
    1457  E1         ADDRESS. HEX LOCATION(00002CEA) IN CSECT(I5000   ) LENGTH(6)
                    1445
    1306  E2         ADDRESS. HEX LOCATION(00002B62) IN CSECT(I5000   ) LENGTH(1)
                    1297
    1469  E3X        ADDRESS. HEX LOCATION(00002D16) IN CSECT(I5000   ) LENGTH(6)
                    1467
    1289  E4         ADDRESS. HEX LOCATION(00002B46) IN CSECT(I5000   ) LENGTH(1)
                    1286
    1473  E4X        ADDRESS. HEX LOCATION(00002D28) IN CSECT(I5000   ) LENGTH(1)
                    1471
    1477  E5X        ADDRESS. HEX LOCATION(00002D34) IN CSECT(I5000   ) LENGTH(6)
                    1475
    1314  E6         ADDRESS. HEX LOCATION(00002B72) IN CSECT(I5000   ) LENGTH(1)
                    1300
    1480  E6X        ADDRESS. HEX LOCATION(00002D40) IN CSECT(I5000   ) LENGTH(1)
                    1478
    1322  E7         ADDRESS. HEX LOCATION(00002B82) IN CSECT(I5000   ) LENGTH(1)
                    1303
     376  F00076     ADDRESS. HEX LOCATION(0000253A) IN CSECT(I5000   ) LENGTH(1)
                     349
     380  F00080     ADDRESS. HEX LOCATION(00002566) IN CSECT(I5000   ) LENGTH(1)
                     355
     885  F10        ADDRESS. HEX LOCATION(000028A4) IN CSECT(I5000   ) LENGTH(2)
                     880  1469  1470  1533  1534  2046  2047  2121  2122
     886  F11        ADDRESS. HEX LOCATION(000028A6) IN CSECT(I5000   ) LENGTH(2)
                    1477  1532  1538  2050  2125
     887  F12        ADDRESS. HEX LOCATION(000028A8) IN CSECT(I5000   ) LENGTH(2)
                    1474  1477  1538  2050  2125
     888  F13        ADDRESS. HEX LOCATION(000028AA) IN CSECT(I5000   ) LENGTH(2)
                     868  1465  1466
     889  F14        ADDRESS. HEX LOCATION(000028AC) IN CSECT(I5000   ) LENGTH(2)
                    1474
     623  GEND       ADDRESS. HEX LOCATION(00002628) IN CSECT(I5000   ) LENGTH(1)
                    2991
     636  GOBCK      ADDRESS. HEX LOCATION(00002652) IN CSECT(I5000   ) LENGTH(4)
                    1442
     416  HTOE       ABSOLUTE. HEX VALUE(0000001A)
                     574   579   584   660   663   666
     716  IAR        ADDRESS. HEX LOCATION(0000275A) IN CSECT(I5000   ) LENGTH(2)
                     588
     697  IDCB       ADDRESS. HEX LOCATION(0000271A) IN CSECT(I5000   ) LENGTH(2)
                     694   695
     787  IDCB0      ADDRESS. HEX LOCATION(000027E0) IN CSECT(I5000   ) LENGTH(2)
                     776   777   867  2032  2033
     789  IDCB1      ADDRESS. HEX LOCATION(000027E4) IN CSECT(I5000   ) LENGTH(2)
                     781   782   879  2106  2107
    1257  ID0        ADDRESS. HEX LOCATION(00002AFC) IN CSECT(I5000   ) LENGTH(2)
                     815   866  1243
    1258  ID1        ADDRESS. HEX LOCATION(00002AFE) IN CSECT(I5000   ) LENGTH(2)
                     836   878  1265
     656  INTER      ADDRESS. HEX LOCATION(0000267C) IN CSECT(I5000   ) LENGTH(1)
                     569   613
    1251  INTR0      ADDRESS. HEX LOCATION(00002AEE) IN CSECT(I5000   ) LENGTH(2)
                    1184  1246  1249  1402  1405  1425  1909  1921  2013
                    2166  2179  2189  2198  2226  2235  2254
    1273  INTR1      ADDRESS. HEX LOCATION(00002B2C) IN CSECT(I5000   ) LENGTH(2)
                    1201  1268  1271  1415  1418  1426  1943  1954  2014
                    2269
    1239  INT0       ADDRESS. HEX LOCATION(00002AC4) IN CSECT(I5000   ) LENGTH(1)
                    1254
    1243  INT0A      ADDRESS. HEX LOCATION(00002AD0) IN CSECT(I5000   ) LENGTH(4)
                    1290  1307  1315  1323
```

CROSS-REFERENCE LISTING

DECLARED NAME ATTRIBUTES AND REFERENCES

1242 INT00 ADDRESS. HEX LOCATION(00002ACC) IN CSECT(I5000) LENGTH(4)
1240 1279
1246 INT01 ADDRESS. HEX LOCATION(00002ADA) IN CSECT(I5000) LENGTH(6)
1244
1249 INT02 ADDRESS. HEX LOCATION(00002AE6) IN CSECT(I5000) LENGTH(4)
1247
1261 INT1 ADDRESS. HEX LOCATION(00002B02) IN CSECT(I5000) LENGTH(1)
1255
1265 INT1A ADDRESS. HEX LOCATION(00002B0E) IN CSECT(I5000) LENGTH(4)
1294 1311 1319 1327
1264 INT10 ADDRESS. HEX LOCATION(00002B0A) IN CSECT(I5000) LENGTH(4)
1262 1283
1268 INT11 ADDRESS. HEX LOCATION(00002B18) IN CSECT(I5000) LENGTH(6)
1266
1271 INT12 ADDRESS. HEX LOCATION(00002B24) IN CSECT(I5000) LENGTH(4)
1269
1125 IPREP ADDRESS. HEX LOCATION(00002A40) IN CSECT(I5000) LENGTH(2)
864 1119 1120
686 IRC ADDRESS. HEX LOCATION(000026F0) IN CSECT(I5000) LENGTH(2)
661
682 IRTN ADDRESS. HEX LOCATION(000026DA) IN CSECT(I5000) LENGTH(2)
658 672 683 1441 1464 1493 1531 1553 1563
1584 1611 1644 1681 1719 1764 1803 1842 1899
1914 1929 1942 1947 1962 1980 2010 2045 2063
