```
 LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                     2 ************************************************************************
                                                     3 *
                                                     4 *                     Tape Data Chaining Test
                                                     5 *
                                                     6 ************************************************************************
                                                     7 *
                                                     8 *   This program verifies proper Hercules tape device handler
                                                     9 *   and/or channel subsystem handling of data-chained CCWs.
                                                    10 *
                                                    11 *   A bug was reported wherein multiple data-chained CCWs were used
                                                    12 *   to read a potentially very large 256K tape block (8 data-chained
                                                    13 *   CCWs, each specifying a 32K buffer), but the "Address of the last
                                                    14 *   CCW processed" and "Residual" SCSW fields of the IRB were wrong,
                                                    15 *   causing the program to calculate an incorrect block size.
                                                    16 *
                                                    17 ************************************************************************
                                                    18 *
                                                    19 *   Example Hercules Testcase:
                                                    20 *
                                                    21 *
                                                    22 *       *Testcase Tape Data Chaining
                                                    23 *
                                                    24 *       # Prepare test environment
                                                    25 *       mainsize  1
                                                    26 *       numcpu    1
                                                    27 *       sysclear
                                                    28 *       archlvl   z/Arch
                                                    29 *       detach    580
                                                    30 *       attach    580 3490 "$(testpath)/tape.aws"
                                                    31 *       loadcore  "$(testpath)/tape.core"
                                                    32 *
                                                    33 *       ## t+                          # (trace instructions)
                                                    34 *       t+580                       # (trace device CCWs)
                                                    35 *
                                                    36 *       # Run the test...
                                                    37 *       runtest   0.25              # (plenty of time)
                                                    38 *
                                                    39 *       # Clean up afterwards
                                                    40 *       detach    580               # (no longer needed)
                                                    41 *
                                                    42 *       *Compare
                                                    43 *       r 800.8
                                                    44 *       *Want "SCSW fields" 00001008 0C403000
                                                    45 *
                                                    46 *       *Done
                                                    47 *
                                                    48 *
                                                    49 ************************************************************************
```

```
 LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                    51          PRINT OFF
                                                  3432          PRINT ON

                                                  3434 ********************************************************************************
                                                  3435 *        SATK prolog stuff...
                                                  3436 ********************************************************************************

                                                  3438          ARCHLVL  MNOTE=NO
                                                  3440+$AL      OPSYN AL
                                                  3441+$ALR     OPSYN ALR
                                                  3442+$B       OPSYN B
                                                  3443+$BAS     OPSYN BAS
                                                  3444+$BASR    OPSYN BASR
                                                  3445+$BC      OPSYN BC
                                                  3446+$BCTR    OPSYN BCTR
                                                  3447+$BE      OPSYN BE
                                                  3448+$BH      OPSYN BH
                                                  3449+$BL      OPSYN BL
                                                  3450+$BM      OPSYN BM
                                                  3451+$BNE     OPSYN BNE
                                                  3452+$BNH     OPSYN BNH
                                                  3453+$BNL     OPSYN BNL
                                                  3454+$BNM     OPSYN BNM
                                                  3455+$BNO     OPSYN BNO
                                                  3456+$BNP     OPSYN BNP
                                                  3457+$BNZ     OPSYN BNZ
                                                  3458+$BO      OPSYN BO
                                                  3459+$BP      OPSYN BP
                                                  3460+$BXLE    OPSYN BXLE
                                                  3461+$BZ      OPSYN BZ
                                                  3462+$CH      OPSYN CH
                                                  3463+$L       OPSYN L
                                                  3464+$LH      OPSYN LH
                                                  3465+$LM      OPSYN LM
                                                  3466+$LPSW    OPSYN LPSW
                                                  3467+$LR      OPSYN LR
                                                  3468+$LTR     OPSYN LTR
                                                  3469+$NR      OPSYN NR
                                                  3470+$SL      OPSYN SL
                                                  3471+$SLR     OPSYN SLR
                                                  3472+$SR      OPSYN SR
                                                  3473+$ST      OPSYN ST
                                                  3474+$STM     OPSYN STM
                                                  3475+$X       OPSYN X
                                                  3476+$AHI     OPSYN AHI
                                                  3477+$B       OPSYN J
                                                  3478+$BC      OPSYN BRC
                                                  3479+$BE      OPSYN JE
                                                  3480+$BH      OPSYN JH
                                                  3481+$BL      OPSYN JL
                                                  3482+$BM      OPSYN JM
                                                  3483+$BNE     OPSYN JNE
```

```
  LOC         OBJECT CODE       ADDR1     ADDR2     STMT

                                                    3484+$BNH     OPSYN JNH
                                                    3485+$BNL     OPSYN JNL
                                                    3486+$BNM     OPSYN JNM
                                                    3487+$BNO     OPSYN JNO
                                                    3488+$BNP     OPSYN JNP
                                                    3489+$BNZ     OPSYN JNZ
                                                    3490+$BO      OPSYN JO
                                                    3491+$BP      OPSYN JP
                                                    3492+$BXLE    OPSYN JXLE
                                                    3493+$BZ      OPSYN JZ
                                                    3494+$CHI     OPSYN CHI
                                                    3495+$AHI     OPSYN AGHI
                                                    3496+$AL      OPSYN ALG
                                                    3497+$ALR     OPSYN ALGR
                                                    3498+$BCTR    OPSYN BCTGR
                                                    3499+$BXLE    OPSYN JXLEG
                                                    3500+$CH      OPSYN CGH
                                                    3501+$CHI     OPSYN CGHI
                                                    3502+$L       OPSYN LG
                                                    3503+$LH      OPSYN LGH
                                                    3504+$LM      OPSYN LMG
                                                    3505+$LPSW    OPSYN LPSWE
                                                    3506+$LR      OPSYN LGR
                                                    3507+$LTR     OPSYN LTGR
                                                    3508+$NR      OPSYN NGR
                                                    3509+$SL      OPSYN SLG
                                                    3510+$SLR     OPSYN SLGR
                                                    3511+$SR      OPSYN SGR
                                                    3512+$ST      OPSYN STG
                                                    3513+$STM     OPSYN STMG
                                                    3514+$X       OPSYN XG
```

```
 LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                   3516 ********************************************************************************
                                                   3517 *        Initiate the TESTTAPE CSECT in the CODE region
                                                   3518 *        with the location counter at 0
                                                   3519 ********************************************************************************

                                                   3521 TESTTAPE ASALOAD  REGION=CODE
                              00000000  000020FF   3522+TESTTAPE START 0,CODE
00000000  00020000 00000000                        3524+         PSW   0,0,2,0,X'008'      64-bit Restart ISR Trap New PSW
00000010                      00000010  00000058   3525+         ORG   TESTTAPE+X'058'
00000058  00020000 00000000                        3527+         PSW   0,0,2,0,X'018'      64-bit External ISR Trap New PSW
00000068  00020000 00000000                        3528+         PSW   0,0,2,0,X'020'      64-bit Supervisor Call ISR Trap New PSW
00000078  00020000 00000000                        3529+         PSW   0,0,2,0,X'028'      64-bit Program ISR Trap New PSW
00000088  00020000 00000000                        3530+         PSW   0,0,2,0,X'030'      64-bit Machine Check Trap New PSW
00000098  00020000 00000000                        3531+         PSW   0,0,2,0,X'038'      64-bit Input/Output Trap New PSW
000000A8                      000000A8  000001A0   3532+         ORG   TESTTAPE+X'1A0'
000001A0  00020000 00000000                        3534+         PSWZ  0,0,2,0,X'120'     Restart ISR Trap New PSW
000001B0  00020000 00000000                        3535+         PSWZ  0,0,2,0,X'130'     External ISR Trap New PSW
000001C0  00020000 00000000                        3536+         PSWZ  0,0,2,0,X'140'     Supervisor Call ISR Trap New PSW
000001D0  00020000 00000000                        3537+         PSWZ  0,0,2,0,X'150'     Program ISR Trap New PSW
000001E0  00020000 00000000                        3538+         PSWZ  0,0,2,0,X'160'     Machine Check Trap New PSW
000001F0  00020000 00000000                        3539+         PSWZ  0,0,2,0,X'170'     Input/Output Trap New PSW


                                                   3541 ********************************************************************************
                                                   3542 *        Define the z/Arch RESTART PSW
                                                   3543 ********************************************************************************

                              00000200  00000001   3545 PREVORG  EQU   *
00000200                      00000200  000001A0   3546          ORG   TESTTAPE+X'1A0'
000001A0  00000001 80000000                        3547          DC    XL16'00000001800000000000000000000200'
000001B0                      000001B0  000001A0   3548          ORG   TESTTAPE+X'1A0'
                                                   3549 *        PSWZ  <sys>,<key>,<mwp>,<prog>,<addr>[,amode]
000001A0  00000001 80000000                        3550          PSWZ  0,0,0,0,X'200',64
000001B0                      000001B0  00000200   3551          ORG   PREVORG



                                                   3553 ********************************************************************************
                                                   3554 *        Create IPL (restart) PSW
                                                   3555 ********************************************************************************

                                                   3557          ASAIPL   IA=BEGIN
                              00000000  000020FF   3558+TESTTAPE CSECT
00000200                      00000200  00000000   3559+         ORG   TESTTAPE
00000000  00080000 00000200                        3560+         PSWE390 0,0,0,0,BEGIN,24
00000008                      00000008  00000200   3561+         ORG   TESTTAPE+512     Reset CSECT to end of assigned storage area
                              00000000  000020FF   3562+TESTTAPE CSECT
```

```
 LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                  3564 ********************************************************************************
                                                  3565 *                The actual TESTTAPE program itself...
