```
  LOC        OBJECT CODE      ADDR1     ADDR2    STMT

                                                    2 *******************************************************************************
                                                    3 *
                                                    4 *              TRE instruction tests
                                                    5 *
                                                    6 *          NOTE: This test is based the CLCL-et-al Test
                                                    7 *                modified to only test the TRE instruction.
                                                    8 *
                                                    9 *          James Wekel August 2022
                                                   10 *******************************************************************************
                                                   11 *******************************************************************************
                                                   12 *
                                                   13 *              TRE basic instruction tests
                                                   14 *
                                                   15 *******************************************************************************
                                                   16 *
                                                   17 *  This program tests proper functioning of the TRE
                                                   18 *  instructions.
                                                   19 *
                                                   20 *  PLEASE NOTE that the tests are very SIMPLE TESTS designed to catch
                                                   21 *  obvious coding errors.  None of the tests are thorough.  They are
                                                   22 *  NOT designed to test all aspects of any of the instructions.
                                                   23 *
                                                   24 *******************************************************************************
                                                   25 *
                                                   26 *  Example Hercules Testcase:
                                                   27 *
                                                   28 *
                                                   29 *      *Testcase TRE-01-basic (Test TRE instructions)
                                                   30 *
                                                   31 *      archlvl     390
                                                   32 *      mainsize    3
                                                   33 *      numcpu      1
                                                   34 *      sysclear
                                                   35 *
                                                   36 *      loadcore    "$(testpath)/TRE-01-basic" 0x0
                                                   37 *
                                                   38 *      runtest     1         # (NON-timing test duration)
                                                   39 *
                                                   40 *      *Done
                                                   41 *
                                                   42 *
                                                   43 *******************************************************************************
```

```
 LOC      OBJECT CODE     ADDR1     ADDR2    STMT

                                              45          PRINT OFF
                                            3426          PRINT ON

                                            3428  ***********************************************************************
                                            3429  *          SATK prolog stuff...
                                            3430  ***********************************************************************

                                            3432          ARCHLVL   ZARCH=NO,MNOTE=NO
                                            3434+$AL       OPSYN AL
                                            3435+$ALR      OPSYN ALR
                                            3436+$B        OPSYN B
                                            3437+$BAS      OPSYN BAS
                                            3438+$BASR     OPSYN BASR
                                            3439+$BC       OPSYN BC
                                            3440+$BCTR     OPSYN BCTR
                                            3441+$BE       OPSYN BE
                                            3442+$BH       OPSYN BH
                                            3443+$BL       OPSYN BL
                                            3444+$BM       OPSYN BM
                                            3445+$BNE      OPSYN BNE
                                            3446+$BNH      OPSYN BNH
                                            3447+$BNL      OPSYN BNL
                                            3448+$BNM      OPSYN BNM
                                            3449+$BNO      OPSYN BNO
                                            3450+$BNP      OPSYN BNP
                                            3451+$BNZ      OPSYN BNZ
                                            3452+$BO       OPSYN BO
                                            3453+$BP       OPSYN BP
                                            3454+$BXLE     OPSYN BXLE
                                            3455+$BZ       OPSYN BZ
                                            3456+$CH       OPSYN CH
                                            3457+$L        OPSYN L
                                            3458+$LH       OPSYN LH
                                            3459+$LM       OPSYN LM
                                            3460+$LPSW     OPSYN LPSW
                                            3461+$LR       OPSYN LR
                                            3462+$LTR      OPSYN LTR
                                            3463+$NR       OPSYN NR
                                            3464+$SL       OPSYN SL
                                            3465+$SLR      OPSYN SLR
                                            3466+$SR       OPSYN SR
                                            3467+$ST       OPSYN ST
                                            3468+$STM      OPSYN STM
                                            3469+$X        OPSYN X
                                            3470+$AHI      OPSYN AHI
                                            3471+$B        OPSYN J
                                            3472+$BC       OPSYN BRC
                                            3473+$BE       OPSYN JE
                                            3474+$BH       OPSYN JH
                                            3475+$BL       OPSYN JL
                                            3476+$BM       OPSYN JM
                                            3477+$BNE      OPSYN JNE
```

```
 LOC      OBJECT CODE      ADDR1     ADDR2     STMT
                                               3478+$BNH      OPSYN JNH
                                               3479+$BNL      OPSYN JNL
                                               3480+$BNM      OPSYN JNM
                                               3481+$BNO      OPSYN JNO
                                               3482+$BNP      OPSYN JNP
                                               3483+$BNZ      OPSYN JNZ
                                               3484+$BO       OPSYN JO
                                               3485+$BP       OPSYN JP
                                               3486+$BXLE     OPSYN JXLE
                                               3487+$BZ       OPSYN JZ
                                               3488+$CHI      OPSYN CHI
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT

                                                  3490 ******************************************************************
                                                  3491 *          Initiate the TRE01TST CSECT in the CODE region
                                                  3492 *          with the location counter at 0
                                                  3493 ******************************************************************

                                                  3495 TRE01TST ASALOAD   REGION=CODE
                               00000000  000021FF 3496+TRE01TST START 0,CODE
00000000   000A0000 00000008                      3498+         PSW   0,0,2,0,X'008'        64-bit Restart ISR Trap New PSW
00000008                       00000008  00000058 3499+         ORG   TRE01TST+X'058'
00000058   000A0000 00000018                      3501+         PSW   0,0,2,0,X'018'        64-bit External ISR Trap New PSW
00000060   000A0000 00000020                      3502+         PSW   0,0,2,0,X'020'        64-bit Supervisor Call ISR Trap New PSW
00000068   000A0000 00000028                      3503+         PSW   0,0,2,0,X'028'        64-bit Program ISR Trap New PSW
00000070   000A0000 00000030                      3504+         PSW   0,0,2,0,X'030'        64-bit Machine Check Trap New PSW
00000078   000A0000 00000038                      3505+         PSW   0,0,2,0,X'038'        64-bit Input/Output Trap New PSW
00000080                       00000080  00000200 3506+         ORG   TRE01TST+512


                                                  3508 ******************************************************************
                                                  3509 *          Create IPL (restart) PSW
                                                  3510 ******************************************************************

                                                  3512          ASAIPL    IA=BEGIN
                               00000000  000021FF 3513+TRE01TST CSECT
00000200                       00000200  00000000 3514+         ORG   TRE01TST
00000000   00080000 00000200                      3515+         PSW   0,0,0,0,BEGIN,24
00000008                       00000008  00000200 3516+         ORG   TRE01TST+512     Reset CSECT to end of assigned storage area
                               00000000  000021FF 3517+TRE01TST CSECT
```

```
 LOC        OBJECT CODE      ADDR1     ADDR2     STMT

                                                3519 ***********************************************************************
                                                3520 *               The actual "TRE01TST" program itself...
                                                3521 ***********************************************************************
                                                3522 *
                                                3523 *   Architecture Mode: 390
                                                3524 *   Addressing Mode:   31-bit
                                                3525 *   Register Usage:
                                                3526 *
                                                3527 *    R0         (work)
                                                3528 *    R1         I/O device used by ENADEV and RAWIO macros
                                                3529 *    R2         First base register
                                                3530 *    R3         IOCB pointer for ENADEV and RAWIO macros
                                                3531 *    R4         IO work register used by ENADEV and RAWIO
                                                3532 *    R5-R7      (work)
                                                3533 *    R8         ORB pointer
                                                3534 *    R9         Second base register
                                                3535 *    R10-R13    (work)
                                                3536 *    R14        Subroutine call
                                                3537 *    R15        Secondary Subroutine call or work
                                                3538 *
                                                3539 ***********************************************************************
00000200                    00000000            3541         USING  ASA,R0           Low core addressability
00000200                    00000200            3542         USING  BEGIN,R2         FIRST Base Register
00000200                    00001200            3543         USING  BEGIN+4096,R9    SECOND Base Register

00000200  0520                                  3545 BEGIN   BALR   R2,0             Initalize FIRST base register
00000202  0620                                  3546         BCTR   R2,0             Initalize FIRST base register
00000204  0620                                  3547         BCTR   R2,0             Initalize FIRST base register
00000206  5020 20CC            000002CC          3548         ST     R2,SAVER2

0000020A  4190 2800            00000800          3550         LA     R9,2048(,R2)     Initialize SECOND base register
0000020E  4190 9800            00000800          3551         LA     R9,2048(,R9)     Initialize SECOND base register
                                                3552 *
                                                3553 **      Run the tests...
                                                3554 *
00000212  45E0 202C            0000022C          3555         BAL    R14,TEST01       Test TRE   instruction
                                                3556 *
```

```
  LOC        OBJECT CODE     ADDR1     ADDR2     STMT

                                                 3558 **********************************************************************
                                                 3559 *        Test for normal or unexpected test completion...
                                                 3560 **********************************************************************

00000216   950A 9FFE                   000021FE  3562         CLI   TESTNUM,X'0A'   Did we end on expected test?
0000021A   4770 2110                   00000310  3563         BNE   FAILTEST        No?! Then FAIL the test!