2082 2120 2145 2161 2178 2197 2223 2244 2266
2298 2380 2451 2522 2614 2714 2798 2895
1256 ISAV ADDRESS. HEX LOCATION(00002AF8) IN CSECT(I5000) LENGTH(2)
1721 1971 2307
1210 ITER ADDRESS. HEX LOCATION(00002AB0) IN CSECT(I5000) LENGTH(4)
1198
1193 ITESR ADDRESS. HEX LOCATION(00002A84) IN CSECT(I5000) LENGTH(4)
1181
1180 ITES0 ADDRESS. HEX LOCATION(00002A60) IN CSECT(I5000) LENGTH(1)
1729 1741 1747 1756 1768 1780 1786 1795 1810
1819 1825 1834 1849 1855 1867 1873
1197 ITES1 ADDRESS. HEX LOCATION(00002A8C) IN CSECT(I5000) LENGTH(1)
1732 1738 1750 1759 1771 1777 1789 1798 1807
1816 1828 1837 1846 1858 1864 1876
1190 IT2 ADDRESS. HEX LOCATION(00002A82) IN CSECT(I5000) LENGTH(2)
1187
1192 IT3 ADDRESS. HEX LOCATION(00002A84) IN CSECT(I5000) LENGTH(1)
1184
1207 IT6 ADDRESS. HEX LOCATION(00002AAE) IN CSECT(I5000) LENGTH(2)
1204
1209 IT7 ADDRESS. HEX LOCATION(00002AB0) IN CSECT(I5000) LENGTH(1)
1201
40 I5000 CSECT. START(00002500) LENGTH(6486) ESDID(1)
40
1372 LLSB ADDRESS. HEX LOCATION(00002BE0) IN CSECT(I5000) LENGTH(2)
632 634 732 734 753 755 1974 1976 2074
2076 2146 2148 2207 2209 2301 2303 2589 2591
2640 2642 2662 2664 2681 2683 2708 2709 2728
2730 2749 2751 2766 2768 2792 2793 2809 2811
2833 2835 2856 2858 2889 2890 2905 2907 2928
2930 2951 2953 2983 2984 2986
751 LV0 ADDRESS. HEX LOCATION(0000278A) IN CSECT(I5000) LENGTH(1)
1460 2009 2278
756 LV0A ADDRESS. HEX LOCATION(0000279C) IN CSECT(I5000) LENGTH(4)
753
762 LV0R ADDRESS. HEX LOCATION(000027B4) IN CSECT(I5000) LENGTH(4)
752
565 MK ADDRESS. HEX LOCATION(000025A4) IN CSECT(I5000) LENGTH(1)
1457
709 MKMSG ADDRESS. HEX LOCATION(00002732) IN CSECT(I5000) LENGTH(10)
702
336 N00001 ADDRESS. HEX LOCATION(00002510) IN CSECT(I5000) LENGTH(2)
318 367
348 N00002 ADDRESS. HEX LOCATION(00002522) IN CSECT(I5000) LENGTH(2)
321
354 N00003 ADDRESS. HEX LOCATION(0000252E) IN CSECT(I5000) LENGTH(2)
324 337
1411 OC3 ADDRESS. HEX LOCATION(00002C6C) IN CSECT(I5000) LENGTH(1)
1394
1414 OC3A ADDRESS. HEX LOCATION(00002C74) IN CSECT(I5000) LENGTH(4)
1412
1418 OC3B ADDRESS. HEX LOCATION(00002C84) IN CSECT(I5000) LENGTH(6)
1416
1396 OC3Z ADDRESS. HEX LOCATION(00002C3E) IN CSECT(I5000) LENGTH(2)
1406 1419 1420 1424 2704 2784 2804 2975
1282 OC4 ADDRESS. HEX LOCATION(00002B3A) IN CSECT(I5000) LENGTH(1)
1276
1218 ODDM ADDRESS. HEX LOCATION(00002AC0) IN CSECT(I5000) LENGTH(2)
1568 1594
1219 ODDV ADDRESS. HEX LOCATION(00002AC2) IN CSECT(I5000) LENGTH(2)
1565 1599 1628
730 OFF ADDRESS. HEX LOCATION(00002762) IN CSECT(I5000) LENGTH(1)
612 625
740 OFFR ADDRESS. HEX LOCATION(00002786) IN CSECT(I5000) LENGTH(4)
731 732
75 OPWD1 ADDRESS. HEX LOCATION(0000180E) IN CSECT(I5000) LENGTH(1)
669
650 ORTN ADDRESS. HEX LOCATION(0000266E) IN CSECT(I5000) LENGTH(1)
651 698
390 OUT ABSOLUTE, HEX VALUE(00000000)
593 678
1310 O2 ADDRESS. HEX LOCATION(00002B6A) IN CSECT(I5000) LENGTH(1)
1298
1293 O4 ADDRESS. HEX LOCATION(00002B4E) IN CSECT(I5000) LENGTH(1)
1287
1318 O6 ADDRESS. HEX LOCATION(00002B7A) IN CSECT(I5000) LENGTH(1)
1301
1326 O7 ADDRESS. HEX LOCATION(00002B8A) IN CSECT(I5000) LENGTH(1)
1304
104 PARMARA ADDRESS. HEX LOCATION(0000196E) IN CSECT(I5000) LENGTH(1)
346
702 PARM1 ADDRESS. HEX LOCATION(00002722) IN CSECT(I5000) LENGTH(2)
591
705 PARM2 ADDRESS. HEX LOCATION(0000272A) IN CSECT(I5000) LENGTH(2)
573 659
706 PARM3 ADDRESS. HEX LOCATION(0000272C) IN CSECT(I5000) LENGTH(2)
572 578 583 658 662 665

CROSS-REFERENCE LISTING

DECLARED NAME ATTRIBUTES AND REFERENCES

785 PERTN ADDRESS. HEX LOCATION(000027DC) IN CSECT(I5000) LENGTH(4)
778 783
72 PID ADDRESS. HEX LOCATION(00001800) IN CSECT(I5000) LENGTH(1)
74 75 76 77 78 79 80 81 82
83 84 85 86 87 88 89 90 91
92 93 94 95 96 97 98 99 100
101 102 103 104 105 106 107 108 109
110 111 112 113 114 115 577 578 582
583 676 677
1117 PRE ADDRESS. HEX LOCATION(00002A26) IN CSECT(I5000) LENGTH(1)
1724 1737 1746 1755 1776 1785 1794 1815 1824
1833 1854 1863 1872 1984 2086 2168 2191 2216
2228 2300
1126 PREPD ADDRESS. HEX LOCATION(00002A42) IN CSECT(I5000) LENGTH(2)
1118
1123 PRE1 ADDRESS. HEX LOCATION(00002A3C) IN CSECT(I5000) LENGTH(4)
1121
714 PSW ADDRESS. HEX LOCATION(00002750) IN CSECT(I5000) LENGTH(2)
575
73 PTYPE ADDRESS. HEX LOCATION(00000232) IN CSECT(I5000) LENGTH(1)
2319 2321 2347 2349 2389 2391 2419 2421 2460
2462 2490 2492 2531 2533 2561 2563 2631 2633
2719 2721 2802 2804 2899 2901
685 RCMS ADDRESS. HEX LOCATION(000026DE) IN CSECT(I5000) LENGTH(18)
718
718 RCMSG ADDRESS. HEX LOCATION(00002760) IN CSECT(I5000) LENGTH(2)
668
1025 RDM0 ADDRESS. HEX LOCATION(0000297A) IN CSECT(I5000) LENGTH(1)
1559 1588 1622 1690 2054
1030 RDM00 ADDRESS. HEX LOCATION(0000298C) IN CSECT(I5000) LENGTH(4)