                                                  3566 ********************************************************************************
                                                  3567 *
                                                  3568 *  Architecture Mode: z/Arch
                                                  3569 *  Addressing Mode:   64-bit
                                                  3570 *  Register Usage:
                                                  3571 *
                                                  3572 *   R0       (work)
                                                  3573 *   R1       I/O device used by ENADEV and RAWIO macros
                                                  3574 *   R2       Program base register
                                                  3575 *   R3       IOCB pointer for ENADEV and RAWIO macros
                                                  3576 *   R4       IO work register used by ENADEV and RAWIO
                                                  3577 *   R5       Used for CPU register when signaling architecture change
                                                  3578 *   R6,R7    Signaling registers when changing architecture
                                                  3579 *   R8       ORB pointer
                                                  3580 *   R9       SCSW pointer
                                                  3581 *   R10-R15  (work)
                                                  3582 *
                                                  3583 ********************************************************************************


00000200                    00000000              3585          USING  ASA,R0          Low core addressability
00000200                    00000200              3586          USING  BEGIN,R2        Program Addressability
00000200                    00000000              3587          USING  IOCB,R3         SATK Device I/O Control Block
00000200                    00000000              3588          USING  ORB,R8          ESA/390 Operation Request Block
00000200                    00000000              3589          USING  SCSW,R9         ESA/390 Subchannel Status Word


00000200  0520                                    3591 BEGIN    BALR   R2,0            Initalize Base Register
00000202  0620                                    3592          BCTR   R2,0            Initalize Base Register
00000204  0620                                    3593          BCTR   R2,0            Initalize Base Register

00000206  45E0 2098                 00000298      3595          BAL    R14,INIT        Initalize Program
                                                  3596 *
                                                  3597 **       Run the tests...
                                                  3598 *
0000020A  45E0 2012                 00000212      3599          BAL    R14,TEST01      Data-Chained CCWs > blocksize,
                                                  3600 *                               with/without ORB ILS flag
                                                  3601 *
0000020E  47F0 20B6                 000002B6      3602          B      EOJ             Normal completion
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT
                                                  3604 ********************************************************************************
                                                  3605 *        TEST01     Data-Chained CCWs test with/without ORB ILS flag
                                                  3606 ********************************************************************************

00000212  9201 2DFF                       00000FFF  3608 TEST01   MVI   TESTNUM,X'01'          Initialize test number

00000216  9200 8005                       00000005  3610         MVI   ORB1_8,0               Initialize ORB flags
0000021A  9200 8007                       00000007  3611         MVI   ORRB1_24,0             Initialize ORB flags
0000021E  9680 8005                       00000005  3612         OI    ORB1_8,ORBF            Format-1 CCWs
00000222  9680 8007                       00000007  3613         OI    ORRB1_24,ORBL          SLI mode for Immediate CCWs

00000226  4100 22B8                       000004B8  3615         LA    R0,REWPROG             Rewind tape to load point
0000022A  45F0 216A                       0000036A  3616         BAL   R15,EXCP               Do the I/O

0000022E  950C 9008                       00000008  3618         CLI   SCSWUS,SCSWCE+SCSWDE   Expected Unit Status?
00000232  4770 20E8                       000002E8  3619         BNE   FAILREW                No?! FAIL the test!
00000236  9500 9009                       00000009  3620         CLI   SCSWCS,0               Expected Channel Status?
0000023A  4770 20E8                       000002E8  3621         BNE   FAILREW                No?! FAIL the test!

                                                  3623 ********************************************************************************
                                                  3624 *     Tape block size is 20,480 bytes, so I/O should end on
                                                  3625 *     the very first 32K CCW (but should point to the second
                                                  3626 *     one) with a residual value of 12,288 (X'3000') bytes.
                                                  3627 ********************************************************************************

0000023E  4100 22C8                       000004C8  3629         LA    R0,READPROG            Read block using data chaining
00000242  45F0 216A                       0000036A  3630         BAL   R15,EXCP               Do the I/O
00000246  D203 2600 9004      00000800    00000004  3631         MVC   TESTCCWA,SCSWCCW       Save Ending CCW Address
0000024C  D200 2604 9008      00000804    00000008  3632         MVC   TESTUS,SCSWUS           Save Unit Status
00000252  D200 2605 9009      00000805    00000009  3633         MVC   TESTCS,SCSWCS           Save Channel Status
00000258  D201 2606 900A      00000806    0000000A  3634         MVC   TESTRES,SCSWCNT         Save Residual

0000025E  D507 2600 2608      00000800    00000808  3636         CLC   TESTRSLT,GOODRSLT      Is results what we expected?
00000264  4770 20F8                       000002F8  3637         BNE   FAILTEST               No, FAIL the test

                                                  3639 ********************************************************************************
                                                  3640 *     Now do the same thing again, but WITHOUT the ORBL flag
                                                  3641 *     to verify we still get a normal incorrect length result.
                                                  3642 ********************************************************************************

00000268  947F 8007                       00000007  3644         NI    ORRB1_24,255-ORBL      Turn off SLI mode ORB flag
0000026C  4100 22C8                       000004C8  3645         LA    R0,READPROG            Read block using data chaining
00000270  45F0 216A                       0000036A  3646         BAL   R15,EXCP               Do the I/O
00000274  D203 2600 9004      00000800    00000004  3647         MVC   TESTCCWA,SCSWCCW       Save Ending CCW Address
0000027A  D200 2604 9008      00000804    00000008  3648         MVC   TESTUS,SCSWUS           Save Unit Status
00000280  D200 2605 9009      00000805    00000009  3649         MVC   TESTCS,SCSWCS           Save Channel Status
00000286  D201 2606 900A      00000806    0000000A  3650         MVC   TESTRES,SCSWCNT         Save Residual

0000028C  D507 2600 2608      00000800    00000808  3652         CLC   TESTRSLT,GOODRSLT      Is results what we expected?
00000292  4770 20F8                       000002F8  3653         BNE   FAILTEST               No, FAIL the test
00000296  07FE                                     3654         BR    R14                    Yes, test SUCCESS
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2     STMT
                                                    3656 ********************************************************************
                                                    3657 *        Program Initialization
                                                    3658 ********************************************************************

00000298                                            3660 INIT     DS    0H                Program Initialization

00000298  4130 2214                       00000414  3662          LA    R3,IOCB_580       Point to IOCB
0000029C  E380 3018 0004                  00000018  3663          $L    R8,IOCBORB        Point to ORB
000002A2  E3F0 3020 0004                  00000020  3664          $L    R15,IOCBIRB       Point to IRB
000002A8                        00000000            3665          USING IRB,R15           Temporary addressability
000002A8  4190 F000                       00000000  3666          LA    R9,IRBSCSW        Point to SCSW
000002AC                                            3667          DROP  R15               Done with IRB

000002AC  45F0 2108                       00000308  3669          BAL   R15,IOINIT        Initialize the CPU for I/O operations
000002B0  45F0 2116                       00000316  3670          BAL   R15,ENADEV        Enable our device making ready for use

000002B4  07FE                                      3672          BR    R14               Return to caller




                                                    3674 ********************************************************************
                                                    3675 *        Normal completion or Abnormal termination PSWs
                                                    3676 ********************************************************************

                                                    3678 EOJ      DWAITEND LOAD=YES          Normal completion
000002B6                                            3680+EOJ      DS    0H
000002B6  8200 20C0                       000002C0  3681+         LPSW  DWAT0009
000002C0  000A0000 00000000                         3682+DWAT0009 PSWE390 0,0,2,0,X'000000'

                                                    3684 FAILDEV  DWAIT LOAD=YES,CODE=01     ENADEV failed
000002C8                                            3685+FAILDEV  DS    0H
000002C8  8200 20D0                       000002D0  3686+         LPSW  DWAT0010
000002D0  000A0000 00010001                         3687+DWAT0010 PSWE390 0,0,2,0,X'010001'

                                                    3689 FAILIO   DWAIT LOAD=YES,CODE=02     RAWIO failed
000002D8                                            3690+FAILIO   DS    0H
000002D8  8200 20E0                       000002E0  3691+         LPSW  DWAT0011
000002E0  000A0000 00010002                         3692+DWAT0011 PSWE390 0,0,2,0,X'010002'

                                                    3694 FAILREW  DWAIT LOAD=YES,CODE=03     REWIND failed
000002E8                                            3695+FAILREW  DS    0H
000002E8  8200 20F0                       000002F0  3696+         LPSW  DWAT0012
000002F0  000A0000 00010003                         3697+DWAT0012 PSWE390 0,0,2,0,X'010003'

                                                    3699 FAILTEST DWAIT LOAD=YES,CODE=BAD    Abnormal termination
000002F8                                            3700+FAILTEST DS    0H
000002F8  8200 2100                       00000300  3701+         LPSW  DWAT0013
00000300  000A0000 00010BAD                         3702+DWAT0013 PSWE390 0,0,2,0,X'010BAD'
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                   3704 ********************************************************************
                                                   3705 *        Initialize the CPU for I/O operations
                                                   3706 ********************************************************************

                                                   3708 IOINIT   IOINIT ,
00000308  B766 2110                      00000310  3709+IOINIT   LCTL  6,6,IOMK0014       Enable subchannel subclasses for interruptions
0000030C  47F0 2114                      00000314  3710+         B     IOMK0014+4
00000310                                           3711+IOMK0014 DS    0F
00000310  FF000000                                 3712+         DC    XL4'FF000000'         All subchannel subclasses enabled
00000314  07FF                                     3713          BR    R15                 Return to caller


                                                   3715 ********************************************************************
                                                   3716 *        Enable the device, making it ready for use
                                                   3717 ********************************************************************

                                                   3719 ENADEV   ENADEV  ENAOKAY,FAILDEV,REG=4
00000316  5810 2160                      00000360  3720+ENADEV   L     1,FIND0015
0000031A  E340 3028 0004                 00000028  3721+         $L    4,IOCBSIB           Locate where the SCHIB is to be stored
00000320                  00000000                 3722+         USING SCHIB,4
00000320                                           3723+FINL0015 DS    0H   Retrieve Subchannel Information Block for desired device number
00000320  B234 4000                      00000000  3724+         STSCH 0(4)                Store the SCHIB for first subchannel
00000324  A774 FFD2                      000002C8  3725+         $BC   B'0111',FAILDEV     Subchannel does not exist and device number not found
00000328  9101 4005                      00000005  3726+         TM    PMCW1_8,PMCWV       Is the subchannel device number valid?