0000021E   9502 9FFF                   000021FF  3565         CLI   SUBTEST,X'02'   Did we end on expected SUB-test?
00000222   4770 2110                   00000310  3566         BNE   FAILTEST        No?! Then FAIL the test!

00000226   47F0 20E0                   000002E0  3568         B     EOJ             Yes, then normal completion!
```

```
  LOC        OBJECT CODE      ADDR1      ADDR2     STMT

                                                  3570 *****************************************************************************
                                                  3571 *         TEST01                    Test TRE instruction
                                                  3572 *****************************************************************************
0000022C                                          3574 TEST01    DS    0F
                                                  3575
0000022C  5010 20C8                    000002C8   3576           ST    R1,SAVER1          Save register 1
00000230  18F2                                    3577           LR    R15,R2             Save first base register
                                                  3578
00000232                                          3579           DROP  R2                 Temporarily drop addressability
00000232                      00000200            3580           USING BEGIN,R15          Establish temporary addressability
                                                  3581 *
00000232  4150 F12C                    0000032C   3582           LA    R5,TRECTL          Point R5 --> testing control table
00000236                      00000000            3583           USING TRETEST,R5         What each table entry looks like
                                                  3584 *
          00000236  00000001                      3585 TST1LOOP EQU   *
                                                  3586 *
00000236  4360 5000                    00000000   3587           IC    R6,TNUM            Set test number
0000023A  4260 9FFE                    000021FE   3588           STC   r6,TESTNUM
                                                  3589 *
                                                  3590 **        Initialize operand data  (move data to testing address)
                                                  3591 *
0000023E  58A0 500C                    0000000C   3592           L     R10,OP1WHERE       Where to move operand-1 data to
00000242  58B0 5010                    00000010   3593           L     R11,OP1LEN          operand-1 length
00000246  5860 5004                    00000004   3594           L     R6,OP1DATA         Where op1 data is right now
0000024A  5870 5010                    00000010   3595           L     R7,OP1LEN          How much of it there is
0000024E  0EA6                                    3596           MVCL  R10,R6
                                                  3597 *
00000250  58C0 5014                    00000014   3598           L     R12,OP2WHERE       Where to move operand-2 data to
00000254  58D0 F120                    00000320   3599           L     R13,=A(OP2LEN)     How much of it there is
00000258  5860 5008                    00000008   3600           L     R6,OP2DATA         Where op2 data is right now
0000025C  5870 F120                    00000320   3601           L     R7,=A(OP2LEN)          How much of it there is
00000260  0EC6                                    3602           MVCL  R12,R6
                                                  3603 *
00000262  4300 5001                    00000001   3604           IC    R0,TBYTE           Set test byte


                                                  3606 *
                                                  3607 **        Execute TRE instruction and check for expected condition code
                                                  3608 *
00000266  9200 9FFF                    000021FF   3609           MVI   SUBTEST,X'00'      (primary TRE)
                                                  3610
0000026A  5870 5018                    00000018   3611           L     R7,FAILMASK        (failure CC)
0000026E  8970 0004                    00000004   3612           SLL   R7,4               (shift to BC instr CC position)
                                                  3613
00000272  98AC 500C                    0000000C   3614           LM    R10,R12,OPSWHERE    get TRE operands
00000276  B2A5 00AC                                3615 TREMORE   TRE   R10,R12             TRE...
0000027A  4470 F0C2                    000002C2   3616           EX    R7,TREBC               fail if..not an expected cc?
0000027E  4710 F076                    00000276   3617           BC    B'0001',TREMORE          not finished
                                                  3618
                                                  3619 *
                                                  3620 **        Verify end conditions R10 and expected main store
```

```
  LOC        OBJECT CODE      ADDR1       ADDR2     STMT

                                                    3621 *        (last 4 bytes)
                                                    3622 *
00000282   5860 501C                     0000001C   3623              L      R6,ENDREG
                                                    3624
00000286   9201 9FFF                     000021FF   3625              MVI    SUBTEST,X'01'      (R10 result)
0000028A   15A6                                     3626              CLR    R10,R6             R10 correct?
0000028C   4770 F0B6                     000002B6   3627              BNE    TREFAIL            No, FAILTEST!
                                                    3628
00000290   9202 9FFF                     000021FF   3629              MVI    SUBTEST,X'02'      (end store)
00000294   186A                                     3630              LR     R6,R10
00000296   5B60 F124                     00000324   3631              S      R6,=F'4'
0000029A   D503 5020 6000   00000020     00000000   3632              CLC    ENDSTOR,0(R6)      end storage correct?
000002A0   4770 F0B6                     000002B6   3633              BNE    TREFAIL            No, FAILTEST!
                                                    3634
                                                    3635 *
000002A4   4150 5024                     00000024   3636              LA     R5,TRENEXT         Go on to next table entry
000002A8   D503 F128 5000   00000328     00000000   3637              CLC    =F'0',0(R5)        End of table?
000002AE   4770 F036                     00000236   3638              BNE    TST1LOOP           No, loop...
000002B2   47F0 F0BA                     000002BA   3639              B      TREDONE            Done! (success!)
                                                    3640
000002B6   41E0 F110                     00000310   3641 TREFAIL      LA     R14,FAILTEST       Unexpected results!
000002BA   5810 F0C8                     000002C8   3642 TREDONE      L      R1,SAVER1          Restore register 1
000002BE   182F                                     3643              LR     R2,R15             Restore first base register
000002C0   07FE                                     3644              BR     R14                Return to caller or FAILTEST
                                                    3645
000002C2   4700 F0B6                     000002B6   3646 TREBC        BC     0,TREFAIL          (fail if unexpected condition code)
                                                    3647
000002C8   00000000                                 3648 SAVER1       DC     F'0'
000002CC   00000000                                 3649 SAVER2       DC     F'0'
000002D0   00000000                                 3650 SAVER5       DC     F'0'
000002D8   00000000 00000000                        3651 SAVETRT      DC     D'0'               (saved R1/R2 from TRT results)
                                                    3652
000002E0                                            3653              DROP   R5
000002E0                                            3654              DROP   R15
000002E0                        00000200            3655              USING  BEGIN,R2
```

```
  LOC         OBJECT CODE      ADDR1    ADDR2    STMT

                                                 3657 ****************************************************************************
                                                 3658 *         Normal completion or Abnormal termination PSWs
                                                 3659 ****************************************************************************


                                                 3661 EOJ       DWAITEND LOAD=YES          Normal completion
000002E0                                         3663+EOJ       DS     0H
000002E0   8200 20E8                  000002E8   3664+         LPSW  DWAT0008
000002E8   000A0000 00000000                     3665+DWAT0008 PSW   0,0,2,0,X'000000'


                                                 3667 FAILDEV   DWAIT LOAD=YES,CODE=01     ENADEV failed
000002F0                                         3668+FAILDEV   DS     0H
000002F0   8200 20F8                  000002F8   3669+         LPSW  DWAT0009
000002F8   000A0000 00010001                     3670+DWAT0009 PSW   0,0,2,0,X'010001'


                                                 3672 FAILIO    DWAIT LOAD=YES,CODE=02     RAWIO failed
00000300                                         3673+FAILIO    DS     0H
00000300   8200 2108                  00000308   3674+         LPSW  DWAT0010
00000308   000A0000 00010002                     3675+DWAT0010 PSW   0,0,2,0,X'010002'


                                                 3677 FAILTEST DWAIT LOAD=YES,CODE=BAD     Abnormal termination
00000310                                         3678+FAILTEST DS     0H
00000310   8200 2118                  00000318   3679+         LPSW  DWAT0011
00000318   000A0000 00010BAD                     3680+DWAT0011 PSW   0,0,2,0,X'010BAD'



                                                 3682 ****************************************************************************
                                                 3683 *         Working Storage
                                                 3684 ****************************************************************************

00000320                                         3686           LTORG ,                   Literals pool
00000320   00000100                              3687                 =A(OP2LEN)
00000324   00000004                              3688                 =F'4'
```

```
  LOC      OBJECT CODE      ADDR1     ADDR2     STMT

00000328  00000000                              3689                =F'0'

                           00000400  00000001  3691 K        EQU    1024              One KB
                           00001000  00000001  3692 PAGE     EQU    (4*K)             Size of one page
                           00010000  00000001  3693 K64      EQU    (64*K)            64 KB
                           00100000  00000001  3694 MB       EQU    (K*K)              1 MB

                           000021FE  00000001  3696 TESTADDR EQU    (2*PAGE+X'200'-2)  Where test/subtest numbers will go
```

```
  LOC       OBJECT CODE    ADDR1     ADDR2    STMT

                                             3698 ****************************************************************************
                                             3699 *          TRETEST DSECT
                                             3700 ****************************************************************************

                                             3702 TRETEST  DSECT ,

00000000   00                                3704 TNUM     DC    X'00'          TRE table Number
00000001   00                                3705 TBYTE    DC    X'00'          TRE Testbyte
00000002   00                                3706          DC    X'00'
00000003   00                                3707          DC    X'00'

00000004   00000000                          3709 OP1DATA  DC    A(0)           Pointer to Operand-1 data
00000008   00000000                          3710 OP2DATA  DC    A(0)           Pointer to Operand-2 data
                                             3711
           0000000C  00000001               3712 OPSWHERE EQU   *              Where TRE Operands are located
0000000C   00000000                          3713 OP1WHERE DC    A(0)           Where Operand-1 data should be placed
00000010   00000000                          3714 OP1LEN   DC    F'0'           How much data is there - 1
00000014   00000000                          3715 OP2WHERE DC    A(0)           Where Operand-2 data should be placed
           00000100  00000001               3716 OP2LEN   EQU   256            Operand-2 is always 256

00000018   00000000                          3718 FAILMASK DC    A(0)           Failure Branch on Condition mask

0000001C   00000000                          3720 ENDREG   DC    A(0)           Ending R10 register value
00000020   00000000                          3721 ENDSTOR  DC    XL4'00'        Ending TRE main store value

           00000024  00000001               3723 TRENEXT  EQU   *              Start of next table entry...