1028
1032 RDM1 ADDRESS. HEX LOCATION(00002994) IN CSECT(I5000) LENGTH(1)
1567 1593 1612 1695 2129
1037 RDM11 ADDRESS. HEX LOCATION(000029A6) IN CSECT(I5000) LENGTH(4)
1035
993 RDV0 ADDRESS. HEX LOCATION(0000293E) IN CSECT(I5000) LENGTH(1)
1556 1603 1617 1653 1915 1930 2053
998 RDV00 ADDRESS. HEX LOCATION(00002950) IN CSECT(I5000) LENGTH(4)
996
1000 RDV1 ADDRESS. HEX LOCATION(00002958) IN CSECT(I5000) LENGTH(1)
1564 1598 1627 1658 1948 1963 2128
1005 RDV11 ADDRESS. HEX LOCATION(0000296A) IN CSECT(I5000) LENGTH(4)
1003
1071 RD0 ADDRESS. HEX LOCATION(000029E6) IN CSECT(I5000) LENGTH(2)
862 1059 1060 2028 2029
1073 RD1 ADDRESS. HEX LOCATION(000029EA) IN CSECT(I5000) LENGTH(2)
875 1065 1066 2102 2103
1072 RD2 ADDRESS. HEX LOCATION(000029E8) IN CSECT(I5000) LENGTH(2)
1058
1074 RD3 ADDRESS. HEX LOCATION(000029EC) IN CSECT(I5000) LENGTH(2)
1064
679 RINTE ADDRESS. HEX LOCATION(000026D4) IN CSECT(I5000) LENGTH(4)
657 671
1040 RM0 ADDRESS. HEX LOCATION(000029AE) IN CSECT(I5000) LENGTH(2)
861 1026 1027
1042 RM1 ADDRESS. HEX LOCATION(000029B2) IN CSECT(I5000) LENGTH(2)
874 1033 1034
1041 RM2 ADDRESS. HEX LOCATION(000029B0) IN CSECT(I5000) LENGTH(2)
1030
1043 RM3 ADDRESS. HEX LOCATION(000029B4) IN CSECT(I5000) LENGTH(2)
1037
974 RSETR ADDRESS. HEX LOCATION(00002932) IN CSECT(I5000) LENGTH(4)
967 972
964 RSET0 ADDRESS. HEX LOCATION(0000290E) IN CSECT(I5000) LENGTH(1)
1585 2007 2068 2261 2277 2617
969 RSET1 ADDRESS. HEX LOCATION(00002920) IN CSECT(I5000) LENGTH(1)
1608 2008 2140 2276 2616
976 RS0 ADDRESS. HEX LOCATION(00002936) IN CSECT(I5000) LENGTH(2)
610 859 965 966
978 RS1 ADDRESS. HEX LOCATION(0000293A) IN CSECT(I5000) LENGTH(2)
611 872 970 971
710 RTN ADDRESS. HEX LOCATION(0000273C) IN CSECT(I5000) LENGTH(2)
580
1008 RV0 ADDRESS. HEX LOCATION(00002972) IN CSECT(I5000) LENGTH(2)
860 994 995
1010 RV1 ADDRESS. HEX LOCATION(00002976) IN CSECT(I5000) LENGTH(2)
873 1001 1002
1009 RV2 ADDRESS. HEX LOCATION(00002974) IN CSECT(I5000) LENGTH(2)
998
1011 RV3 ADDRESS. HEX LOCATION(00002978) IN CSECT(I5000) LENGTH(2)
1005
0 R0 REGISTER, HEX VALUE(00000000)
577 677 1720 1721 1722 1900 1901 1970 1971
2011 2012 2245 2246 2306 2307 2308
0 R1 REGISTER, HEX VALUE(00000001)
520 582 628 629 642 643 644 676 1443
1444 1458 1459 2267 2268 2340 2341 2344 2369
2370 2373 2410 2411 2414 2440 2441 2444 2481
2482 2485 2511 2512 2515 2552 2553 2556 2582
2583 2586 2627 2628 2629
0 R2 REGISTER, HEX VALUE(00000002)
571 675 1646 1650 1650 1650 1659 1666 1683
1687 1687 1696 1703
0 R3 REGISTER, HEX VALUE(00000003)
587 673 674 1554 1589 1613 1623 1645 1648
1648 1648 1654 1663 1665 1682 1685 1685 1685
1691 1700 1702
0 R4 REGISTER, HEX VALUE(00000004)
592 669 670 672 1449 1451 1452 1453 1454
0 R5 REGISTER, HEX VALUE(00000005)
541 818 839 857 858 859 860 861 862
863 864 865 866 867 868 870 871 872
873 874 875 876 877 878 879 880 916
998 1005 1030 1037 1058 1064 1089 1095 1118
1159 1182 1199 1447 1448 1449 1494 1499 1504
1509 1514 1519 1557 1560 1565 1568 1589 1594
1599 1604 1613 1618 1623 1628 1648 1650 1654
1659 1685 1697 1691 1696 1723 1725 1730 1733
1736 1739 1742 1745 1748 1751 1754 1757 1760
1765 1769 1772 1775 1778 1781 1784 1787 1790
1793 1796 1799 1804 1808 1811 1814 1817 1820
1823 1826 1829 1832 1835 1838 1843 1847 1850

CROSS-REFERENCE LISTING

DECLARED NAME ATTRIBUTES AND REFERENCES

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                1853  1856  1859  1862  1865  1868  1871  1874  1877
                1902  1905  1916  1918  1931  1933  1949  1951  1964
                1966  1981  1983  2016  2018  2022  2055  2083  2085
                2090  2092  2096  2130  2153  2162  2164  2167  2182
                2190  2201  2215  2224  2227  2238  2247  2250  2256
                2271  2299  2309  2312  2323  2325  2328  2351  2353
                2356  2381  2384  2393  2398  2423  2425  2427  2428
                2452  2455  2464  2466  2469  2494  2496  2499  2523
                2526  2535  2537  2540  2565  2567  2570  2619  2622
                2624  2638  2645  2648  2653  2655  2660  2667  2670
                2674  2676  2687  2690  2695  2697  2715  2717  2726
                2733  2736  2740  2742  2747  2754  2757  2760  2762
                2772  2775  2779  2781  2799  2817  2823  2826  2828
                2841  2847  2850  2852  2864  2871  2875  2877  2896
                2913  2919  2922  2924  2936  2942  2945  2947  2960
                2966  2970  2972  2989
      0    R6   REGISTER. HEX VALUE(00000006)
                 542   785   814   819   835   840   882   917   946
                 974   999  1006  1031  1038  1069  1100  1123  1162