0000032C  A784 0011                      0000034E  3727+         $BZ   FINN0015            ..No, check the next subchannel
00000330  D501 4006 3004      00000006  00000004  3728+         CLC   PMCWDNUM,IOCBDEV    Is this the device number being sought?
00000336  A774 000C                      0000034E  3729+         $BNE  FINN0015            ..No, check the next subchannel
                                                   3730+* Subchannel found!
0000033A  5010 3000                      00000000  3731+         ST    1,IOCBDID           Remember the subchannel so I/O can be done to it.
0000033E  9680 4005                      00000005  3732+         OI    PMCW1_8,PMCWE       Make sure it is enabled so I/O requests accepted
00000342  B232 4000                      00000000  3733+         MSCH  0(4)                Enable the subchannel to the channel sub-system
00000346  A784 0011                      00000368  3734+         $BC   B'1000',ENAOKAY     CC0 (SCHIB updated), device is ready.
0000034A  A7F4 FFBF                      000002C8  3735+         $B    FAILDEV             CC1,CC2,CC3 (SCHIB update failed), quit
0000034E                                           3736+FINN0015 DS    0H  Advance to next subchannel
0000034E  4110 1001                      00000001  3737+         LA    1,1(0,1)            Advance to next subchannel
00000352  5510 2164                      00000364  3738+         CL    1,FINM0015          Beyond maximum subchannel
00000356  A7D4 FFE5                      00000320  3739+         $BNH  FINL0015            ..No, examine the next subchannel
0000035A  A724 FFB7                      000002C8  3740+         $BH   FAILDEV             ..Yes, failed to enable the device
0000035E                                           3741+         DROP  4                   Forget SCHIB addressing
00000360  00010000                                 3742+FIND0015 DC    A(X'00010000')      First subchannel subsystem ID
00000364  0001FFFF                                 3743+FINM0015 DC    A(X'0001FFFF')      Last subchannel subsystem ID
                                                   3744 *
00000368  07FF                                     3745 ENAOKAY  BR    R15               Return to caller if device enabled OK
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT

                                                  3747 ************************************************************************
                                                  3748 *        Execute the channel program pointed to by R0
                                                  3749 ************************************************************************

0000036A  5000 8008                      00000008 3751 EXCP     ST    R0,ORBCCW      Plug Channel Program address into IORB

                                                  3753          RAWIO 4,FAIL=FAILIO
0000036E  9200 300E                      0000000E 3754+         MVI   IOCBSC,X'00'           Clear SC information
00000372  D201 300A 3006      0000000A   00000006 3755+         MVC   IOCBST,IOCBZERO        Clear accumulated status
00000378  5810 3000                      00000000 3756+         L     1,IOCBDID              Remember the device ID with which I am working
                                                  3757+* Initiate Subchannel-based input/output operation
0000037C  E340 3018 0004                 00000018 3758+         $L    4,IOCBORB              Locate the ORB for the channel subsystem
00000382  B233 4000                      00000000 3759+         SSCH  0(4)                   Initiate the I/O operation
00000386  A774 FFA9                      000002D8 3760+         $BC   B'0111',FAILIO         ..Start function failed, report/handle the error
0000038A  E340 3020 0004                 00000020 3761+         $L    4,IOCBIRB              Locate the IRB storage area
00000390                      00000000           3762+         USING IRB,4                  Make it addressable

                                                  3764+* Wait for I/O operation to present status via an interruption
00000390                                          3765+IOWT0016 DS    0H  Wait for I/O to complete
00000390  D20F 21C0 01F0      000003C0   000001F0 3767+         MVC   IOS0017(16),496(0)      Save Input/Output new PSW
00000396  D20F 01F0 21B0      000001F0   000003B0 3768+         MVC   496(16,0),ION0017      Establish Input/Ouput new PSW
0000039C  B2B2 21A0                      000003A0 3769+         $LPSW WPSW0017               Wait for event
000003A0  02020000 00000000                       3770+WPSW0017 PSW   2,0,2,0,0               Wait for event
000003B0  00002000 00000000                       3771+ION0017  PSW   0,0,0,32,IRST0017,24        I/O New PSW: cc==2
000003C0  00000000 00000000                       3772+IOS0017  DC    XL16'00'
                                                  3773+* Handle input/output interruption
000003D0                                          3774+IRST0017 DS    0H
000003D0  D20F 01F0 21C0      000001F0   000003C0 3775+         MVC   496(16,0),IOS0017       Restore input/output new PSW
                                                  3776+* Process the interruption...
                                                  3777+* Validate interruption is for the expected subchannel
000003D6  5510 00B8                      000000B8 3778+         CL    1,IOSSID               Is this the device for which I am waiting?
000003DA  A774 FFDB                      00000390 3779+         $BNE  IOWT0016               ..No, continue waiting for it
                                                  3780+* Accumulate interruption information from IRB
000003DE  B235 4000                      00000000 3781+         TSCH  0(4)                   Retrive interrupt information
000003E2  A744 FFD7                      00000390 3782+         $BC   B'0100',IOWT0016       CC1 (not status pending), wait for it to arrive
000003E6  A714 FF79                      000002D8 3783+         $BC   B'0001',FAILIO         CC3 (not operational), an error then
                                                  3784+*                                      CC0 (status was pending), accumulate the statu
000003EA  D600 300E 4003      0000000E   00000003 3785+         OC    IOCBSC,IRBSCSW+SCSW2   Accumulate status control
000003F0  D601 300A 4008      0000000A   00000008 3786+         OC    IOCBST,IRBSCSW+SCSWUS  Accumulate device and channel status
000003F6  9104 300E                      0000000E 3787+         TM    IOCBSC,SCSWSPRI        Primary subchannel status?
000003FA  A7E4 FFCB                      00000390 3788+         $BNO  IOWT0016               ..No, wait for primary status
000003FE  D203 3010 4004      00000010   00000004 3789+         MVC   IOCBSCCW,IRBSCSW+SCSWCCW  CCW address
00000404  D201 3016 400A      00000016   0000000A 3790+         MVC   IOCBRCNT,IRBSCSW+SCSWCNT  Residual count
                                                  3791+* Test for errors as specified in the IOCB
0000040A  910C 300A                      0000000A 3792+         TM    IOCBUS,CSWCE+CSWDE     Channel end and device end both accumulated?
0000040E  A7E4 FF65                      000002D8 3793+         $BNO  FAILIO                 Hunh? No CE and DE but do have primary status!
                                                  3794+* Input/Output operation successful

00000412  07FF                                    3796          BR    R15            Return to caller
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT

                                                  3798 ********************************************************************************
                                                  3799 *         Structure used by RAWIO identifying
                                                  3800 *         the device and operation being performed
                                                  3801 ********************************************************************************

                                                  3803 IOCB_580 IOCB  X'580'
00000414  00000000                                3804+IOCB_580 DC    A(0)            +0 Device Identifier (supplied by ENADEV macro)
00000418  0580                                    3805+         DC    AL2(X'580')     +4 Device address or device number
0000041A  0000                                    3806+         DC    H'0'            +6 Must be zeros
0000041C  D3                                      3807+         DC    AL1(X'D3')      +8 Default detected unit errors
0000041D  3F                                      3808+         DC    AL1(X'3F')      +9 Default detected channel errors
0000041E  0000                                    3809+         DC    HL2'0'          +10 Accumulated unit and channel errors
00000420  0000                                    3810+         DC    HL2'0'          +12 Tested unit and channel status
00000422  00                                      3811+         DC    XL1'00'         +14 Accumulated subchannel status control from SCSW
00000423  80                                      3812+         DC    XL1'80'         +15 Default unsoliticed wait condition
00000424  00000000                                3813+         DC    F'0'            +16 I/O status CCW address
00000428  00000000                                3814+         DC    F'0'            +20 residual count
0000042C  00000000 000004A4                       3815+         DC    ADL8(IORB0018)  +24  Address where ORB is located
00000434  00000000 00000444                       3816+         DC    ADL8(IIRB0018)  +32 Address where IRB stored
0000043C  00000000 00000444                       3817+         DC    ADL8(IIRB0018)  +40 Address where SCHIB stored
00000444  00000000 00000000                       3818+IIRB0018 DC    24F'0'              Embedded shared IRB and SCHIB area
000004A4                                          3820+IORB0018 DS    0XL12
000004A4  00000000                                3821+         DC    A(0)                    Word 0 - Interruption Parameter
000004A8  00                                      3822+         DC    AL1((0)*16+B'0000')     Word 1, bits 0-7
000004A9  80                                      3823+         DC    BL1'10000000'           Word 1, bits 8-15
000004AA  FF                                      3824+         DC    AL1(255)                Word 1, bits 16-23
000004AB  00                                      3825+         DC    BL1'00000000'            Word 1, bits 24-31
000004AC  00000000                                3826+         DC    AL4(0)                 Word 2 - CCW address
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                    3828 ********************************************************************************
                                                    3829 *        Working Storage
                                                    3830 ********************************************************************************

000004B0                                            3832          LTORG ,          Literals pool

000004B0  10                                        3834 MODE     DC    X'10'      Mode Set argument

                          00000400  00000001      3836 K        EQU   1024       One kilobyte  (OK! OK! "Kibibyte!" Sheesh!)