           00000000  000021FF               3725 TRE01TST CSECT ,
```

```
  LOC        OBJECT CODE      ADDR1     ADDR2     STMT

                                                  3727 ***********************************************************************
                                                  3728 *         TRE Testing Control tables    (ref: TRETEST DSECT)
                                                  3729 ***********************************************************************
                                                  3730         PRINT DATA
0000032C                                          3731 TRECTL  DC    0A(0)    start of table
                                                  3732


0000032C                                          3734 TRE1    DS    0F
0000032C   01000000                               3735         DC    X'01',X'00',X'00',X'00'
00000330   0000049C 00001894                      3736         DC    A(TRTOP10),A(TRTOP20)
00000338   00010000 00000001                      3737         DC    A(00+(1*K64)),A(001),A(MB+(1*K64))
00000340   00110000
00000344   00000007                               3738         DC    A(7) CC0
00000348   00010001 00000000                      3739         DC    A(00+(1*K64)+01),X'00000000'


00000350                                          3741 TRE2    DS    0F
00000350   02000000                               3742         DC    X'02',X'00',X'00',X'00'
00000354   0000049C 00001894                      3743         DC    A(TRTOP10),A(TRTOP20)
0000035C   00020000 00000002                      3744         DC    A(00+(2*K64)),A(002),A(MB+(2*K64))
00000364   00120000
00000368   00000007                               3745         DC    A(7) CC0
0000036C   00020002 00000000                      3746         DC    A(00+(2*K64)+02),X'00000000'


00000374                                          3748 TRE4    DS    0F
00000374   03000000                               3749         DC    X'03',X'00',X'00',X'00'
00000378   0000049C 00001894                      3750         DC    A(TRTOP10),A(TRTOP20)
00000380   00030000 00000004                      3751         DC    A(00+(3*K64)),A(004),A(MB+(3*K64))
00000388   00130000
0000038C   00000007                               3752         DC    A(7) CC0
00000390   00030004 00000000                      3753         DC    A(00+(3*K64)+04),X'00000000'


00000398                                          3755 TRE8    DS    0F
00000398   04000000                               3756         DC    X'04',X'00',X'00',X'00'
0000039C   0000049C 00001894                      3757         DC    A(TRTOP10),A(TRTOP20)
000003A4   00040000 00000008                      3758         DC    A(00+(4*K64)),A(008),A(MB+(4*K64))
000003AC   00140000
000003B0   00000007                               3759         DC    A(7) CC0
000003B4   00040008 00000000                      3760         DC    A(00+(4*K64)+08),X'00000000'
```

```
   LOC        OBJECT CODE      ADDR1     ADDR2     STMT

000003BC                                          3762 TRE256   DS     0F
000003BC   05000000                               3763          DC     X'05',X'00',X'00',X'00'
000003C0   0000049C 00001894                      3764          DC     A(TRTOP10),A(TRTOP20)
000003C8   00050000 00000100                      3765          DC     A(00+(5*K64)),A(256),A(MB+(5*K64))
000003D0   00150000
000003D4   00000007                               3766          DC     A(7) CC0
000003D8   00050100 00000000                      3767          DC     A(00+(5*K64)+256),X'00000000'


000003E0                                          3769 TREBTH   DS     0F
000003E0   06110000                               3770          DC     X'06',X'11',X'00',X'00'
000003E4   00001694 00001994                      3771          DC     A(TRTOP111),A(TRTOP211)
000003EC   0005FFF4 00000100                      3772          DC     A(00+(6*K64)-12),A(256),A(MB+(6*K64)-34) both cross page
000003F4   0015FFDE
000003F8   0000000A                               3773          DC     A(10)   CC1 = stop, scan incomplete or CC=3
000003FC   00060005 00000000                      3774          DC     A(00+(6*K64)-12+X'11'),X'00000000'


00000404                                          3776 TREOP1   DS     0F
00000404   07F00000                               3777          DC     X'07',X'F0',X'00',X'00'
00000408   00001794 00001A94                      3778          DC     A(TRTOP1F0),A(TRTOP2F0)
00000410   0006FFF4 00000100                      3779          DC     A(00+(7*K64)-12),A(256),A(MB+(7*K64)) only op1 crosses
00000418   00170000
0000041C   0000000A                               3780          DC     A(10) CC1 = stopped on last byte  or CC=3
00000420   000700F3 00000000                      3781          DC     A(00+(7*K64)-12+255),X'00000000'


00000428                                          3783 TREOP2   DS     0F
00000428   08110000                               3784          DC     X'08',X'11',X'00',X'00'
0000042C   00001694 00001994                      3785          DC     A(TRTOP111),A(TRTOP211)
00000434   00080000 00000100                      3786          DC     A(00+(8*K64)),A(256),A(MB+(8*K64)-34)    only op2 crosses
0000043C   0017FFDE
00000440   0000000A                               3787          DC     A(10) CC1 = stop, scan incomplete or CC=3
00000444   00080011 00000000                      3788          DC     A(00+(8*K64)+X'11'),X'00000000'


0000044C                                          3790 TRELOP1  DS     0F
0000044C   09000000                               3791          DC     X'09',X'00',X'00',X'00'
00000450   0000049C 00001B94                      3792          DC     A(TRTOP10),A(TRELOP20)
00000458   0008FFF4 00000200                      3793          DC     A(00+(9*K64)-12),A(512),A(MB+(9*K64)) only op1 crosses
00000460   00190000
00000464   00000006                               3794          DC     A(6)  CC0 or CC=3
00000468   000901F4 00000000                      3795          DC     A(00+(9*K64)-12+512),X'00000000'
```

```
  LOC      OBJECT CODE     ADDR1     ADDR2     STMT

00000470                                       3797 TRELOP2  DS    0F
00000470  0A000000                             3798          DC    X'0A',X'00',X'00',X'00'
00000474  0000049C 00001C94                    3799          DC    A(TRTOP10),A(TRELOP21)
0000047C  0009FFF4 000011F8                    3800          DC    A(00+(10*K64)-12),A(4600),A(MB+(10*K64)) op1 crosses 2X
00000484  001A0000
00000488  00000006                             3801          DC    A(6)  CC0 or CC=3
0000048C  000A11EC FFFFFFFF                    3802          DC    A(00+(10*K64)-12+4600),X'FFFFFFFF'


00000494  00000000                             3804          DC    A(0)     end of table
00000498  00000000                             3805          DC    A(0)     end of table
```

```
   LOC         OBJECT CODE      ADDR1      ADDR2      STMT

                                                     3807 ************************************************************************
                                                     3808 *        TRE op1 scan data...