                1181  1183  1198  1200  1242  1264  1401  1414  1427
                1450  1496  1501  1506  1511  1516  1521  1556  1559
                1564  1567  1585  1586  1588  1593  1598  1605  1608
                1609  1612  1617  1622  1627  1649  1651  1653  1658
                1686  1688  1690  1695  1724  1726  1727  1729  1731
                1732  1734  1737  1738  1740  1741  1743  1746  1747
                1749  1750  1752  1755  1756  1758  1759  1761  1766
                1767  1768  1770  1771  1773  1776  1777  1779  1780
                1782  1785  1786  1788  1789  1791  1794  1795  1797
                1798  1800  1805  1806  1807  1809  1810  1813  1815
                1816  1818  1819  1821  1824  1825  1827  1828  1830
                1833  1834  1836  1837  1839  1844  1845  1846  1848
                1849  1851  1854  1855  1857  1858  1860  1863  1864
                1866  1867  1869  1872  1873  1875  1876  1878  1903
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                1982  1984  2007  2008  2017  2019  2020  2023  2053
                2058  2068  2084  2086  2091  2093  2094  2097  2128
                2129  2140  2154  2163  2165  2168  2183  2191  2202
                2216  2225  2228  2239  2248  2249  2251  2252  2255
                2257  2261  2270  2272  2276  2277  2300  2310  2311
                2313  2314  2334  2335  2363  2364  2382  2383  2385
                2386  2404  2405  2434  2435  2453  2454  2456  2457
                2475  2476  2505  2506  2524  2525  2527  2528  2546
                2547  2576  2577  2616  2617  2620  2621  2623  2625
                2639  2643  2644  2646  2647  2654  2656  2661  2665
                2666  2668  2669  2671  2675  2677  2685  2686  2688
                2689  2691  2696  2698  2716  2718  2727  2731  2732
                2734  2735  2741  2743  2748  2752  2753  2755  2756
                2758  2761  2763  2769  2771  2773  2774  2776  2780
                2782  2800  2801  2812  2818  2824  2827  2829  2836
                2842  2848  2851  2853  2859  2865  2872  2876  2878
                2897  2898  2908  2914  2920  2923  2925  2931  2937
                2943  2946  2948  2954  2961  2967  2971  2973  2990
      0    R7   REGISTER. HEX VALUE(00000007)
                 569   573   591   612   613   625   633   634   657
                 659   668   731   733   734   735   736   737   738
                 752   754   755   756   757   758   759   760   761
                 779   784   812   815   817   833   836   838   910
                 914   918   919   940   945   968   973   997  1004
                1029  1036  1062  1068  1093  1099  1122  1139  1158
                1159  1161  1188  1205  1241  1243  1245  1248  1249
                1250  1263  1265  1267  1270  1271  1272  1280  1284
                1291  1295  1308  1312  1316  1320  1324  1328  1400
                1404  1413  1417  1442  1460  1468  1472  1476  1479
                1495  1500  1505  1510  1515  1520  1525  1526  1532
                1536  1540  1591  1596  1601  1606  1615  1620  1625
                1630  1656  1661  1693  1698  1920  1925  1935  1953
                1958  1968  1975  1976  2009  2027  2031  2035  2039
                2049  2052  2057  2067  2075  2076  2101  2105  2109
                2113  2124  2127  2132  2139  2147  2148  2172  2181
                2188  2200  2208  2209  2214  2237  2278  2302  2303
                2332  2338  2343  2361  2367  2372  2402  2408  2413
                2432  2438  2443  2473  2479  2484  2503  2509  2514
                2544  2550  2555  2574  2580  2585  2590  2591  2641
                2642  2663  2664  2682  2683  2702  2706  2707  2709
                2729  2730  2750  2751  2767  2768  2786  2790  2791
                2793  2810  2811  2816  2822  2834  2835  2840  2846
                2857  2858  2863  2870  2882  2886  2888  2890  2906
                2907  2912  2918  2929  2930  2935  2941  2952  2953
                2959  2965  2977  2981  2985  2986
1259  SAVA      ADDRESS. HEX LOCATION(00002B00) IN CSECT(I5000   ) LENGTH(2)
                 628  1453  1458  1720  1900  1970  2011  2245  2267
                2306  2627
 700  SAVA1     ADDRESS. HEX LOCATION(0000271E) IN CSECT(I5000   ) LENGTH(2)
                 630  1455
 822  SBCL0     ADDRESS. HEX LOCATION(0000280E) IN CSECT(I5000   ) LENGTH(2)
                 818  2317
 823  SBCL1     ADDRESS. HEX LOCATION(00002810) IN CSECT(I5000   ) LENGTH(2)
                 839  2316