                          00000800  00000001      3838 RESLTADR EQU   (2*K)      Address where test results will be placed
                          00000FFF  00000001      3839 TESTADDR EQU   (4*K)-1    Address where test number will be placed
                          00001000  00000001      3840 CDCCWADR EQU   (4*K)      Address of data-chained CCWs
                          00002000  00000001      3841 IDALADDR EQU   (8*K)      Address of Indirect Data Address Lists

                          00008000  00000001      3843 BUFSADDR EQU   (32*K)     Address where first I/O buffer will start
                          00008000  00000001      3844 IOBUFLEN EQU   (32*K)     Length of one I/O buffer  (32768 bytes)
                          00005000  00000001      3845 BLOCKLEN EQU   (20*K)     Size of tape block        (20480 bytes)

                          00003000  00000001      3847 RESIDUAL EQU   (IOBUFLEN-BLOCKLEN)  Expected residual value


                                                    3849 ********************************************************************************
                                                    3850 *        CCW opcode equates, etc.
                                                    3851 ********************************************************************************

                          00000080  00000001      3853 CD       EQU   X'80'    Chain Data
                          00000040  00000001      3854 CC       EQU   X'40'    Chain Command
                          00000020  00000001      3855 SLI      EQU   X'20'    Suppress Incorrect Length Indication
                          00000010  00000001      3856 SKIP     EQU   X'10'    Skip Data Transfer
                          00000004  00000001      3857 IDA      EQU   X'04'    Indirect Data Address

                          00000002  00000001      3859 READ     EQU   X'02'    Read or Read IPL
                          00000006  00000001      3860 READFWD  EQU   X'06'    Read Forward (3590 only)
                          00000007  00000001      3861 REWIND   EQU   X'07'    Rewind to load point
                          00000008  00000001      3862 TIC      EQU   X'08'    Transfer In Channel (branch to another CCW)
                          000000DB  00000001      3863 MODESET  EQU   X'DB'    Mode Set


                                                    3865 ********************************************************************************
                                                    3866 *        Channel Programs
                                                    3867 ********************************************************************************

000004B8  DB600001 000004B0                         3869 REWPROG  CCW1  MODESET,MODE,CC+SLI,1
000004C0  08000000 000004D8                         3870          CCW1  TIC,REW2LDPT,0,0

000004C8  DB600001 000004B0                         3872 READPROG CCW1  MODESET,MODE,CC+SLI,1
000004D0  08000000 00001000                         3873          CCW1  TIC,READ256K,0,0

000004D8  07200001 00000000                         3875 REW2LDPT CCW1  REWIND,0,SLI,1
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2     STMT
                                                    3877 ********************************************************************************
                                                    3878 *        Fixed storage locations
                                                    3879 ********************************************************************************

000004E0                       000004E0  00000800  3881          ORG   TESTTAPE+RESLTADR      (s/b @ X'0800')

00000800                                           3883 TESTRSLT DS    0XL8                   Saved Test Results...
00000800  00000000                                 3884 TESTCCWA DC    A(0)                   Ending CCW Address
00000804  00                                       3885 TESTUS   DC    X'00'                  Unit Status
00000805  00                                       3886 TESTCS   DC    X'00'                  Channel Status
00000806  0000                                     3887 TESTRES  DC    H'0'                   Residual
00000808  00001008                                 3888 GOODRSLT DC    A(READ256K+8)
0000080C  0C403000                                 3889          DC    AL1(SCSWCE+SCSWDE),AL1(SCSWIL),AL2(IOBUFLEN-BLOCKLEN)



00000810                       00000810  00000FFF  3891          ORG   TESTTAPE+TESTADDR      (s/b @ X'0FFF')

00000FFF  00                                       3893 TESTNUM  DC    X'00'      Test number of active test




00001000                       00001000  00001000  3895          ORG   TESTTAPE+CDCCWADR      (s/b @ X'1000')

00001000  02848000 00002000                        3897 READ256K CCW1  READ,IDAL1,CD+IDA,IOBUFLEN
00001008  02848000 00002020                        3898          CCW1  READ,IDAL2,CD+IDA,IOBUFLEN
00001010  02848000 00002040                        3899          CCW1  READ,IDAL3,CD+IDA,IOBUFLEN
00001018  02848000 00002060                        3900          CCW1  READ,IDAL4,CD+IDA,IOBUFLEN
00001020  02848000 00002080                        3901          CCW1  READ,IDAL5,CD+IDA,IOBUFLEN
00001028  02848000 000020A0                        3902          CCW1  READ,IDAL6,CD+IDA,IOBUFLEN
00001030  02848000 000020C0                        3903          CCW1  READ,IDAL7,CD+IDA,IOBUFLEN
00001038  02048000 000020E0                        3904          CCW1  READ,IDAL8,IDA,IOBUFLEN




                                                    3906 ********************************************************************************
                                                    3907 *        I/O Buffers referenced by IDALs
                                                    3908 ********************************************************************************

                               00008000  00000001  3910 IOBUFFS  EQU   BUFSADDR       Where first I/O buffer will begin
                                                    3911 *
                               00008000  00000001  3912 IOBUFF1  EQU   IOBUFFS+(0*IOBUFLEN)
                               00010000  00000001  3913 IOBUFF2  EQU   IOBUFFS+(1*IOBUFLEN)
                               00018000  00000001  3914 IOBUFF3  EQU   IOBUFFS+(2*IOBUFLEN)
                               00020000  00000001  3915 IOBUFF4  EQU   IOBUFFS+(3*IOBUFLEN)
                               00028000  00000001  3916 IOBUFF5  EQU   IOBUFFS+(4*IOBUFLEN)
                               00030000  00000001  3917 IOBUFF6  EQU   IOBUFFS+(5*IOBUFLEN)
                               00038000  00000001  3918 IOBUFF7  EQU   IOBUFFS+(6*IOBUFLEN)
                               00040000  00000001  3919 IOBUFF8  EQU   IOBUFFS+(7*IOBUFLEN)
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                    3921 ********************************************************************************
                                                    3922 *        Indirect Data Address Lists 1 - 4
                                                    3923 ********************************************************************************

00001040                       00001040  00002000   3925          ORG   TESTTAPE+IDALADDR      (s/b @ X'2000')

00002000  00008000                                  3927 IDAL1    DC    A(IOBUFF1+(0*(4*K)))
00002004  00009000                                  3928          DC    A(IOBUFF1+(1*(4*K)))
00002008  0000A000                                  3929          DC    A(IOBUFF1+(2*(4*K)))
0000200C  0000B000                                  3930          DC    A(IOBUFF1+(3*(4*K)))
00002010  0000C000                                  3931          DC    A(IOBUFF1+(4*(4*K)))
00002014  0000D000                                  3932          DC    A(IOBUFF1+(5*(4*K)))
00002018  0000E000                                  3933          DC    A(IOBUFF1+(6*(4*K)))
0000201C  0000F000                                  3934          DC    A(IOBUFF1+(7*(4*K)))



00002020  00010000                                  3936 IDAL2    DC    A(IOBUFF2+(0*(4*K)))
00002024  00011000                                  3937          DC    A(IOBUFF2+(1*(4*K)))
00002028  00012000                                  3938          DC    A(IOBUFF2+(2*(4*K)))
0000202C  00013000                                  3939          DC    A(IOBUFF2+(3*(4*K)))