                                                     3809 ************************************************************************

0000049C    78125634 78125634                        3811 TRTOP10   DC      1150XL4'78125634'
000004A4    78125634 78125634
000004AC    78125634 78125634
000004B4    78125634 78125634
000004BC    78125634 78125634
000004C4    78125634 78125634
000004CC    78125634 78125634
000004D4    78125634 78125634
000004DC    78125634 78125634
000004E4    78125634 78125634
000004EC    78125634 78125634
000004F4    78125634 78125634
000004FC    78125634 78125634
00000504    78125634 78125634
0000050C    78125634 78125634
00000514    78125634 78125634
0000051C    78125634 78125634
00000524    78125634 78125634
0000052C    78125634 78125634
00000534    78125634 78125634
0000053C    78125634 78125634
00000544    78125634 78125634
0000054C    78125634 78125634
00000554    78125634 78125634
0000055C    78125634 78125634
00000564    78125634 78125634
0000056C    78125634 78125634
00000574    78125634 78125634
0000057C    78125634 78125634
00000584    78125634 78125634
0000058C    78125634 78125634
00000594    78125634 78125634
0000059C    78125634 78125634
000005A4    78125634 78125634
000005AC    78125634 78125634
000005B4    78125634 78125634
000005BC    78125634 78125634
000005C4    78125634 78125634
000005CC    78125634 78125634
000005D4    78125634 78125634
000005DC    78125634 78125634
000005E4    78125634 78125634
000005EC    78125634 78125634
000005F4    78125634 78125634
000005FC    78125634 78125634
00000604    78125634 78125634
0000060C    78125634 78125634
00000614    78125634 78125634
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  LOC        OBJECT CODE      ADDR1     ADDR2     STMT

0000061C  78125634 78125634
00000624  78125634 78125634
0000062C  78125634 78125634
00000634  78125634 78125634
0000063C  78125634 78125634
00000644  78125634 78125634
0000064C  78125634 78125634
00000654  78125634 78125634
0000065C  78125634 78125634
00000664  78125634 78125634
0000066C  78125634 78125634
00000674  78125634 78125634
0000067C  78125634 78125634
00000684  78125634 78125634
0000068C  78125634 78125634
00000694  78125634 78125634
0000069C  78125634 78125634
000006A4  78125634 78125634
000006AC  78125634 78125634
000006B4  78125634 78125634
000006BC  78125634 78125634
000006C4  78125634 78125634
000006CC  78125634 78125634
000006D4  78125634 78125634
000006DC  78125634 78125634
000006E4  78125634 78125634
000006EC  78125634 78125634
000006F4  78125634 78125634
000006FC  78125634 78125634
00000704  78125634 78125634
0000070C  78125634 78125634
00000714  78125634 78125634
0000071C  78125634 78125634
00000724  78125634 78125634
0000072C  78125634 78125634
00000734  78125634 78125634
0000073C  78125634 78125634
00000744  78125634 78125634
0000074C  78125634 78125634
00000754  78125634 78125634
0000075C  78125634 78125634
00000764  78125634 78125634
0000076C  78125634 78125634
00000774  78125634 78125634
0000077C  78125634 78125634
00000784  78125634 78125634
0000078C  78125634 78125634
00000794  78125634 78125634
0000079C  78125634 78125634
000007A4  78125634 78125634
000007AC  78125634 78125634
000007B4  78125634 78125634
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```
   LOC         OBJECT CODE      ADDR1     ADDR2     STMT

000007BC   78125634 78125634
000007C4   78125634 78125634
000007CC   78125634 78125634
000007D4   78125634 78125634
000007DC   78125634 78125634
000007E4   78125634 78125634
000007EC   78125634 78125634
000007F4   78125634 78125634
000007FC   78125634 78125634
00000804   78125634 78125634
0000080C   78125634 78125634
00000814   78125634 78125634
0000081C   78125634 78125634
00000824   78125634 78125634
0000082C   78125634 78125634
00000834   78125634 78125634
0000083C   78125634 78125634
00000844   78125634 78125634
0000084C   78125634 78125634
00000854   78125634 78125634
0000085C   78125634 78125634
00000864   78125634 78125634
0000086C   78125634 78125634
00000874   78125634 78125634
0000087C   78125634 78125634
00000884   78125634 78125634
0000088C   78125634 78125634
00000894   78125634 78125634
0000089C   78125634 78125634
000008A4   78125634 78125634
000008AC   78125634 78125634
000008B4   78125634 78125634
000008BC   78125634 78125634
000008C4   78125634 78125634
000008CC   78125634 78125634
000008D4   78125634 78125634
000008DC   78125634 78125634
000008E4   78125634 78125634
000008EC   78125634 78125634
000008F4   78125634 78125634
000008FC   78125634 78125634
00000904   78125634 78125634
0000090C   78125634 78125634
00000914   78125634 78125634
0000091C   78125634 78125634
00000924   78125634 78125634
0000092C   78125634 78125634
00000934   78125634 78125634
0000093C   78125634 78125634
00000944   78125634 78125634
0000094C   78125634 78125634
00000954   78125634 78125634
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  LOC         OBJECT CODE      ADDR1     ADDR2     STMT

0000095C   78125634 78125634
00000964   78125634 78125634
0000096C   78125634 78125634
00000974   78125634 78125634
0000097C   78125634 78125634
00000984   78125634 78125634
0000098C   78125634 78125634
00000994   78125634 78125634
0000099C   78125634 78125634
000009A4   78125634 78125634
000009AC   78125634 78125634
000009B4   78125634 78125634
000009BC   78125634 78125634
000009C4   78125634 78125634
000009CC   78125634 78125634
000009D4   78125634 78125634
000009DC   78125634 78125634
000009E4   78125634 78125634
000009EC   78125634 78125634
000009F4   78125634 78125634
000009FC   78125634 78125634
00000A04   78125634 78125634
00000A0C   78125634 78125634
00000A14   78125634 78125634
00000A1C   78125634 78125634
00000A24   78125634 78125634
00000A2C   78125634 78125634
00000A34   78125634 78125634
00000A3C   78125634 78125634
00000A44   78125634 78125634
00000A4C   78125634 78125634
00000A54   78125634 78125634
00000A5C   78125634 78125634
00000A64   78125634 78125634
00000A6C   78125634 78125634
00000A74   78125634 78125634
00000A7C   78125634 78125634
00000A84   78125634 78125634
00000A8C   78125634 78125634
00000A94   78125634 78125634
00000A9C   78125634 78125634
00000AA4   78125634 78125634
00000AAC   78125634 78125634
00000AB4   78125634 78125634
00000ABC   78125634 78125634
00000AC4   78125634 78125634
00000ACC   78125634 78125634
00000AD4   78125634 78125634
00000ADC   78125634 78125634
00000AE4   78125634 78125634
00000AEC   78125634 78125634
00000AF4   78125634 78125634
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  LOC        OBJECT CODE      ADDR1    ADDR2    STMT

00000AFC   78125634 78125634
00000B04   78125634 78125634
00000B0C   78125634 78125634
00000B14   78125634 78125634
00000B1C   78125634 78125634
00000B24   78125634 78125634
00000B2C   78125634 78125634
00000B34   78125634 78125634
00000B3C   78125634 78125634
00000B44   78125634 78125634
00000B4C   78125634 78125634
00000B54   78125634 78125634
00000B5C   78125634 78125634
00000B64   78125634 78125634
00000B6C   78125634 78125634
00000B74   78125634 78125634
00000B7C   78125634 78125634
00000B84   78125634 78125634
00000B8C   78125634 78125634
00000B94   78125634 78125634
00000B9C   78125634 78125634
00000BA4   78125634 78125634
00000BAC   78125634 78125634
00000BB4   78125634 78125634
00000BBC   78125634 78125634
00000BC4   78125634 78125634
00000BCC   78125634 78125634
00000BD4   78125634 78125634
00000BDC   78125634 78125634
00000BE4   78125634 78125634
00000BEC   78125634 78125634
00000BF4   78125634 78125634
00000BFC   78125634 78125634
00000C04   78125634 78125634
00000C0C   78125634 78125634
00000C14   78125634 78125634
00000C1C   78125634 78125634
00000C24   78125634 78125634
00000C2C   78125634 78125634
00000C34   78125634 78125634
00000C3C   78125634 78125634
00000C44   78125634 78125634
00000C4C   78125634 78125634
00000C54   78125634 78125634
00000C5C   78125634 78125634
00000C64   78125634 78125634
00000C6C   78125634 78125634
00000C74   78125634 78125634
00000C7C   78125634 78125634
00000C84   78125634 78125634
00000C8C   78125634 78125634
00000C94   78125634 78125634
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  LOC        OBJECT CODE      ADDR1     ADDR2     STMT

00000C9C  78125634 78125634
00000CA4  78125634 78125634
00000CAC  78125634 78125634
00000CB4  78125634 78125634
00000CBC  78125634 78125634
00000CC4  78125634 78125634
00000CCC  78125634 78125634
00000CD4  78125634 78125634
00000CDC  78125634 78125634
00000CE4  78125634 78125634
00000CEC  78125634 78125634
00000CF4  78125634 78125634
00000CFC  78125634 78125634
00000D04  78125634 78125634
00000D0C  78125634 78125634
00000D14  78125634 78125634
00000D1C  78125634 78125634
00000D24  78125634 78125634
00000D2C  78125634 78125634
00000D34  78125634 78125634
00000D3C  78125634 78125634
00000D44  78125634 78125634
00000D4C  78125634 78125634
00000D54  78125634 78125634
00000D5C  78125634 78125634
00000D64  78125634 78125634
00000D6C  78125634 78125634
00000D74  78125634 78125634
00000D7C  78125634 78125634
00000D84  78125634 78125634
00000D8C  78125634 78125634
00000D94  78125634 78125634
00000D9C  78125634 78125634
00000DA4  78125634 78125634
00000DAC  78125634 78125634
00000DB4  78125634 78125634
00000DBC  78125634 78125634
00000DC4  78125634 78125634
00000DCC  78125634 78125634
00000DD4  78125634 78125634
00000DDC  78125634 78125634
00000DE4  78125634 78125634
00000DEC  78125634 78125634
00000DF4  78125634 78125634
00000DFC  78125634 78125634
00000E04  78125634 78125634
00000E0C  78125634 78125634
00000E14  78125634 78125634
00000E1C  78125634 78125634
00000E24  78125634 78125634
00000E2C  78125634 78125634
00000E34  78125634 78125634
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  LOC         OBJECT CODE       ADDR1     ADDR2     STMT

00000E3C   78125634 78125634
00000E44   78125634 78125634
00000E4C   78125634 78125634
00000E54   78125634 78125634
00000E5C   78125634 78125634
00000E64   78125634 78125634
00000E6C   78125634 78125634
00000E74   78125634 78125634
00000E7C   78125634 78125634
00000E84   78125634 78125634