 693  SDCP      ADDRESS. HEX LOCATION(00002712) IN CSECT(I5000   ) LENGTH(2)
                 629  1454
1069  SETMR     ADDRESS. HEX LOCATION(000029E2) IN CSECT(I5000   ) LENGTH(4)
                1061  1067
1057  SETM0     ADDRESS. HEX LOCATION(000029B6) IN CSECT(I5000   ) LENGTH(1)
                1686  1726  1767  1806  1844  1903  2017  2163  2248
                2310  2382  2453  2525  2620
1063  SETM1     ADDRESS. HEX LOCATION(000029CC) IN CSECT(I5000   ) LENGTH(1)
                1688  1727  1766  1805  1845  1904  2091  2249  2311
                2383  2454  2524  2621
1100  SETR      ADDRESS. HEX LOCATION(00002A1A) IN CSECT(I5000   ) LENGTH(4)
                1092  1098
 856  SETT      ADDRESS. HEX LOCATION(00002844) IN CSECT(I5000   ) LENGTH(1)
                1450
1423  SETUP     ADDRESS. HEX LOCATION(00002C98) IN CSECT(I5000   ) LENGTH(6)
                2643  2665  2685  2731  2752  2769  2812  2836  2859
                2908  2931  2954
1102  SETV0     ADDRESS. HEX LOCATION(00002A1E) IN CSECT(I5000   ) LENGTH(2)
                 863  1090  1091  2024  2025
1104  SETV1     ADDRESS. HEX LOCATION(00002A22) IN CSECT(I5000   ) LENGTH(2)
                 876  1096  1097  2098  2099
1103  SETV2     ADDRESS. HEX LOCATION(00002A20) IN CSECT(I5000   ) LENGTH(2)
                1089
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CROSS-REFERENCE LISTING

DECLARED NAME ATTRIBUTES AND REFERENCES

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1105  SETV3     ADDRESS. HEX LOCATION(00002A24) IN CSECT(I5000   ) LENGTH(2)
                1095
1088  SET0      ADDRESS. HEX LOCATION(000029EE) IN CSECT(I5000   ) LENGTH(1)
                1183  1649  1906  2019  2165  2251  2313  2385  2456
                2527  2623  2716  2727  2748  2800  2897
1094  SET1      ADDRESS. HEX LOCATION(00002A04) IN CSECT(I5000   ) LENGTH(1)
                1200  1651  1907  2093  2252  2314  2386  2457  2528
                2625  2639  2661  2718  2801  2898
 549  SI        ADDRESS. HEX LOCATION(0000259E) IN CSECT(I5000   ) LENGTH(2)
                 592   776   781   911   937   942   965   970   994
                1001  1026  1033  1059  1065  1090  1096  1119  1185
                1202  1465  1469  1533  1922  1955  2024  2028  2032
                2036  2046  2064  2098  2102  2106  2110  2121  2136
                2169  2185  2211  2329  2358  2399  2429  2470  2500
                2541  2571  2813  2819  2837  2843  2860  2867  2909
                2915  2932  2938  2956  2962
1332  ST        ADDRESS. HEX LOCATION(00002B94) IN CSECT(I5000   ) LENGTH(2)
                1645
1194  STAP      ADDRESS. HEX LOCATION(00002A88) IN CSECT(I5000   ) LENGTH(2)
                 865  1185  1186  1922  1923  2036  2037  2169  2170
                2185  2186  2211  2212  2329  2330  2429  2430  2470
                2471  2541  2542  2813  2814  2837  2838  2860  2861
                2915  2916  2938  2939  2962  2963
 690  STAT      ADDRESS. HEX LOCATION(0000270C) IN CSECT(I5000   ) LENGTH(2)
                 667
 946  STOPR     ADDRESS. HEX LOCATION(00002902) IN CSECT(I5000   ) LENGTH(4)
                 939   944
 936  STOP0     ADDRESS. HEX LOCATION(000028DE) IN CSECT(I5000   ) LENGTH(1)
                 814  1242  1401  1609  2335  2435  2476  2547
 941  STOP1     ADDRESS. HEX LOCATION(000028F0) IN CSECT(I5000   ) LENGTH(1)
                 835  1264  1414  1586  2364  2405  2506  2577
1212  STP       ADDRESS. HEX LOCATION(00002AB4) IN CSECT(I5000   ) LENGTH(2)
                 877  1202  1203  1955  1956  2110  2111  2358  2359
                2399  2400  2500  2501  2571  2572  2819  2820  2843
                2844  2867  2868  2909  2910  2932  2933  2956  2957
 775  STPE0     ADDRESS. HEX LOCATION(00027B8E) IN CSECT(I5000   ) LENGTH(1)
                1910  2020  2255  2644  2666  2686  2735  2756  2774
 780  STPE1     ADDRESS. HEX LOCATION(000027CA) IN CSECT(I5000   ) LENGTH(1)
                1944  2094  2270  2647  2669  2689  2732  2753  2771
1354  STT       ADDRESS. HEX LOCATION(00002BBE) IN CSECT(I5000   ) LENGTH(2)
                1682  2700  2704  2784  2788  2880  2884  2975  2979
 948  ST0       ADDRESS. HEX LOCATION(00002906) IN CSECT(I5000   ) LENGTH(2)
                 858   937   938  2064  2065
 950  ST1       ADDRESS. HEX LOCATION(0000290A) IN CSECT(I5000   ) LENGTH(2)
                 871   942   943  2136  2137
 595  SVPSW     ADDRESS. HEX LOCATION(0000260C) IN CSECT(I5000   ) LENGTH(2)
                 567   570
 101  TURESUL   ADDRESS. HEX LOCATION(000018C8) IN CSECT(I5000   ) LENGTH(1)
                 520   609   626   642   644   652   665  1443