00002030  00014000                                  3940          DC    A(IOBUFF2+(4*(4*K)))
00002034  00015000                                  3941          DC    A(IOBUFF2+(5*(4*K)))
00002038  00016000                                  3942          DC    A(IOBUFF2+(6*(4*K)))
0000203C  00017000                                  3943          DC    A(IOBUFF2+(7*(4*K)))



00002040  00018000                                  3945 IDAL3    DC    A(IOBUFF3+(0*(4*K)))
00002044  00019000                                  3946          DC    A(IOBUFF3+(1*(4*K)))
00002048  0001A000                                  3947          DC    A(IOBUFF3+(2*(4*K)))
0000204C  0001B000                                  3948          DC    A(IOBUFF3+(3*(4*K)))
00002050  0001C000                                  3949          DC    A(IOBUFF3+(4*(4*K)))
00002054  0001D000                                  3950          DC    A(IOBUFF3+(5*(4*K)))
00002058  0001E000                                  3951          DC    A(IOBUFF3+(6*(4*K)))
0000205C  0001F000                                  3952          DC    A(IOBUFF3+(7*(4*K)))



00002060  00020000                                  3954 IDAL4    DC    A(IOBUFF4+(0*(4*K)))
00002064  00021000                                  3955          DC    A(IOBUFF4+(1*(4*K)))
00002068  00022000                                  3956          DC    A(IOBUFF4+(2*(4*K)))
0000206C  00023000                                  3957          DC    A(IOBUFF4+(3*(4*K)))
00002070  00024000                                  3958          DC    A(IOBUFF4+(4*(4*K)))
00002074  00025000                                  3959          DC    A(IOBUFF4+(5*(4*K)))
00002078  00026000                                  3960          DC    A(IOBUFF4+(6*(4*K)))
0000207C  00027000                                  3961          DC    A(IOBUFF4+(7*(4*K)))
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                    3963 ********************************************************************************
                                                    3964 *        Indirect Data Address Lists 5 - 8
                                                    3965 ********************************************************************************



00002080  00028000                                  3967 IDAL5    DC    A(IOBUFF5+(0*(4*K)))
00002084  00029000                                  3968          DC    A(IOBUFF5+(1*(4*K)))
00002088  0002A000                                  3969          DC    A(IOBUFF5+(2*(4*K)))
0000208C  0002B000                                  3970          DC    A(IOBUFF5+(3*(4*K)))
00002090  0002C000                                  3971          DC    A(IOBUFF5+(4*(4*K)))
00002094  0002D000                                  3972          DC    A(IOBUFF5+(5*(4*K)))
00002098  0002E000                                  3973          DC    A(IOBUFF5+(6*(4*K)))
0000209C  0002F000                                  3974          DC    A(IOBUFF5+(7*(4*K)))



000020A0  00030000                                  3976 IDAL6    DC    A(IOBUFF6+(0*(4*K)))
000020A4  00031000                                  3977          DC    A(IOBUFF6+(1*(4*K)))
000020A8  00032000                                  3978          DC    A(IOBUFF6+(2*(4*K)))
000020AC  00033000                                  3979          DC    A(IOBUFF6+(3*(4*K)))
000020B0  00034000                                  3980          DC    A(IOBUFF6+(4*(4*K)))
000020B4  00035000                                  3981          DC    A(IOBUFF6+(5*(4*K)))
000020B8  00036000                                  3982          DC    A(IOBUFF6+(6*(4*K)))
000020BC  00037000                                  3983          DC    A(IOBUFF6+(7*(4*K)))



000020C0  00038000                                  3985 IDAL7    DC    A(IOBUFF7+(0*(4*K)))
000020C4  00039000                                  3986          DC    A(IOBUFF7+(1*(4*K)))
000020C8  0003A000                                  3987          DC    A(IOBUFF7+(2*(4*K)))
000020CC  0003B000                                  3988          DC    A(IOBUFF7+(3*(4*K)))
000020D0  0003C000                                  3989          DC    A(IOBUFF7+(4*(4*K)))
000020D4  0003D000                                  3990          DC    A(IOBUFF7+(5*(4*K)))
000020D8  0003E000                                  3991          DC    A(IOBUFF7+(6*(4*K)))
000020DC  0003F000                                  3992          DC    A(IOBUFF7+(7*(4*K)))



000020E0  00040000                                  3994 IDAL8    DC    A(IOBUFF8+(0*(4*K)))
000020E4  00041000                                  3995          DC    A(IOBUFF8+(1*(4*K)))
000020E8  00042000                                  3996          DC    A(IOBUFF8+(2*(4*K)))
000020EC  00043000                                  3997          DC    A(IOBUFF8+(3*(4*K)))
000020F0  00044000                                  3998          DC    A(IOBUFF8+(4*(4*K)))
000020F4  00045000                                  3999          DC    A(IOBUFF8+(5*(4*K)))
000020F8  00046000                                  4000          DC    A(IOBUFF8+(6*(4*K)))
000020FC  00047000                                  4001          DC    A(IOBUFF8+(7*(4*K)))
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT

                                                  4003 ********************************************************************************
                                                  4004 *        IOCB DSECT
                                                  4005 ********************************************************************************

                                                  4007          DSECTS NAME=IOCB
                                                  4009+IOCB     DSECT
                                                  4010+*     Field usage by: CH SC Description (R->program read-only, X->program read/writ
00000000                                          4011+IOCBDID  DS    0F  +0     R  Device Identifier - Subsystem ID for channel subsystem
00000000  0000                                    4012+         DS    H   +0  R      reserved - must be zeros
00000002  0000                                    4013+IOCBDV   DS    H   +2  R      Channel Unit Device address of I/O operation
00000004  0000                                    4014+IOCBDEV  DS    H   +4  X  X  Device address or device number (R after ENADEV)
00000006  0000                                    4015+IOCBZERO DS    H   +6  R  R  Must be zeros
00000008  00                                      4016+IOCBUM   DS    X   +8  X  X  Unit status test mask
00000009  00                                      4017+IOCBCM   DS    X   +9  X  X  Channel status test mask
0000000A                                          4018+IOCBST   DS    0H  +10 X  X  Input/Output unit and channel status accumulation
0000000A  00                                      4019+IOCBUS   DS    X   +10 R  R  Accumulated unit status
0000000B  00                                      4020+IOCBCS   DS    X   +11 R  R  Accumulated channel status
0000000C  00                                      4021+IOCBUT   DS    X   +14 R  R  Used to test unit status
0000000D  00                                      4022+IOCBCT   DS    X   +13 R  R  Used to test channel status
0000000E  00                                      4023+IOCBSC   DS    X   +14    R  Accumulted subchanel status control
0000000F  00                                      4024+IOCBWAIT DS    X   +15 X  X  Recognized unsolicited interruption unit status events
00000010  00000000                                4025+IOCBSCCW DS    A   +16 R  R  I/O status CCW address
00000014                                          4026+IOCBSCNT DS    0F  +20 R  R  I/O status residual count as a positive full word
00000014  0000                                    4027+         DS    H   +20 R    reserved must be zeros
00000016  0000                                    4028+IOCBRCNT DS    H   +22 R    I/O status residual count as an unsigned halfword
00000018                                          4029+IOCBCAW  DS    0A  +24 X    Channel Address word
00000018  00000000 00000000                       4030+IOCBORB  DS    AD  +24    X  Address of the ORB for channel subsystem I/O
00000020  00000000 00000000                       4031+IOCBIRB  DS    AD  +32    X  Channel subsystem IRB address
00000028  00000000 00000000                       4032+IOCBSIB  DS    AD  +40    X  Channel subsystem SCHIB address