00000E8C   78125634 78125634
00000E94   78125634 78125634
00000E9C   78125634 78125634
00000EA4   78125634 78125634
00000EAC   78125634 78125634
00000EB4   78125634 78125634
00000EBC   78125634 78125634
00000EC4   78125634 78125634
00000ECC   78125634 78125634
00000ED4   78125634 78125634
00000EDC   78125634 78125634
00000EE4   78125634 78125634
00000EEC   78125634 78125634
00000EF4   78125634 78125634
00000EFC   78125634 78125634
00000F04   78125634 78125634
00000F0C   78125634 78125634
00000F14   78125634 78125634
00000F1C   78125634 78125634
00000F24   78125634 78125634
00000F2C   78125634 78125634
00000F34   78125634 78125634
00000F3C   78125634 78125634
00000F44   78125634 78125634
00000F4C   78125634 78125634
00000F54   78125634 78125634
00000F5C   78125634 78125634
00000F64   78125634 78125634
00000F6C   78125634 78125634
00000F74   78125634 78125634
00000F7C   78125634 78125634
00000F84   78125634 78125634
00000F8C   78125634 78125634
00000F94   78125634 78125634
00000F9C   78125634 78125634
00000FA4   78125634 78125634
00000FAC   78125634 78125634
00000FB4   78125634 78125634
00000FBC   78125634 78125634
00000FC4   78125634 78125634
00000FCC   78125634 78125634
00000FD4   78125634 78125634
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  LOC         OBJECT CODE     ADDR1     ADDR2     STMT

00000FDC  78125634 78125634
00000FE4  78125634 78125634
00000FEC  78125634 78125634
00000FF4  78125634 78125634
00000FFC  78125634 78125634
00001004  78125634 78125634
0000100C  78125634 78125634
00001014  78125634 78125634
0000101C  78125634 78125634
00001024  78125634 78125634
0000102C  78125634 78125634
00001034  78125634 78125634
0000103C  78125634 78125634
00001044  78125634 78125634
0000104C  78125634 78125634
00001054  78125634 78125634
0000105C  78125634 78125634
00001064  78125634 78125634
0000106C  78125634 78125634
00001074  78125634 78125634
0000107C  78125634 78125634
00001084  78125634 78125634
0000108C  78125634 78125634
00001094  78125634 78125634
0000109C  78125634 78125634
000010A4  78125634 78125634
000010AC  78125634 78125634
000010B4  78125634 78125634
000010BC  78125634 78125634
000010C4  78125634 78125634
000010CC  78125634 78125634
000010D4  78125634 78125634
000010DC  78125634 78125634
000010E4  78125634 78125634
000010EC  78125634 78125634
000010F4  78125634 78125634
000010FC  78125634 78125634
00001104  78125634 78125634
0000110C  78125634 78125634
00001114  78125634 78125634
0000111C  78125634 78125634
00001124  78125634 78125634
0000112C  78125634 78125634
00001134  78125634 78125634
0000113C  78125634 78125634
00001144  78125634 78125634
0000114C  78125634 78125634
00001154  78125634 78125634
0000115C  78125634 78125634
00001164  78125634 78125634
0000116C  78125634 78125634
00001174  78125634 78125634
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   LOC         OBJECT CODE      ADDR1     ADDR2     STMT

0000117C  78125634 78125634
00001184  78125634 78125634
0000118C  78125634 78125634
00001194  78125634 78125634
0000119C  78125634 78125634
000011A4  78125634 78125634
000011AC  78125634 78125634
000011B4  78125634 78125634
000011BC  78125634 78125634
000011C4  78125634 78125634
000011CC  78125634 78125634
000011D4  78125634 78125634
000011DC  78125634 78125634
000011E4  78125634 78125634
000011EC  78125634 78125634
000011F4  78125634 78125634
000011FC  78125634 78125634
00001204  78125634 78125634
0000120C  78125634 78125634
00001214  78125634 78125634
0000121C  78125634 78125634
00001224  78125634 78125634
0000122C  78125634 78125634
00001234  78125634 78125634
0000123C  78125634 78125634
00001244  78125634 78125634
0000124C  78125634 78125634
00001254  78125634 78125634
0000125C  78125634 78125634
00001264  78125634 78125634
0000126C  78125634 78125634
00001274  78125634 78125634
0000127C  78125634 78125634
00001284  78125634 78125634
0000128C  78125634 78125634
00001294  78125634 78125634
0000129C  78125634 78125634
000012A4  78125634 78125634
000012AC  78125634 78125634
000012B4  78125634 78125634
000012BC  78125634 78125634
000012C4  78125634 78125634
000012CC  78125634 78125634
000012D4  78125634 78125634
000012DC  78125634 78125634
000012E4  78125634 78125634
000012EC  78125634 78125634
000012F4  78125634 78125634
000012FC  78125634 78125634
00001304  78125634 78125634
0000130C  78125634 78125634
00001314  78125634 78125634
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  LOC         OBJECT CODE     ADDR1     ADDR2     STMT

0000131C  78125634 78125634
00001324  78125634 78125634
0000132C  78125634 78125634
00001334  78125634 78125634
0000133C  78125634 78125634
00001344  78125634 78125634
0000134C  78125634 78125634
00001354  78125634 78125634
0000135C  78125634 78125634
00001364  78125634 78125634
0000136C  78125634 78125634
00001374  78125634 78125634
0000137C  78125634 78125634
00001384  78125634 78125634
0000138C  78125634 78125634
00001394  78125634 78125634
0000139C  78125634 78125634
000013A4  78125634 78125634
000013AC  78125634 78125634
000013B4  78125634 78125634
000013BC  78125634 78125634
000013C4  78125634 78125634
000013CC  78125634 78125634
000013D4  78125634 78125634
000013DC  78125634 78125634
000013E4  78125634 78125634
000013EC  78125634 78125634
000013F4  78125634 78125634
000013FC  78125634 78125634
00001404  78125634 78125634
0000140C  78125634 78125634
00001414  78125634 78125634
0000141C  78125634 78125634
00001424  78125634 78125634
0000142C  78125634 78125634
00001434  78125634 78125634
0000143C  78125634 78125634
00001444  78125634 78125634
0000144C  78125634 78125634
00001454  78125634 78125634
0000145C  78125634 78125634
00001464  78125634 78125634
0000146C  78125634 78125634
00001474  78125634 78125634
0000147C  78125634 78125634
00001484  78125634 78125634
0000148C  78125634 78125634
00001494  78125634 78125634
0000149C  78125634 78125634
000014A4  78125634 78125634
000014AC  78125634 78125634
000014B4  78125634 78125634
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```
  LOC        OBJECT CODE     ADDR1     ADDR2     STMT

000014BC  78125634 78125634
000014C4  78125634 78125634
000014CC  78125634 78125634
000014D4  78125634 78125634
000014DC  78125634 78125634
000014E4  78125634 78125634
000014EC  78125634 78125634
000014F4  78125634 78125634
000014FC  78125634 78125634
00001504  78125634 78125634
0000150C  78125634 78125634
00001514  78125634 78125634
0000151C  78125634 78125634
00001524  78125634 78125634
0000152C  78125634 78125634
00001534  78125634 78125634
0000153C  78125634 78125634
00001544  78125634 78125634
0000154C  78125634 78125634
00001554  78125634 78125634
0000155C  78125634 78125634
00001564  78125634 78125634
0000156C  78125634 78125634
00001574  78125634 78125634
0000157C  78125634 78125634
00001584  78125634 78125634
0000158C  78125634 78125634
00001594  78125634 78125634
0000159C  78125634 78125634
000015A4  78125634 78125634
000015AC  78125634 78125634
000015B4  78125634 78125634
000015BC  78125634 78125634
000015C4  78125634 78125634
000015CC  78125634 78125634
000015D4  78125634 78125634
000015DC  78125634 78125634
000015E4  78125634 78125634
000015EC  78125634 78125634
000015F4  78125634 78125634
000015FC  78125634 78125634
00001604  78125634 78125634
0000160C  78125634 78125634
00001614  78125634 78125634
0000161C  78125634 78125634
00001624  78125634 78125634
0000162C  78125634 78125634
00001634  78125634 78125634
0000163C  78125634 78125634
00001644  78125634 78125634
0000164C  78125634 78125634
00001654  78125634 78125634
```

     LOC   OBJECT CODE   ADDR1   ADDR2   STMT

0000165C 78125634 78125634
00001664 78125634 78125634
0000166C 78125634 78125634
00001674 78125634 78125634
0000167C 78125634 78125634
00001684 78125634 78125634
0000168C 78125634 78125634

00001694 78125634 78125634   3813 TRTOP111 DC   04XL4'78125634',X'00110000',59XL4'78125634'   (CC1)
0000169C 78125634 78125634
000016A4 00110000 78125634
000016AC 78125634 78125634
000016B4 78125634 78125634
000016BC 78125634 78125634
000016C4 78125634 78125634
000016CC 78125634 78125634
000016D4 78125634 78125634
000016DC 78125634 78125634
000016E4 78125634 78125634
000016EC 78125634 78125634
000016F4 78125634 78125634
000016FC 78125634 78125634
00001704 78125634 78125634
0000170C 78125634 78125634
00001714 78125634 78125634
0000171C 78125634 78125634
00001724 78125634 78125634
0000172C 78125634 78125634
00001734 78125634 78125634
0000173C 78125634 78125634
00001744 78125634 78125634
0000174C 78125634 78125634
00001754 78125634 78125634
0000175C 78125634 78125634
00001764 78125634 78125634
0000176C 78125634 78125634
00001774 78125634 78125634
0000177C 78125634 78125634
00001784 78125634 78125634
0000178C 78125634 78125634

00001794 78125634 78125634   3815 TRTOP1F0 DC   63XL4'78125634',X'000000F0'   (CC1)
0000179C 78125634 78125634
000017A4 78125634 78125634
000017AC 78125634 78125634
000017B4 78125634 78125634
000017BC 78125634 78125634
000017C4 78125634 78125634
000017CC 78125634 78125634
000017D4 78125634 78125634
000017DC 78125634 78125634
000017E4 78125634 78125634

```
  LOC        OBJECT CODE     ADDR1     ADDR2     STMT

000017EC  78125634 78125634
000017F4  78125634 78125634
000017FC  78125634 78125634
00001804  78125634 78125634
0000180C  78125634 78125634
00001814  78125634 78125634
0000181C  78125634 78125634
00001824  78125634 78125634
0000182C  78125634 78125634
00001834  78125634 78125634
0000183C  78125634 78125634
00001844  78125634 78125634
0000184C  78125634 78125634
00001854  78125634 78125634
0000185C  78125634 78125634
00001864  78125634 78125634
0000186C  78125634 78125634
00001874  78125634 78125634
0000187C  78125634 78125634
00001884  78125634 78125634
0000188C  78125634 000000F0
                                                3816
                                                3817
```

```
  LOC        OBJECT CODE      ADDR1     ADDR2    STMT

                                                 3819 ********************************************************************
                                                 3820 *          TRE op2 stop tables...