1439  T0        ADDRESS. HEX LOCATION(00002CB4) IN CSECT(I5000   ) LENGTH(1)
                 521
2028  T102      ADDRESS. HEX LOCATION(00003288) IN CSECT(I5000   ) LENGTH(6)
                2026
2032  T103      ADDRESS. HEX LOCATION(0000329A) IN CSECT(I5000   ) LENGTH(6)
                2030
2036  T104      ADDRESS. HEX LOCATION(000032AC) IN CSECT(I5000   ) LENGTH(6)
                2034
2044  T105      ADDRESS. HEX LOCATION(000032BE) IN CSECT(I5000   ) LENGTH(1)
                2038
2050  T106      ADDRESS. HEX LOCATION(000032D6) IN CSECT(I5000   ) LENGTH(6)
                2048
2053  T107      ADDRESS. HEX LOCATION(000032E2) IN CSECT(I5000   ) LENGTH(4)
                2051
2062  T109      ADDRESS. HEX LOCATION(000032F4) IN CSECT(I5000   ) LENGTH(1)
                2056
1530  T11       ADDRESS. HEX LOCATION(00002D98) IN CSECT(I5000   ) LENGTH(1)
                1527
2068  T110      ADDRESS. HEX LOCATION(0000330C) IN CSECT(I5000   ) LENGTH(4)
                2066
2081  T112      ADDRESS. HEX LOCATION(00003320) IN CSECT(I5000   ) LENGTH(1)
                2074
2102  T117      ADDRESS. HEX LOCATION(00003364) IN CSECT(I5000   ) LENGTH(6)
                2100
2106  T118      ADDRESS. HEX LOCATION(00003376) IN CSECT(I5000   ) LENGTH(6)
                2104
2110  T119      ADDRESS. HEX LOCATION(00003388) IN CSECT(I5000   ) LENGTH(6)
                2108
1537  T12       ADDRESS. HEX LOCATION(00002DB4) IN CSECT(I5000   ) LENGTH(1)
                1535
2119  T120      ADDRESS. HEX LOCATION(0000339A) IN CSECT(I5000   ) LENGTH(1)
                2112
2125  T121      ADDRESS. HEX LOCATION(000033B2) IN CSECT(I5000   ) LENGTH(6)
                2123
2128  T122      ADDRESS. HEX LOCATION(000033BE) IN CSECT(I5000   ) LENGTH(4)
                2126
2136  T124      ADDRESS. HEX LOCATION(000033D0) IN CSECT(I5000   ) LENGTH(6)
                2131
2140  T125      ADDRESS. HEX LOCATION(000033E2) IN CSECT(I5000   ) LENGTH(4)
                2138
2153  T127      ADDRESS. HEX LOCATION(000033FC) IN CSECT(I5000   ) LENGTH(4)
                2146
2173  T131      ADDRESS. HEX LOCATION(0000343A) IN CSECT(I5000   ) LENGTH(2)
                2171
2177  T132      ADDRESS. HEX LOCATION(0000343C) IN CSECT(I5000   ) LENGTH(1)
                2166
2182  T133      ADDRESS. HEX LOCATION(0000344E) IN CSECT(I5000   ) LENGTH(4)
                2180
2189  T134      ADDRESS. HEX LOCATION(00003468) IN CSECT(I5000   ) LENGTH(6)
                2187
2196  T135A     ADDRESS. HEX LOCATION(00003478) IN CSECT(I5000   ) LENGTH(1)
                2189
2201  T136      ADDRESS. HEX LOCATION(0000348A) IN CSECT(I5000   ) LENGTH(4)
                2199
2215  T137      ADDRESS. HEX LOCATION(000034B2) IN CSECT(I5000   ) LENGTH(4)
                2213
2222  T138      ADDRESS. HEX LOCATION(000034BC) IN CSECT(I5000   ) LENGTH(1)
                2207
2235  T139      ADDRESS. HEX LOCATION(000034DA) IN CSECT(I5000   ) LENGTH(6)
                2226
2238  T140      ADDRESS. HEX LOCATION(000034E6) IN CSECT(I5000   ) LENGTH(4)
                2236
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CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
2260	T143	ADDRESS. HEX LOCATION(00003528) IN CSECT(I5000) LENGTH(1)
2275	T145	2254 ADDRESS. HEX LOCATION(00003550) IN CSECT(I5000) LENGTH(1)
1552	T20	2269 ADDRESS. HEX LOCATION(00002DC2) IN CSECT(I5000) LENGTH(1)
1593	T26	1529 ADDRESS. HEX LOCATION(00002E0C) IN CSECT(I5000) LENGTH(4)
1598	T27	1590 ADDRESS. HEX LOCATION(00002E1A) IN CSECT(I5000) LENGTH(4)
1603	T28	1595 ADDRESS. HEX LOCATION(00002E28) IN CSECT(I5000) LENGTH(4)
1608	T29	1600 ADDRESS. HEX LOCATION(00002E36) IN CSECT(I5000) LENGTH(4)
1492	T3	1605 ADDRESS. HEX LOCATION(00002D40) IN CSECT(I5000) LENGTH(1)
1617	T30	1539 ADDRESS. HEX LOCATION(00002E50) IN CSECT(I5000) LENGTH(4)
1622	T31	1614 ADDRESS. HEX LOCATION(00002E5E) IN CSECT(I5000) LENGTH(4)
1627	T32	1619 ADDRESS. HEX LOCATION(00002E6A) IN CSECT(I5000) LENGTH(4)
1643	T33	1624 ADDRESS. HEX LOCATION(00002E78) IN CSECT(I5000) LENGTH(1)
1648	T34	1629 ADDRESS. HEX LOCATION(00002E86) IN CSECT(I5000) LENGTH(2)
1658	T35	1667 ADDRESS. HEX LOCATION(00002E9E) IN CSECT(I5000) LENGTH(4)
1663	T36	1655 ADDRESS. HEX LOCATION(00002EAA) IN CSECT(I5000) LENGTH(4)
1680	T37	1660 ADDRESS. HEX LOCATION(00002EBA) IN CSECT(I5000) LENGTH(1)
1685	T38	1664 ADDRESS. HEX LOCATION(00002EC8) IN CSECT(I5000) LENGTH(2)
1695	T39	1704 ADDRESS. HEX LOCATION(00002EE0) IN CSECT(I5000) LENGTH(4)
1700	T40	1692 ADDRESS. HEX LOCATION(00002EEC) IN CSECT(I5000) LENGTH(4)
1718	T41	1697 ADDRESS. HEX LOCATION(00002EFC) IN CSECT(I5000) LENGTH(1)
486	T5000	1701 ADDRESS. HEX LOCATION(0000257C) IN CSECT(I5000) LENGTH(1)