                            00000030  00000001    4033+IOCBL    EQU   *-IOCB  Length of IOCB control block (48) without embedded structures
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT
                                                  4035 ********************************************************************************
                                                  4036 *        ORB DSECT
                                                  4037 ********************************************************************************

                                                  4039          DSECTS NAME=ORB
                                                  4041+ORB      DSECT
00000000  00000000                                4042+ORBPARM  DC    F'0'     Word 0, bits 0-31

00000004  00                                      4044+ORB1_0   DC    X'00'    Word 1, bits 0-7
                            000000F0  00000001    4045+ORBKEYM  EQU   X'F0'    Word 1, bits 0-3   - Storage Key Mask
                            00000008  00000001    4046+ORBS     EQU   X'08'    Word 1, bit 4      - Suspend Control
                            00000004  00000001    4047+ORBC     EQU   X'04'    Word 1, bit 5      - Streaming Mode Control
                            00000002  00000001    4048+ORBM     EQU   X'02'    Word 1, bit 6      - Modification Control
                            00000001  00000001    4049+ORBY     EQU   X'01'    Word 1, bit 7      - Synchronization Control

00000005  00                                      4051+ORB1_8   DC    X'00'    Word 1, bits 8-15
                            00000080  00000001    4052+ORBF     EQU   X'80'    Word 1, bit 8      - CCW Format-Control
                            00000040  00000001    4053+ORBP     EQU   X'40'    Word 1, bit 9      - Pre-fetch control
                            00000020  00000001    4054+ORBI     EQU   X'20'    Word 1, bit 10     - Initial-status Interruption Control
                            00000010  00000001    4055+ORBA     EQU   X'10'    Word 1, bit 11     - Address Limit Checking Control
                            00000008  00000001    4056+ORBU     EQU   X'08'    Word 1, bit 12     - Suppress-suspended-interruption control
                            00000004  00000001    4057+ORBB     EQU   X'04'    Word 1, bit 13     - Channel-Program-Type Control
                            00000002  00000001    4058+ORBH     EQU   X'02'    Word 1, bit 14     - Format 2-IDAW Control
                            00000001  00000001    4059+ORBT     EQU   X'01'    Word 1, bit 15     - 2K-IDAW control
00000006  00                                      4060+ORBLPM   DC    X'00'    Word 1, bits 16-23 - Logical Path Mask
00000007  00                                      4061+ORRB1_24 DC    X'00'    Word 1, bits 24-31
                            00000080  00000001    4062+ORBL     EQU   X'80'    Word 1, bit 24     - Incorrect Length Suppression Mode
                            0000007F  00000001    4063+ORBRSV3  EQU   X'7F'    Word 1, bits 25-31 - reserved must be zeros
                            00000040  00000001    4064+ORBD     EQU   X'40'    Word 1, bit 25     - MIDAW Addressing Control
                            0000003E  00000001    4065+ORBRSV26 EQU   X'3E'    Word 1, bits 26-30 - reserved must be zeros
                            0000007E  00000001    4066+ORBRSV25 EQU   X'7E'    Word 1, bits 25-30 - reserved must be zeros
                            00000001  00000001    4067+ORBX     EQU   X'01'    Word 1, bit 31     - ORB-extension control

00000008  00000000                                4069+ORBCCW   DC    A(0)     Word 2, bits 1-31  - Channel Program Address
                            00000080  00000001    4070+ORBRSV4  EQU   X'80'    Word 2, bit 0      - reserved must be zero
                            0000000C  00000001    4071+ORBLEN   EQU   *-ORB Length of standard ORB
                                                  4072+* Extended ORB fields
0000000C  00                                      4073+ORBCSS   DC    X'00'    Word 3, bits 0-7   - Channel Subsystem Priority
0000000D  00                                      4074+ORBRSV5  DC    X'00'    Word 3, bits 8-15  - reserved must be zeros
0000000E                                          4075+ORBPGM   DC    0X'00'   Word 3, bits 16-23 - Transport mode reserves for program us
0000000E  00                                      4076+ORBCU    DC    X'00'    Word 3, bits 16-23 - Control Unit Priority
0000000F  00                                      4077+ORBRSV6  DC    X'00'    Word 3, bits 24-31 - reserved must be zeros
00000010  00000000 00000000                       4078+ORBRSV7  DC    XL16'00' Words 4-7          - reserved must be zeros
                            00000020  00000001    4079+ORBXLEN  EQU   *-ORB Length of extended ORB
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT

                                                  4082 ********************************************************************************
                                                  4083 *        IRB DSECT
                                                  4084 ********************************************************************************

                                                  4086          DSECTS NAME=IRB
                                                  4088+IRB      DSECT Interruption          Response Block
00000000  00000000 00000000                       4089+IRBSCSW  DC    XL12'00' Words 0-2 - Subchannel Status Word (Defined by DSECT SCSW)
0000000C  00000000 00000000                       4090+IRBESW   DC    XL20'00' Words 3-7 - Extended Status Word
00000020  00000000 00000000                       4091+IRBECW   DC    XL32'00' Words 8-15 - Extended Control Word
                             00000040  00000001   4092+IRBL     EQU   *-IRB    IRB Length
00000040  00000000 00000000                       4093+IRBEMW   DC    XL32'00' Words 16-23 - Extended Measurement Word
                             00000060  00000001   4094+IRBXL    EQU   *-IRB    Extended IRB Length
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT

                                                  4097 ********************************************************************************
                                                  4098 *        SCSW DSECT
                                                  4099 ********************************************************************************

                                                  4101          DSECTS NAME=SCSW
                                                  4103+SCSW     DSECT Subchannel          Status Word
00000000  00                                      4104+SCSWFLAG DC    X'00'    Flags
                          000000F0  00000001      4105+SCSWKEYM EQU   X'F0'    Storage Key Mask of subchannel storage key
                          00000008  00000001      4106+SCSWSUSC EQU   X'08'    Suspend Control
                          00000004  00000001      4107+SCSWESWF EQU   X'04'    Extended Status Word Format
                          00000003  00000001      4108+SCSWDCCM EQU   X'03'    Deferred condiont code mask
                          00000000  00000001      4109+SCSWDCC0 EQU   X'00'    Normal I/O interruption
                          00000001  00000001      4110+SCSWDCC1 EQU   X'01'    Deferred condition code is 1
                          00000003  00000001      4111+SCSWDCC3 EQU   X'03'    Deferred condition code is 3

00000001  00                                      4113+SCSWCTLS DC    X'00'    General Controls
                          00000080  00000001      4114+SCSWCCWF EQU   X'80'    CCW Format control when ...
                          00000040  00000001      4115+SCSWCCWP EQU   X'40'    CCW Prefetch Control
                          00000020  00000001      4116+SCSWISIC EQU   X'20'    Initial-Status-Interruption Control
                          00000010  00000001      4117+SCSWALKC EQU   X'10'    Address-Limit-Checking Control
                          00000008  00000001      4118+SCSWSSIC EQU   X'08'    Suppress suspended interruption
                          00000004  00000001      4119+SCSW0CC  EQU   X'04'    Zero-Condition Code
                          00000002  00000001      4120+SCSWECWC EQU   X'02'    Extended Control Word control
                          00000001  00000001      4121+SCSWPNOP EQU   X'01'    Path Not Operational