                                                 3821 ********************************************************************

00001894   00000000 00000000                     3823 TRTOP20  DC      256X'00'                        no stop
0000189C   00000000 00000000
000018A4   00000000 00000000
000018AC   00000000 00000000
000018B4   00000000 00000000
000018BC   00000000 00000000
000018C4   00000000 00000000
000018CC   00000000 00000000
000018D4   00000000 00000000
000018DC   00000000 00000000
000018E4   00000000 00000000
000018EC   00000000 00000000
000018F4   00000000 00000000
000018FC   00000000 00000000
00001904   00000000 00000000
0000190C   00000000 00000000
00001914   00000000 00000000
0000191C   00000000 00000000
00001924   00000000 00000000
0000192C   00000000 00000000
00001934   00000000 00000000
0000193C   00000000 00000000
00001944   00000000 00000000
0000194C   00000000 00000000
00001954   00000000 00000000
0000195C   00000000 00000000
00001964   00000000 00000000
0000196C   00000000 00000000
00001974   00000000 00000000
0000197C   00000000 00000000
00001984   00000000 00000000
0000198C   00000000 00000000

00001994   00000000 00000000                     3825 TRTOP211 DC      17X'00',X'11',238X'00'     stop on X'11'
0000199C   00000000 00000000
000019A4   00110000 00000000
000019AC   00000000 00000000
000019B4   00000000 00000000
000019BC   00000000 00000000
000019C4   00000000 00000000
000019CC   00000000 00000000
000019D4   00000000 00000000
000019DC   00000000 00000000
000019E4   00000000 00000000
000019EC   00000000 00000000
000019F4   00000000 00000000
000019FC   00000000 00000000
00001A04   00000000 00000000
```

```
  LOC        OBJECT CODE    ADDR1     ADDR2    STMT

00001A0C   00000000 00000000
00001A14   00000000 00000000
00001A1C   00000000 00000000
00001A24   00000000 00000000
00001A2C   00000000 00000000
00001A34   00000000 00000000
00001A3C   00000000 00000000
00001A44   00000000 00000000
00001A4C   00000000 00000000
00001A54   00000000 00000000
00001A5C   00000000 00000000
00001A64   00000000 00000000
00001A6C   00000000 00000000
00001A74   00000000 00000000
00001A7C   00000000 00000000
00001A84   00000000 00000000
00001A8C   00000000 00000000

00001A94   00000000 00000000                  3827 TRTOP2F0 DC    240X'00',X'F0',15X'00'    stop on X'F0'
00001A9C   00000000 00000000
00001AA4   00000000 00000000
00001AAC   00000000 00000000
00001AB4   00000000 00000000
00001ABC   00000000 00000000
00001AC4   00000000 00000000
00001ACC   00000000 00000000
00001AD4   00000000 00000000
00001ADC   00000000 00000000
00001AE4   00000000 00000000
00001AEC   00000000 00000000
00001AF4   00000000 00000000
00001AFC   00000000 00000000
00001B04   00000000 00000000
00001B0C   00000000 00000000
00001B14   00000000 00000000
00001B1C   00000000 00000000
00001B24   00000000 00000000
00001B2C   00000000 00000000
00001B34   00000000 00000000
00001B3C   00000000 00000000
00001B44   00000000 00000000
00001B4C   00000000 00000000
00001B54   00000000 00000000
00001B5C   00000000 00000000
00001B64   00000000 00000000
00001B6C   00000000 00000000
00001B74   00000000 00000000
00001B7C   00000000 00000000
00001B84   F0000000 00000000
00001B8C   00000000 00000000

00001B94   FF000000 00000000                  3829 TRELOP20 DC    X'FF',255X'00'
```

```
     LOC        OBJECT CODE      ADDR1     ADDR2     STMT

00001B9C   00000000 00000000
00001BA4   00000000 00000000
00001BAC   00000000 00000000
00001BB4   00000000 00000000
00001BBC   00000000 00000000
00001BC4   00000000 00000000
00001BCC   00000000 00000000
00001BD4   00000000 00000000
00001BDC   00000000 00000000
00001BE4   00000000 00000000
00001BEC   00000000 00000000
00001BF4   00000000 00000000
00001BFC   00000000 00000000
00001C04   00000000 00000000
00001C0C   00000000 00000000
00001C14   00000000 00000000
00001C1C   00000000 00000000
00001C24   00000000 00000000
00001C2C   00000000 00000000
00001C34   00000000 00000000
00001C3C   00000000 00000000
00001C44   00000000 00000000
00001C4C   00000000 00000000
00001C54   00000000 00000000
00001C5C   00000000 00000000
00001C64   00000000 00000000
00001C6C   00000000 00000000
00001C74   00000000 00000000
00001C7C   00000000 00000000
00001C84   00000000 00000000
00001C8C   00000000 00000000
                                           3830
00001C94   FFFFFFFF FFFFFFFF               3831 TRELOP21 DC     256X'FF'
00001C9C   FFFFFFFF FFFFFFFF
00001CA4   FFFFFFFF FFFFFFFF
00001CAC   FFFFFFFF FFFFFFFF
00001CB4   FFFFFFFF FFFFFFFF
00001CBC   FFFFFFFF FFFFFFFF
00001CC4   FFFFFFFF FFFFFFFF
00001CCC   FFFFFFFF FFFFFFFF
00001CD4   FFFFFFFF FFFFFFFF
00001CDC   FFFFFFFF FFFFFFFF
00001CE4   FFFFFFFF FFFFFFFF
00001CEC   FFFFFFFF FFFFFFFF
00001CF4   FFFFFFFF FFFFFFFF
00001CFC   FFFFFFFF FFFFFFFF
00001D04   FFFFFFFF FFFFFFFF
00001D0C   FFFFFFFF FFFFFFFF
00001D14   FFFFFFFF FFFFFFFF
00001D1C   FFFFFFFF FFFFFFFF
00001D24   FFFFFFFF FFFFFFFF
00001D2C   FFFFFFFF FFFFFFFF
```

```
  LOC       OBJECT CODE      ADDR1     ADDR2    STMT

00001D34  FFFFFFFF FFFFFFFF
00001D3C  FFFFFFFF FFFFFFFF
00001D44  FFFFFFFF FFFFFFFF
00001D4C  FFFFFFFF FFFFFFFF
00001D54  FFFFFFFF FFFFFFFF
00001D5C  FFFFFFFF FFFFFFFF
00001D64  FFFFFFFF FFFFFFFF
00001D6C  FFFFFFFF FFFFFFFF
00001D74  FFFFFFFF FFFFFFFF
00001D7C  FFFFFFFF FFFFFFFF
00001D84  FFFFFFFF FFFFFFFF
00001D8C  FFFFFFFF FFFFFFFF
```

```
  LOC        OBJECT CODE      ADDR1     ADDR2     STMT

                                              3833 *******************************************************************************
                                              3834 *        Fixed storage locations
                                              3835 *******************************************************************************


00001D94                      00001D94  000021FE  3837            ORG    TRE01TST+TESTADDR      (s/b @ X'21FE', X'21FF')

000021FE   00                                 3839 TESTNUM  DC     X'00'      Test number of active test
000021FF   00                                 3840 SUBTEST  DC     X'00'      Active test sub-test number



                                              3842 *******************************************************************************