2659	T58A	338 ADDRESS. HEX LOCATION(000039A2) IN CSECT(I5000) LENGTH(1)
2681	T58B	2634 ADDRESS. HEX LOCATION(000039E8) IN CSECT(I5000) LENGTH(6)
2694	T61	2632 ADDRESS. HEX LOCATION(00003A14) IN CSECT(I5000) LENGTH(1)
2673	T61A	2681 ADDRESS. HEX LOCATION(000039D6) IN CSECT(I5000) LENGTH(1)
2700	T62	2662 ADDRESS. HEX LOCATION(00003A24) IN CSECT(I5000) LENGTH(6)
2704	T63	2657 2678 ADDRESS. HEX LOCATION(00003A30) IN CSECT(I5000) LENGTH(6)
2707	T64	2701 ADDRESS. HEX LOCATION(00003A3C) IN CSECT(I5000) LENGTH(4)
2713	T64A	2705 ADDRESS. HEX LOCATION(00003A4A) IN CSECT(I5000) LENGTH(1)
2746	T64B	2708 ADDRESS. HEX LOCATION(00003AB6) IN CSECT(I5000) LENGTH(1)
2766	T64C	2722 ADDRESS. HEX LOCATION(00003AFC) IN CSECT(I5000) LENGTH(6)
2779	T66	2720 ADDRESS. HEX LOCATION(00003B28) IN CSECT(I5000) LENGTH(4)
2760	T66A	2766 ADDRESS. HEX LOCATION(00003AEA) IN CSECT(I5000) LENGTH(4)
2784	T66AA	2749 ADDRESS. HEX LOCATION(00003B38) IN CSECT(I5000) LENGTH(6)
2788	T67	2744 2764 ADDRESS. HEX LOCATION(00003B44) IN CSECT(I5000) LENGTH(6)
2791	T68	2785 ADDRESS. HEX LOCATION(00003B50) IN CSECT(I5000) LENGTH(4)
2797	T69	2789 ADDRESS. HEX LOCATION(00003B5E) IN CSECT(I5000) LENGTH(1)
2832	T69A	2792 ADDRESS. HEX LOCATION(00003BDA) IN CSECT(I5000) LENGTH(1)
2856	T69X	2805 ADDRESS. HEX LOCATION(00003C34) IN CSECT(I5000) LENGTH(6)
2864	T71	2803 ADDRESS. HEX LOCATION(00003C58) IN CSECT(I5000) LENGTH(4)
2841	T71A	2862 ADDRESS. HEX LOCATION(00003BFE) IN CSECT(I5000) LENGTH(4)
2871	T72	2839 ADDRESS. HEX LOCATION(00003C72) IN CSECT(I5000) LENGTH(4)
2847	T72A	2869 ADDRESS. HEX LOCATION(00003C18) IN CSECT(I5000) LENGTH(4)
2875	T73	2845 ADDRESS. HEX LOCATION(00003C7C) IN CSECT(I5000) LENGTH(4)
2850	T73A	2856 ADDRESS. HEX LOCATION(00003C22) IN CSECT(I5000) LENGTH(4)
2880	T74	2833 ADDRESS. HEX LOCATION(00003C8C) IN CSECT(I5000) LENGTH(6)
2884	T75	2830 2854 ADDRESS. HEX LOCATION(00003C98) IN CSECT(I5000) LENGTH(6)
2888	T76	2881 ADDRESS. HEX LOCATION(00003CA4) IN CSECT(I5000) LENGTH(4)
2894	T77	2885 ADDRESS. HEX LOCATION(00003CB2) IN CSECT(I5000) LENGTH(1)
2951	T77A	2889 ADDRESS. HEX LOCATION(00003D88) IN CSECT(I5000) LENGTH(6)
2928	T77AX	2900 ADDRESS. HEX LOCATION(00003D2E) IN CSECT(I5000) LENGTH(6)
2960	T79	2902 ADDRESS. HEX LOCATION(00003DAC) IN CSECT(I5000) LENGTH(4)
2966	T79A	2958 ADDRESS. HEX LOCATION(00003DC6) IN CSECT(I5000) LENGTH(4)
2942	T79AA	2964 ADDRESS. HEX LOCATION(00003D6C) IN CSECT(I5000) LENGTH(4)
2970	T79B	2940 ADDRESS. HEX LOCATION(00003DD0) IN CSECT(I5000) LENGTH(4)
2945	T79BA	2951 ADDRESS. HEX LOCATION(00003D76) IN CSECT(I5000) LENGTH(4)

CROSS-REFERENCE LISTING

DECLARED	NAME	ATTRIBUTES AND REFERENCES
2975	T79C	2928 ADDRESS. HEX LOCATION(00003DE0) IN CSECT(I5000) LENGTH(6)
2979	T79D	2926 2949 ADDRESS. HEX LOCATION(00003DEC) IN CSECT(I5000) LENGTH(6)
2983	T79E	2976 ADDRESS. HEX LOCATION(00003DF8) IN CSECT(I5000) LENGTH(6)
2988	T79F	2980 ADDRESS. HEX LOCATION(00003E0E) IN CSECT(I5000) LENGTH(1)
2936	T79X	2983 ADDRESS. HEX LOCATION(00003D52) IN CSECT(I5000) LENGTH(4)
1979	T81	2934 ADDRESS. HEX LOCATION(0000321E) IN CSECT(I5000) LENGTH(1)
2305	T82A	1974 ADDRESS. HEX LOCATION(0000357A) IN CSECT(I5000) LENGTH(1)
2325	T82AX	2301 ADDRESS. HEX LOCATION(000035C6) IN CSECT(I5000) LENGTH(4)
2328	T82A1	2322 ADDRESS. HEX LOCATION(000035CC) IN CSECT(I5000) LENGTH(4)
2329	T82A2	2320 ADDRESS. HEX LOCATION(000035D0) IN CSECT(I5000) LENGTH(6)
2334	T83	2324 2326 ADDRESS. HEX LOCATION(000035E2) IN CSECT(I5000) LENGTH(4)
2339	T83A	2331 ADDRESS. HEX LOCATION(000035F6) IN CSECT(I5000) LENGTH(1)
2343	T83B	2337 ADDRESS. HEX LOCATION(00003600) IN CSECT(I5000) LENGTH(4)
2344	T83C	2345 ADDRESS. HEX LOCATION(00003604) IN CSECT(I5000) LENGTH(4)
2356	T833A	2342 ADDRESS. HEX LOCATION(00003626) IN CSECT(I5000) LENGTH(4)
2357	T833B	2348 ADDRESS. HEX LOCATION(0000362A) IN CSECT(I5000) LENGTH(6)
2353	T833C	2352 2354 ADDRESS. HEX LOCATION(00003620) IN CSECT(I5000) LENGTH(4)
2363	T84	2350 ADDRESS. HEX LOCATION(00003642) IN CSECT(I5000) LENGTH(4)
2368	T84A	2360 ADDRESS. HEX LOCATION(00003656) IN CSECT(I5000) LENGTH(1)
2372	T84B	2366 ADDRESS. HEX LOCATION(00003660) IN CSECT(I5000) LENGTH(4)
2373	T84C	2374 ADDRESS. HEX LOCATION(00003664) IN CSECT(I5000) LENGTH(4)
2398	T85A	2371 ADDRESS. HEX LOCATION(000036AA) IN CSECT(I5000) LENGTH(4)
2395	T85AX	2390 ADDRESS. HEX LOCATION(000036A4) IN CSECT(I5000) LENGTH(4)
2399	T85B	2392 ADDRESS. HEX LOCATION(000036AE) IN CSECT(I5000) LENGTH(6)
2404	T86	2394 2396 ADDRESS. HEX LOCATION(000036C0) IN CSECT(I5000) LENGTH(4)
2409	T86A	2401 ADDRESS. HEX LOCATION(000036D4) IN CSECT(I5000) LENGTH(1)
2413	T86B	2407 ADDRESS. HEX LOCATION(000036DE) IN CSECT(I5000) LENGTH(4)