00000002  00                                      4123+SCSW1    DC    X'00'    Control Byte 1
                          00000070  00000001      4124+SCSWFM   EQU   X'70'    Functional Control Mask
                          00000040  00000001      4125+SCSWFS   EQU   X'40'    Function Control - Start Function
                          00000020  00000001      4126+SCSWFH   EQU   X'20'    Function Control - Halt Function
                          00000010  00000001      4127+SCSWFC   EQU   X'10'    Function Control - Clear Function
                          00000008  00000001      4128+SCSWARP  EQU   X'08'    Activity Control - Resume pending
                          00000004  00000001      4129+SCSWASP  EQU   X'04'    Activity Control - Start pending
                          00000002  00000001      4130+SCSWAHP  EQU   X'02'    Activity Control - Halt pending
                          00000001  00000001      4131+SCSWACP  EQU   X'01'    Activity Control - Clear pending
00000003  00                                      4132+SCSW2    DC    X'00'    Control Byte 2
                          00000080  00000001      4133+SCSWASA  EQU   X'80'    Activity Control - Subchannel Active
                          00000040  00000001      4134+SCSWADA  EQU   X'40'    Activity Control - Device Active
                          00000020  00000001      4135+SCSWASUS EQU   X'20'    Activity Control - Suspended
                          00000010  00000001      4136+SCSWSAS  EQU   X'10'    Status Control   - Alert Status
                          00000008  00000001      4137+SCSWSINT EQU   X'08'    Status Control   - Intermediate Status
                          00000004  00000001      4138+SCSWSPRI EQU   X'04'    Status Control   - Primary Status
                          00000002  00000001      4139+SCSWSSEC EQU   X'02'    Status Control   - Secondary Status
                          00000001  00000001      4140+SCSWSPEN EQU   X'01'    Status Control   - Status Pending

00000004  00000000                                4142+SCSWCCW  DC    A(0)     CCW Address

00000008  00                                      4144+SCSWUS   DC    X'00'    Unit Status
                          00000080  00000001      4145+SCSWATTN EQU   X'80'    Attention
                          00000040  00000001      4146+SCSWSM   EQU   X'40'    Status modifier
                          00000020  00000001      4147+SCSWCUE  EQU   X'20'    Control-unit end
                          00000010  00000001      4148+SCSWBUSY EQU   X'10'    Busy
                          00000008  00000001      4149+SCSWCE   EQU   X'08'    Channel end
```

```
  LOC        OBJECT CODE       ADDR1     ADDR2    STMT
                               00000004  00000001 4150+SCSWDE   EQU   X'04'    Device end
                               00000002  00000001 4151+SCSWUC   EQU   X'02'    Unit check
                               00000001  00000001 4152+SCSWUX   EQU   X'01'    Unit exception

00000009  00                                      4154+SCSWCS   DC    X'00'    Channel Status
                               00000080  00000001 4155+SCSWPCI  EQU   X'80'    Program-controlled interruption
                               00000040  00000001 4156+SCSWIL   EQU   X'40'    Incorrect length
                               00000020  00000001 4157+SCSWPRGM EQU   X'20'    Program check
                               00000010  00000001 4158+SCSWPROT EQU   X'10'    Protection Check
                               00000008  00000001 4159+SCSWCDAT EQU   X'08'    Channel-data check
                               00000004  00000001 4160+SCSWCCTL EQU   X'04'    Channel-control check
                               00000002  00000001 4161+SCSWICTL EQU   X'02'    Interface-control check
                               00000001  00000001 4162+SCSWCHNG EQU   X'01'    Chaining check

0000000A  0000                                    4164+SCSWCNT  DC    H'0'     Residual CCW count
                               0000000C  00000001 4165+SCSWL    EQU   *-SCSW
```

```
 LOC        OBJECT CODE       ADDR1     ADDR2     STMT

                                                  4168 ********************************************************************************
                                                  4169 *        (other DSECTS needed by SATK)
                                                  4170 ********************************************************************************

                                                  4172          DSECTS PRINT=OFF,NAME=(ASA,SCHIB,CCW0,CCW1,CSW)
```

```
                                                  4448          PRINT ON
```

```
                                                  4450 ********************************************************************************
                                                  4451 *        Register equates
                                                  4452 ********************************************************************************

                          00000000  00000001  4454 R0        EQU   0
                          00000001  00000001  4455 R1        EQU   1
                          00000002  00000001  4456 R2        EQU   2
                          00000003  00000001  4457 R3        EQU   3
                          00000004  00000001  4458 R4        EQU   4
                          00000005  00000001  4459 R5        EQU   5
                          00000006  00000001  4460 R6        EQU   6
                          00000007  00000001  4461 R7        EQU   7
                          00000008  00000001  4462 R8        EQU   8
                          00000009  00000001  4463 R9        EQU   9
                          0000000A  00000001  4464 R10       EQU   10
                          0000000B  00000001  4465 R11       EQU   11
                          0000000C  00000001  4466 R12       EQU   12
                          0000000D  00000001  4467 R13       EQU   13
                          0000000E  00000001  4468 R14       EQU   14
                          0000000F  00000001  4469 R15       EQU   15
```

```
                                                  4471          END
```

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
ASA	4	000000	512	4176	3585
ASBEGIN	U	000000	1	4177	4182 4224 4260 4269 4287 4294 4300 4304 4308 4314 4331
ASEND	U	000200	1	4330	4331
ASLENGTH	U	000200	1	4331	
BCEXTCOD	H	00001A	2	4194	
BCIOCOD	H	00003A	2	4202	
BCMCKCOD	H	000032	2	4200	
BCPGMCOD	H	00002A	2	4198	
BCSVCCOD	H	000022	2	4196	
BEGIN	I	000200	2	3591	3560 3586
BLOCKLEN	U	005000	1	3845	3847 3889
BUFSADDR	U	008000	1	3843	3910
CAW	F	000048	4	4206	
CAWADDR	R	000049	3	4209	
CAWKEY	X	000048	1	4207	
CAWSUSP	U	000008	1	4208	
CC	U	000040	1	3854	3869 3872
CCW0	4	000000	8	4335	4341
CCW0ADDR	R	000001	3	4337	
CCW0CNT	H	000006	2	4340	
CCW0CODE	X	000000	1	4336	
CCW0FLGS	X	000004	1	4338	
CCW0L	U	000008	1	4341	
CCW1	4	000000	8	4353	4358
CCW1ADDR	A	000004	4	4357	
CCW1CNT	H	000002	2	4356	
CCW1CODE	X	000000	1	4354	
CCW1FLGS	X	000001	1	4355	
CCW1L	U	000008	1	4358	
CCWCC	U	000040	1	4345	
CCWCD	U	000080	1	4344	
CCWIDA	U	000004	1	4349	
CCWPCI	U	000008	1	4348	
CCWSKIP	U	000010	1	4347	
CCWSLI	U	000020	1	4346	
CCWSUSP	U	000002	1	4350	
CD	U	000080	1	3853	3897 3898 3899 3900 3901 3902 3903
CDCCWADR	U	001000	1	3840	3895
CHANID	F	0000A8	4	4261	
CODE	2	000000	8448	3522	
CPUID	U	00031B	1	4333	
CSW	F	000040	8	4205	
CSWATTN	U	000080	1	4375	
CSWBUSY	U	000010	1	4378	
CSWCCTL	U	000004	1	4390	
CSWCCW	R	000001	3	4372	
CSWCDAT	U	000008	1	4389	
CSWCE	U	000008	1	4379	3792
CSWCHNG	U	000001	1	4392	
CSWCNT	H	000006	2	4394	
CSWCS	X	000005	1	4384	
CSWCUE	U	000020	1	4377	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
CSWDCC0	U	000000	1	4368	
CSWDCC1	U	000001	1	4369	
CSWDCC3	U	000003	1	4370	
CSWDCCM	U	000003	1	4367	
CSWDE	U	000004	1	4380	3792
CSWFLAG	X	000000	1	4362	
CSWFMT	4	000000	8	4361	4395
CSWFMTL	U	000008	1	4395	
CSWICTL	U	000002	1	4391	
CSWIL	U	000040	1	4386	
CSWKEYM	U	0000F0	1	4363	
CSWLOG	U	000004	1	4366	
CSWPCI	U	000080	1	4385	
CSWPRGM	U	000020	1	4387	
CSWPROT	U	000010	1	4388	
CSWSM	U	000040	1	4376	
CSWSUSP	U	000008	1	4365	
CSWUC	U	000002	1	4381	
CSWUS	X	000004	1	4374	
CSWUX	U	000001	1	4382	
DWAT0009	3	0002C0	8	3682	3681
DWAT0010	3	0002D0	8	3687	3686
DWAT0011	3	0002E0	8	3692	3691
DWAT0012	3	0002F0	8	3697	3696
DWAT0013	3	000300	8	3702	3701
ENADEV	I	000316	4	3720	3670
ENAOKAY	I	000368	2	3745	3734
EOJ	H	0002B6	2	3680	3602
EXCP	I	00036A	4	3751	3616 3630 3646
EXTCPUAD	H	000084	2	4226	
EXTICODE	H	000086	2	4227	