                                              3843 *        (other DSECTS needed by SATK)
                                              3844 *******************************************************************************

                                              3846            DSECTS PRINT=OFF,NAME=(ASA,SCHIB,CCW0,CCW1,CSW)





                                              4122            PRINT ON

                                              4124 *******************************************************************************
                                              4125 *        Register equates
                                              4126 *******************************************************************************

                              00000000  00000001  4128 R0       EQU    0
                              00000001  00000001  4129 R1       EQU    1
                              00000002  00000001  4130 R2       EQU    2
                              00000003  00000001  4131 R3       EQU    3
                              00000004  00000001  4132 R4       EQU    4
                              00000005  00000001  4133 R5       EQU    5
```

```
 LOC        OBJECT CODE      ADDR1     ADDR2     STMT

                            00000006  00000001  4134 R6       EQU   6
                            00000007  00000001  4135 R7       EQU   7
                            00000008  00000001  4136 R8       EQU   8
                            00000009  00000001  4137 R9       EQU   9
                            0000000A  00000001  4138 R10      EQU   10
                            0000000B  00000001  4139 R11      EQU   11
                            0000000C  00000001  4140 R12      EQU   12
                            0000000D  00000001  4141 R13      EQU   13
                            0000000E  00000001  4142 R14      EQU   14
                            0000000F  00000001  4143 R15      EQU   15



                                                4145          END
```

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
ASA	4	000000	512	3850	3541
ASBEGIN	U	000000	1	3851	3856 3898 3934 3943 3961 3968 3974 3978 3982 3988 4005
ASEND	U	000200	1	4004	4005
ASLENGTH	U	000200	1	4005	
BCEXTCOD	H	00001A	2	3868	
BCIOCOD	H	00003A	2	3876	
BCMCKCOD	H	000032	2	3874	
BCPGMCOD	H	00002A	2	3872	
BCSVCCOD	H	000022	2	3870	
BEGIN	I	000200	2	3545	3515 3542 3543 3580 3655
CAW	F	000048	4	3880	
CAWADDR	R	000049	3	3883	
CAWKEY	X	000048	1	3881	
CAWSUSP	U	000008	1	3882	
CCW0	4	000000	8	4009	4015
CCW0ADDR	R	000001	3	4011	
CCW0CNT	H	000006	2	4014	
CCW0CODE	X	000000	1	4010	
CCW0FLGS	X	000004	1	4012	
CCW0L	U	000008	1	4015	
CCW1	4	000000	8	4027	4032
CCW1ADDR	A	000004	4	4031	
CCW1CNT	H	000002	2	4030	
CCW1CODE	X	000000	1	4028	
CCW1FLGS	X	000001	1	4029	
CCW1L	U	000008	1	4032	
CCWCC	U	000040	1	4019	
CCWCD	U	000080	1	4018	
CCWIDA	U	000004	1	4023	
CCWPCI	U	000008	1	4022	
CCWSKIP	U	000010	1	4021	
CCWSLI	U	000020	1	4020	
CCWSUSP	U	000002	1	4024	
CHANID	F	0000A8	4	3935	
CODE	2	000000	8704	3496	
CPUID	U	00031B	1	4007	
CSW	F	000040	8	3879	
CSWATTN	U	000080	1	4049	
CSWBUSY	U	000010	1	4052	
CSWCCTL	U	000004	1	4064	
CSWCCW	R	000001	3	4046	
CSWCDAT	U	000008	1	4063	
CSWCE	U	000008	1	4053	
CSWCHNG	U	000001	1	4066	
CSWCNT	H	000006	2	4068	
CSWCS	X	000005	1	4058	
CSWCUE	U	000020	1	4051	
CSWDCC0	U	000000	1	4042	
CSWDCC1	U	000001	1	4043	
CSWDCC3	U	000003	1	4044	
CSWDCCM	U	000003	1	4041	
CSWDE	U	000004	1	4054	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
CSWFLAG	X	000000	1	4036	
CSWFMT	4	000000	8	4035	4069
CSWFMTL	U	000008	1	4069	
CSWICTL	U	000002	1	4065	
CSWIL	U	000040	1	4060	
CSWKEYM	U	0000F0	1	4037	
CSWLOG	U	000004	1	4040	
CSWPCI	U	000080	1	4059	
CSWPRGM	U	000020	1	4061	
CSWPROT	U	000010	1	4062	
CSWSM	U	000040	1	4050	
CSWSUSP	U	000008	1	4039	
CSWUC	U	000002	1	4055	
CSWUS	X	000004	1	4048	
CSWUX	U	000001	1	4056	
DWAT0008	3	0002E8	8	3665	3664
DWAT0009	3	0002F8	8	3670	3669
DWAT0010	3	000308	8	3675	3674
DWAT0011	3	000318	8	3680	3679
ENDREG	A	00001C	4	3720	3623
ENDSTOR	X	000020	4	3721	3632
EOJ	H	0002E0	2	3663	3568
EXTCPUAD	H	000084	2	3900	
EXTICODE	H	000086	2	3901	
EXTIPARM	F	000080	4	3899	
EXTNPSW	F	000058	8	3889	
EXTOPSW	F	000018	8	3861	3867
FAILDEV	H	0002F0	2	3668	
FAILIO	H	000300	2	3673	
FAILMASK	A	000018	4	3718	3611
FAILTEST	H	000310	2	3678	3563 3566 3641
IMAGE	1	000000	8704	0	
IOELADDR	F	0000AC	4	3936	
IOICODE	H	0000BA	2	3941	
IOIID	F	0000C0	4	3946	
IOIPARM	F	0000BC	4	3945	
IONPSW	F	000078	8	3893	
IOOPSW	F	000038	8	3865	3875
IOSSID	F	0000B8	4	3944	
IPLCCW1	F	000008	8	3853	
IPLCCW2	F	000010	8	3854	
IPLPSW	F	000000	8	3852	
K	U	000400	1	3691	3692 3693 3694
K64	U	010000	1	3693	3737 3739 3744 3746 3751 3753 3758 3760 3765 3767 3772 3774 3779 3781
					3786 3788 3793 3795 3800 3802
LCHANLOG	F	0000B0	4	3937	
MB	U	100000	1	3694	3737 3744 3751 3758 3765 3772 3779 3786 3793 3800
MCKLOG	F	000100	4	3969	
MCKNPSW	F	000070	8	3892	
MCKOPSW	F	000030	8	3864	3873
MEASUREB	X	0000B9	1	3940	
MKARCHMD	X	0000A3	1	3928	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES	
MKARS	F	000120	4	3967		
MKCLKCMP	F	0000E0	8	3953		
MKCPUTIM	F	0000D8	8	3952		
MKCRS	F	0001C0	4	3972		
MKDMGCOD	F	0000F4	4	3956		
MKFAILA	F	0000F8	4	3958		
MKFPRS	D	000160	8	3970		
MKICODE	F	0000E8	4	3954		
MKLOGOUT	F	000100	4	3960		
MKMODEL	F	0000FC	4	3959		
MKXSAA	F	0000D4	4	3951		
MONCLS	H	000094	2	3916		
MONCODE	F	00009C	4	3923		
MONNUMBR	X	000095	1	3918		
MPGACCID	X	0000A2	1	3926		
NKGRS	F	000180	4	3971		
OP1DATA	A	000004	4	3709	3594	
OP1LEN	F	000010	4	3714	3593	3595
OP1WHERE	A	00000C	4	3713	3592	
OP2DATA	A	000008	4	3710	3600	
OP2LEN	U	000100	1	3716	3599	
OP2WHERE	A	000014	4	3715	3598	
OPSWHERE	U	00000C	1	3712	3614	
PAGE	U	001000	1	3692	3696	
PCFETO	A	0000C4	4	3947		
PERACCID	X	0000A1	1	3925		
PERADDR	F	000098	4	3922		
PERCODE	X	000096	1	3919		
PERCODMK	U	0000F0	1	3920		
PGMACCID	X	0000A0	1	3924		
PGMDXC	F	000090	4	3914		
PGMICODE	H	00008E	2	3913		
PGMIID	F	00008C	4	3909		
PGMIILC	X	00008D	1	3911		
PGMIILCM	U	00000C	1	3912		
PGMNPSW	F	000068	8	3891		
PGMOPSW	F	000028	8	3863	3871	
PGMTRX	F	000090	4	3915		
PMCW1_0	X	000004	1	4076		
PMCW1_8	X	000005	1	4079		
PMCWB	U	000004	1	4111		
PMCWCHP0	X	000010	1	4100		
PMCWCHP1	X	000011	1	4101		