2414	T86C	2415 ADDRESS. HEX LOCATION(000036E2) IN CSECT(I5000) LENGTH(4)
2428	T87A	2412 ADDRESS. HEX LOCATION(0000370A) IN CSECT(I5000) LENGTH(4)
2425	T87AX	2420 ADDRESS. HEX LOCATION(00003704) IN CSECT(I5000) LENGTH(4)
2429	T87B	2422 ADDRESS. HEX LOCATION(0000370E) IN CSECT(I5000) LENGTH(6)
2434	T88	2424 2426 ADDRESS. HEX LOCATION(00003720) IN CSECT(I5000) LENGTH(4)
2439	T88A	2431 ADDRESS. HEX LOCATION(00003734) IN CSECT(I5000) LENGTH(1)
2443	T88B	2437 ADDRESS. HEX LOCATION(0000373E) IN CSECT(I5000) LENGTH(4)
2444	T88C	2445 ADDRESS. HEX LOCATION(00003742) IN CSECT(I5000) LENGTH(4)
2469	T89A	2442 ADDRESS. HEX LOCATION(00003788) IN CSECT(I5000) LENGTH(4)
2466	T89AX	2461 ADDRESS. HEX LOCATION(00003782) IN CSECT(I5000) LENGTH(4)
2470	T89B	2463 ADDRESS. HEX LOCATION(0000378C) IN CSECT(I5000) LENGTH(6)
2475	T90	2465 2467 ADDRESS. HEX LOCATION(0000379E) IN CSECT(I5000) LENGTH(4)
2480	T90A	2472 ADDRESS. HEX LOCATION(000037B2) IN CSECT(I5000) LENGTH(1)
2484	T90B	2478 ADDRESS. HEX LOCATION(000037BC) IN CSECT(I5000) LENGTH(4)
2485	T90C	2486 ADDRESS. HEX LOCATION(000037C0) IN CSECT(I5000) LENGTH(4)
2499	T91A	2483 ADDRESS. HEX LOCATION(000037E8) IN CSECT(I5000) LENGTH(4)
2496	T91AX	2491 ADDRESS. HEX LOCATION(000037E2) IN CSECT(I5000) LENGTH(4)
2500	T91B	2493 ADDRESS. HEX LOCATION(000037EC) IN CSECT(I5000) LENGTH(6)
2505	T92	2495 2497 ADDRESS. HEX LOCATION(000037FE) IN CSECT(I5000) LENGTH(4)
2510	T92A	2502 ADDRESS. HEX LOCATION(00003812) IN CSECT(I5000) LENGTH(1)
2514	T92B	2508 ADDRESS. HEX LOCATION(0000381C) IN CSECT(I5000) LENGTH(4)
2515	T92C	2516 ADDRESS. HEX LOCATION(00003820) IN CSECT(I5000) LENGTH(4)
2540	T93A	2513 ADDRESS. HEX LOCATION(00003866) IN CSECT(I5000) LENGTH(4)
2541	T93B	2532 ADDRESS. HEX LOCATION(0000386A) IN CSECT(I5000) LENGTH(6)
2537	T93BX	2536 2538 ADDRESS. HEX LOCATION(00003860) IN CSECT(I5000) LENGTH(4)
2546	T94	2534 ADDRESS. HEX LOCATION(0000387C) IN CSECT(I5000) LENGTH(4)
2551	T94A	2543 ADDRESS. HEX LOCATION(00003890) IN CSECT(I5000) LENGTH(1)
2555	T94B	2549 ADDRESS. HEX LOCATION(0000389A) IN CSECT(I5000) LENGTH(4)
		2557

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DECLARED  NAME     ATTRIBUTES AND REFERENCES
  2556    T94C       ADDRESS. HEX LOCATION(0000389E) IN CSECT(I5000   ) LENGTH(4)
                   2554
  2570    T95A       ADDRESS. HEX LOCATION(000038C6) IN CSECT(I5000   ) LENGTH(4)
                   2562
  2571    T95B       ADDRESS. HEX LOCATION(000038CA) IN CSECT(I5000   ) LENGTH(6)
                   2566   2568
  2567    T95BX      ADDRESS. HEX LOCATION(000038C0) IN CSECT(I5000   ) LENGTH(4)
                   2564
  2576    T96        ADDRESS. HEX LOCATION(000038DC) IN CSECT(I5000   ) LENGTH(4)
                   2573
  2581    T96A       ADDRESS. HEX LOCATION(000038F0) IN CSECT(I5000   ) LENGTH(1)
                   2579
  2585    T96B       ADDRESS. HEX LOCATION(000038FA) IN CSECT(I5000   ) LENGTH(4)
                   2587
  2586    T96C       ADDRESS. HEX LOCATION(000038FE) IN CSECT(I5000   ) LENGTH(4)
                   2584
  2593    T98        ADDRESS. HEX LOCATION(00003914) IN CSECT(I5000   ) LENGTH(1)
                   2589
  1913    T99B       ADDRESS. HEX LOCATION(00003158) IN CSECT(I5000   ) LENGTH(1)
                   1909
  1921    T99C       ADDRESS. HEX LOCATION(00003172) IN CSECT(I5000   ) LENGTH(6)
                   1917   1919
  1926    T99D       ADDRESS. HEX LOCATION(0000318A) IN CSECT(I5000   ) LENGTH(2)
                   1924
  1928    T99E       ADDRESS. HEX LOCATION(0000318C) IN CSECT(I5000   ) LENGTH(1)
                   1921
  1941    T99F       ADDRESS. HEX LOCATION(000031A6) IN CSECT(I5000   ) LENGTH(1)
                   1932   1934
  1946    T99G       ADDRESS. HEX LOCATION(000031B8) IN CSECT(I5000   ) LENGTH(1)
                   1943
  1954    T99H       ADDRESS. HEX LOCATION(000031D2) IN CSECT(I5000   ) LENGTH(6)
                   1950   1952
  1959    T99I       ADDRESS. HEX LOCATION(000031EA) IN CSECT(I5000   ) LENGTH(2)
                   1957
  1961    T99J       ADDRESS. HEX LOCATION(000031EC) IN CSECT(I5000   ) LENGTH(1)
                   1954
  1969    T99K       ADDRESS. HEX LOCATION(00003206) IN CSECT(I5000   ) LENGTH(1)
                   1965   1967
   652    UNSET      ADDRESS. HEX LOCATION(00002674) IN CSECT(I5000   ) LENGTH(6)
                    649
    65    XTRNL      ABSOLUTE. HEX VALUE(00000001)
                    352
   891    ZFFFF      ADDRESS. HEX LOCATION(000028B0) IN CSECT(I5000   ) LENGTH(2)
                   2336   2365   2406   2436   2477   2507   2548   2578
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