PMCWCHP2	X	000012	1	4102		
PMCWCHP3	X	000013	1	4103		
PMCWCHP4	X	000014	1	4104		
PMCWCHP5	X	000015	1	4105		
PMCWCHP6	X	000016	1	4106		
PMCWCHP7	X	000017	1	4107		
PMCWDNUM	H	000006	2	4091		
PMCWE	U	000080	1	4080		
PMCWEXC	X	00001B	1	4110		

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
PMCWIP	F	000000	4	4075	
PMCWISCM	U	000038	1	4077	
PMCWLM	U	000060	1	4081	
PMCWLMG	U	000020	1	4082	
PMCWLML	U	000040	1	4083	
PMCWLPM	X	000008	1	4093	
PMCWLPUM	X	00000A	1	4095	
PMCWM	U	000004	1	4087	
PMCWMBI	H	00000C	2	4097	
PMCWMM	U	000018	1	4084	
PMCWMMC	U	000008	1	4086	
PMCWMME	U	000010	1	4085	
PMCWPAM	X	00000F	1	4099	
PMCWPIM	X	00000B	1	4096	
PMCWPNOM	X	000009	1	4094	
PMCWPOM	X	00000E	1	4098	
PMCWRES1	X	000018	4	4108	
PMCWRES2	X	000018	3	4109	
PMCWS	U	000001	1	4113	
PMCWT	U	000002	1	4088	
PMCWV	U	000001	1	4089	
PMCWX	U	000002	1	4112	
R0	U	000000	1	4128	3541 3604
R1	U	000001	1	4129	3576 3642
R10	U	00000A	1	4138	3592 3596 3614 3615 3626 3630
R11	U	00000B	1	4139	3593
R12	U	00000C	1	4140	3598 3602 3614 3615
R13	U	00000D	1	4141	3599
R14	U	00000E	1	4142	3555 3641 3644
R15	U	00000F	1	4143	3577 3580 3643 3654
R2	U	000002	1	4130	3542 3545 3546 3547 3548 3550 3577 3579 3643 3655
R3	U	000003	1	4131	
R4	U	000004	1	4132	
R5	U	000005	1	4133	3582 3583 3636 3637 3653
R6	U	000006	1	4134	3587 3588 3594 3596 3600 3602 3623 3626 3630 3631 3632
R7	U	000007	1	4135	3595 3601 3611 3612 3616
R8	U	000008	1	4136	
R9	U	000009	1	4137	3543 3550 3551
RSTNPSW	F	000000	8	3857	
RSTOPSW	F	000008	8	3858	
SAVER1	F	0002C8	4	3648	3576 3642
SAVER2	F	0002CC	4	3649	3548
SAVER5	F	0002D0	4	3650	
SAVETRT	D	0002D8	8	3651	
SCANOUT	X	000080	1	3895	3896
SCANOUTL	U	000000	1	3896	
SCHIB	4	000000	52	4072	4119
SCHIBL	U	000034	1	4119	
SCHMBA	A	000028	8	4117	
SCHMDA1	X	000030	4	4118	
SCHMDA3	X	000028	12	4116	
SCHPMCW	X	000000	28	4074	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
SCHSCSW	X	00001C	12	4115	
SSARCHMD	X	0000A3	1	3927	
SSARS	F	000120	4	3983	
SSCLKCMP	F	0000E0	8	3977	
SSCPUTIM	F	0000D8	8	3976	
SSCRS	F	0001C0	4	3986	
SSFPRS	D	000160	8	3984	
SSGRS	F	000180	4	3985	
SSMODEL	F	00010C	4	3981	
SSPREFIX	F	000108	4	3980	
SSPSW	F	000100	8	3979	
SSXSAA	A	0000D4	4	3975	
STFLDATA	F	0000C8	4	3948	
SUBTEST	X	0021FF	1	3840	3565 3609 3625 3629
SVCICODE	H	00008A	2	3907	
SVCIID	F	000088	4	3903	
SVCIILC	X	000089	1	3905	
SVCIILCM	U	00000C	1	3906	
SVCNPSW	F	000060	8	3890	
SVCOPSW	F	000020	8	3862	3869
TBYTE	X	000001	1	3705	3604
TEST01	F	00022C	4	3574	3555
TESTADDR	U	0021FE	1	3696	3837
TESTNUM	X	0021FE	1	3839	3562 3588
TIMER	F	000050	4	3886	
TNUM	X	000000	1	3704	3587
TRE01TST	J	000000	8704	3496	3499 3506 3514 3516 3837
TRE1	F	00032C	4	3734	
TRE2	F	000350	4	3741	
TRE256	F	0003BC	4	3762	
TRE4	F	000374	4	3748	
TRE8	F	000398	4	3755	
TREBC	I	0002C2	4	3646	3616
TREBTH	F	0003E0	4	3769	
TRECTL	A	00032C	4	3731	3582
TREDONE	I	0002BA	4	3642	3639
TREFAIL	I	0002B6	4	3641	3627 3633 3646
TRELOP1	F	00044C	4	3790	
TRELOP2	F	000470	4	3797	
TRELOP20	X	001B94	1	3829	3792
TRELOP21	X	001C94	1	3831	3799
TREMORE	I	000276	4	3615	3617
TRENEXT	U	000024	1	3723	3636
TREOP1	F	000404	4	3776	
TREOP2	F	000428	4	3783	
TRETEST	4	000000	36	3702	3583
TRTOP10	X	00049C	4	3811	3736 3743 3750 3757 3764 3792 3799
TRTOP111	X	001694	4	3813	3771 3785
TRTOP1F0	X	001794	4	3815	3778
TRTOP20	X	001894	1	3823	3736 3743 3750 3757 3764
TRTOP211	X	001994	1	3825	3771 3785
TRTOP2F0	X	001A94	1	3827	3778

```
       SYMBOL          TYPE   VALUE    LENGTH   DEFN   REFERENCES

TST1LOOP             U     000236        1   3585   3638
TTDES               F     000054        4   3887
UA0                 F     000010        8   3859
UA1                 F     00004C        4   3884
UA2                 F     0000A4        4   3929
UA3                 F     0000B4        4   3938
UA4                 X     0000B8        1   3939
UA5                 X     0000CC        8   3949
UA6                 X     0000EC        8   3955
UA7                 F     000118        8   3966
UA8                 X     000180       32   3995
ZBRKADDR            A     000110        8   3965
ZEMONCNT            F     00010C        4   3964
ZEMONCTR            A     000100        8   3962
ZEMONSIZ            F     000108        4   3963
ZEXTNPSW            X     0001B0       16   3998
ZEXTOPSW            X     000130       16   3990
ZIONPSW             X     0001F0       16   4002
ZIOOPSW             X     000170       16   3994
ZMCKNPSW            X     0001E0       16   4001
ZMCKOPSW            X     000160       16   3993
ZMKFAILA            F     0000F8        8   3957
ZMONCODE            F     0000B0        8   3932
ZPGMNPSW            X     0001D0       16   4000
ZPGMOPSW            X     000150       16   3992
ZPGMTRX             F     0000A8        8   3931
ZRSTNPSW            X     0001A0       16   3997
ZRSTOPSW            X     000120       16   3989
ZSASDISP            U     0011C0        1   4003
ZSVCNPSW            X     0001C0       16   3999
ZSVCOPSW            X     000140       16   3991
=A(OP2LEN)          A     000320        4   3687   3599   3601
=F'0'               F     000328        4   3689   3637
=F'4'               F     000324        4   3688   3631
```

```
 MACRO      DEFN  REFERENCES

ANTR        111
APROB       243
ARCHIND     403   3433
ARCHLVL     544   3432
ASAIPL      670   3512
ASALOAD     750   3495
ASAREA      805   3849
ASAZAREA    990
CPUWAIT    1073
DSECTS     1399   3846
DWAIT      1602   3662    3667    3672    3677
DWAITEND   1659   3661
ENADEV     1667
ESA390     1767
IOCB       1778
IOCBDS     1954
IOFMT      1988   4008    4026    4034    4071
IOINIT     2326
IOTRFR     2367
ORB        2415
POINTER    2604
PSWFMT     2632
RAWAIT     2766
RAWIO      2862
SIGCPU     3020
SMMGR      3078
SMMGRB     3178
TRAP128    3227
TRAP64     3204   3497    3500
TRAPS      3240
ZARCH      3314
ZEROH      3326
ZEROL      3354
ZEROLH     3382
ZEROLL     3405
```

```
     DESC        SYMBOL   SIZE     POS         ADDR

Entry: 0

Image       IMAGE    8704   0000-21FF   0000-21FF
  Region    CODE     8704   0000-21FF   0000-21FF
    CSECT   TRE01TST 8704   0000-21FF   0000-21FF
```

    STMT   FILE NAME

1   /devstor/dev/satk/samples/tests/TRE-01-basic.asm
2   /home/tn529/dev/satk/srcasm/satk.mac

** NO ERRORS FOUND **