EXTIPARM	F	000080	4	4225	
EXTNPSW	F	000058	8	4215	
EXTOPSW	F	000018	8	4187	4193
FAILDEV	H	0002C8	2	3685	3725 3735 3740
FAILIO	H	0002D8	2	3690	3760 3783 3793
FAILREW	H	0002E8	2	3695	3619 3621
FAILTEST	H	0002F8	2	3700	3637 3653
FIND0015	A	000360	4	3742	3720
FINL0015	H	000320	2	3723	3739
FINM0015	A	000364	4	3743	3738
FINN0015	H	00034E	2	3736	3727 3729
GOODRSLT	A	000808	4	3888	3636 3652
IDA	U	000004	1	3857	3897 3898 3899 3900 3901 3902 3903 3904
IDAL1	A	002000	4	3927	3897
IDAL2	A	002020	4	3936	3898
IDAL3	A	002040	4	3945	3899
IDAL4	A	002060	4	3954	3900
IDAL5	A	002080	4	3967	3901
IDAL6	A	0020A0	4	3976	3902
IDAL7	A	0020C0	4	3985	3903
IDAL8	A	0020E0	4	3994	3904

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
IDALADDR	U	002000	1	3841	3925
IIRB0018	F	000444	4	3818	3816 3817
IMAGE	1	000000	8448	0	
INIT	H	000298	2	3660	3595
IOBUFF1	U	008000	1	3912	3927 3928 3929 3930 3931 3932 3933 3934
IOBUFF2	U	010000	1	3913	3936 3937 3938 3939 3940 3941 3942 3943
IOBUFF3	U	018000	1	3914	3945 3946 3947 3948 3949 3950 3951 3952
IOBUFF4	U	020000	1	3915	3954 3955 3956 3957 3958 3959 3960 3961
IOBUFF5	U	028000	1	3916	3967 3968 3969 3970 3971 3972 3973 3974
IOBUFF6	U	030000	1	3917	3976 3977 3978 3979 3980 3981 3982 3983
IOBUFF7	U	038000	1	3918	3985 3986 3987 3988 3989 3990 3991 3992
IOBUFF8	U	040000	1	3919	3994 3995 3996 3997 3998 3999 4000 4001
IOBUFFS	U	008000	1	3910	3912 3913 3914 3915 3916 3917 3918 3919
IOBUFLEN	U	008000	1	3844	3847 3912 3913 3914 3915 3916 3917 3918 3919 3889 3897 3898 3899 3900 3901 3902 3903 3904
IOCB	4	000000	48	4009	4033 3587
IOCBCAW	A	000018	4	4029	
IOCBCM	X	000009	1	4017	
IOCBCS	X	00000B	1	4020	
IOCBCT	X	00000D	1	4022	
IOCBDEV	H	000004	2	4014	3728
IOCBDID	F	000000	4	4011	3731 3756
IOCBDV	H	000002	2	4013	
IOCBIRB	A	000020	8	4031	3664 3761
IOCBL	U	000030	1	4033	
IOCBORB	A	000018	8	4030	3663 3758
IOCBRCNT	H	000016	2	4028	3790
IOCBSC	X	00000E	1	4023	3754 3785 3787
IOCBSCCW	A	000010	4	4025	3789
IOCBSCNT	F	000014	4	4026	
IOCBSIB	A	000028	8	4032	3721
IOCBST	H	00000A	2	4018	3755 3786
IOCBUM	X	000008	1	4016	
IOCBUS	X	00000A	1	4019	3792
IOCBUT	X	00000C	1	4021	
IOCBWAIT	X	00000F	1	4024	
IOCBZERO	H	000006	2	4015	3755
IOCB_580	A	000414	4	3804	3662
IOELADDR	F	0000AC	4	4262	
IOICODE	H	0000BA	2	4267	
IOIID	F	0000C0	4	4272	
IOINIT	I	000308	4	3709	3669
IOIPARM	F	0000BC	4	4271	
IOMK0014	F	000310	4	3711	3709 3710
ION0017	U	0003B0	16	3771	3768
IONPSW	F	000078	8	4219	
IOOPSW	F	000038	8	4191	4201
IORB0018	X	0004A4	12	3820	3815
IOS0017	X	0003C0	16	3772	3767 3775
IOSSID	F	0000B8	4	4270	3778
IOWT0016	H	000390	2	3765	3779 3782 3788
IPLCCW1	F	000008	8	4179	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
IPLCCW2	F	000010	8	4180	
IPLPSW	F	000000	8	4178	
IRB	4	000000	96	4088	4092 4094 3665 3762
IRBECW	X	000020	32	4091	
IRBEMW	X	000040	32	4093	
IRBESW	X	00000C	20	4090	
IRBL	U	000040	1	4092	
IRBSCSW	X	000000	12	4089	3666 3785 3786 3789 3790
IRBXL	U	000060	1	4094	
IRST0017	H	0003D0	2	3774	3771
K	U	000400	1	3836	3838 3839 3840 3841 3843 3844 3845 3927 3928 3929 3930 3931 3932 3933 3934 3936 3937 3938 3939 3940 3941 3942 3943 3945 3946 3947 3948 3949 3950 3951 3952 3954 3955 3956 3957 3958 3959 3960 3961 3967 3968 3969 3970 3971 3972 3973 3974 3976 3977 3978 3979 3980 3981 3982 3983 3985 3986 3987 3988 3989 3990 3991 3992 3994 3995 3996 3997 3998 3999 4000 4001
LCHANLOG	F	0000B0	4	4263	
MCKLOG	F	000100	4	4295	
MCKNPSW	F	000070	8	4218	
MCKOPSW	F	000030	8	4190	4199
MEASUREB	X	0000B9	1	4266	
MKARCHMD	X	0000A3	1	4254	
MKARS	F	000120	4	4293	
MKCLKCMP	F	0000E0	8	4279	
MKCPUTIM	F	0000D8	8	4278	
MKCRS	F	0001C0	4	4298	
MKDMGCOD	F	0000F4	4	4282	
MKFAILA	F	0000F8	4	4284	
MKFPRS	D	000160	8	4296	
MKICODE	F	0000E8	4	4280	
MKLOGOUT	F	000100	4	4286	
MKMODEL	F	0000FC	4	4285	
MKXSAA	F	0000D4	4	4277	
MODE	X	0004B0	1	3834	3869 3872
MODESET	U	0000DB	1	3863	3869 3872
MONCLS	H	000094	2	4242	
MONCODE	F	00009C	4	4249	
MONNUMBR	X	000095	1	4244	
MPGACCID	X	0000A2	1	4252	
NKGRS	F	000180	4	4297	
ORB	4	000000	32	4041	4071 4079 3588
ORB1_0	X	000004	1	4044	
ORB1_8	X	000005	1	4051	3610 3612
ORBA	U	000010	1	4055	
ORBB	U	000004	1	4057	
ORBC	U	000004	1	4047	
ORBCCW	A	000008	4	4069	3751
ORBCSS	X	00000C	1	4073	
ORBCU	X	00000E	1	4076	
ORBD	U	000040	1	4064	
ORBF	U	000080	1	4052	3612
ORBH	U	000002	1	4058	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
ORBI	U	000020	1	4054	
ORBKEYM	U	0000F0	1	4045	
ORBL	U	000080	1	4062	3613 3644
ORBLEN	U	00000C	1	4071	
ORBLPM	X	000006	1	4060	
ORBM	U	000002	1	4048	
ORBP	U	000040	1	4053	
ORBPARM	F	000000	4	4042	
ORBPGM	X	00000E	1	4075	
ORBRSV25	U	00007E	1	4066	
ORBRSV26	U	00003E	1	4065	
ORBRSV3	U	00007F	1	4063	
ORBRSV4	U	000080	1	4070	
ORBRSV5	X	00000D	1	4074	
ORBRSV6	X	00000F	1	4077	
ORBRSV7	X	000010	16	4078	
ORBS	U	000008	1	4046	
ORBT	U	000001	1	4059	
ORBU	U	000008	1	4056	
ORBX	U	000001	1	4067	
ORBXLEN	U	000020	1	4079	
ORBY	U	000001	1	4049	
ORRB1_24	X	000007	1	4061	3611 3613 3644
PCFETO	A	0000C4	4	4273	
PERACCID	X	0000A1	1	4251	
PERADDR	F	000098	4	4248	
PERCODE	X	000096	1	4245	
PERCODMK	U	0000F0	1	4246	
PGMACCID	X	0000A0	1	4250	
PGMDXC	F	000090	4	4240	
PGMICODE	H	00008E	2	4239	
PGMIID	F	00008C	4	4235	
PGMIILC	X	00008D	1	4237	
PGMIILCM	U	00000C	1	4238	
PGMNPSW	F	000068	8	4217	
PGMOPSW	F	000028	8	4189	4197
PGMTRX	F	000090	4	4241	
PMCW1_0	X	000004	1	4402	
PMCW1_8	X	000005	1	4405	3726 3732
PMCWB	U	000004	1	4437	
PMCWCHP0	X	000010	1	4426	
PMCWCHP1	X	000011	1	4427	
PMCWCHP2	X	000012	1	4428	
PMCWCHP3	X	000013	1	4429	
PMCWCHP4	X	000014	1	4430	
PMCWCHP5	X	000015	1	4431	
PMCWCHP6	X	000016	1	4432	
PMCWCHP7	X	000017	1	4433	
PMCWDNUM	H	000006	2	4417	3728
PMCWE	U	000080	1	4406	3732
PMCWEXC	X	00001B	1	4436	
PMCWIP	F	000000	4	4401	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
PMCWISCM	U	000038	1	4403	
PMCWLM	U	000060	1	4407	
PMCWLMG	U	000020	1	4408	
PMCWLML	U	000040	1	4409	
PMCWLPM	X	000008	1	4419	
PMCWLPUM	X	00000A	1	4421	
PMCWM	U	000004	1	4413	
PMCWMBI	H	00000C	2	4423	
PMCWMM	U	000018	1	4410	
PMCWMMC	U	000008	1	4412	
PMCWMME	U	000010	1	4411	
PMCWPAM	X	00000F	1	4425	
PMCWPIM	X	00000B	1	4422	
PMCWPNOM	X	000009	1	4420	
PMCWPOM	X	00000E	1	4424	
PMCWRES1	X	000018	4	4434	
PMCWRES2	X	000018	3	4435	
PMCWS	U	000001	1	4439	
PMCWT	U	000002	1	4414	
PMCWV	U	000001	1	4415	3726
PMCWX	U	000002	1	4438	
PREVORG	U	000200	1	3545	3551
R0	U	000000	1	4454	3585 3615 3629 3645 3751
R1	U	000001	1	4455	
R10	U	00000A	1	4464	
R11	U	00000B	1	4465	
R12	U	00000C	1	4466	
R13	U	00000D	1	4467	
R14	U	00000E	1	4468	3595 3599 3654 3672
R15	U	00000F	1	4469	3616 3630 3646 3664 3665 3667 3669 3670 3713 3745 3796
R2	U	000002	1	4456	3586 3591 3592 3593
R3	U	000003	1	4457	3587 3662
R4	U	000004	1	4458	
R5	U	000005	1	4459	
R6	U	000006	1	4460	
R7	U	000007	1	4461	
R8	U	000008	1	4462	3588 3663
R9	U	000009	1	4463	3589 3666
READ	U	000002	1	3859	3897 3898 3899 3900 3901 3902 3903 3904
READ256K	W	001000	8	3897	3873 3888
READFWD	U	000006	1	3860	
READPROG	W	0004C8	8	3872	3629 3645
RESIDUAL	U	003000	1	3847	
RESLTADR	U	000800	1	3838	3881
REW2LDPT	W	0004D8	8	3875	3870
REWIND	U	000007	1	3861	3875
REWPROG	W	0004B8	8	3869	3615
RSTNPSW	F	000000	8	4183	
RSTOPSW	F	000008	8	4184	
SCANOUT	X	000080	1	4221	4222
SCANOUTL	U	000000	1	4222	
SCHIB	4	000000	52	4398	4445 3722

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
SCHIBL	U	000034	1	4445	
SCHMBA	A	000028	8	4443	
SCHMDA1	X	000030	4	4444	
SCHMDA3	X	000028	12	4442	
SCHPMCW	X	000000	28	4400	
SCHSCSW	X	00001C	12	4441	
SCSW	4	000000	12	4103	4165 3589
SCSW0CC	U	000004	1	4119	
SCSW1	X	000002	1	4123	
SCSW2	X	000003	1	4132	3785
SCSWACP	U	000001	1	4131	
SCSWADA	U	000040	1	4134	
SCSWAHP	U	000002	1	4130	
SCSWALKC	U	000010	1	4117	
SCSWARP	U	000008	1	4128	
SCSWASA	U	000080	1	4133	
SCSWASP	U	000004	1	4129	
SCSWASUS	U	000020	1	4135	
SCSWATTN	U	000080	1	4145	
SCSWBUSY	U	000010	1	4148	
SCSWCCTL	U	000004	1	4160	
SCSWCCW	A	000004	4	4142	3631 3647 3789
SCSWCCWF	U	000080	1	4114	
SCSWCCWP	U	000040	1	4115	
SCSWCDAT	U	000008	1	4159	
SCSWCE	U	000008	1	4149	3618 3889
SCSWCHNG	U	000001	1	4162	
SCSWCNT	H	00000A	2	4164	3634 3650 3790
SCSWCS	X	000009	1	4154	3620 3633 3649
SCSWCTLS	X	000001	1	4113	
SCSWCUE	U	000020	1	4147	
SCSWDCC0	U	000000	1	4109	
SCSWDCC1	U	000001	1	4110	
SCSWDCC3	U	000003	1	4111	
SCSWDCCM	U	000003	1	4108	
SCSWDE	U	000004	1	4150	3618 3889
SCSWECWC	U	000002	1	4120	
SCSWESWF	U	000004	1	4107	
SCSWFC	U	000010	1	4127	
SCSWFH	U	000020	1	4126	
SCSWFLAG	X	000000	1	4104	
SCSWFM	U	000070	1	4124	
SCSWFS	U	000040	1	4125	
SCSWICTL	U	000002	1	4161	
SCSWIL	U	000040	1	4156	3889
SCSWISIC	U	000020	1	4116	
SCSWKEYM	U	0000F0	1	4105	
SCSWL	U	00000C	1	4165	
SCSWPCI	U	000080	1	4155	
SCSWPNOP	U	000001	1	4121	
SCSWPRGM	U	000020	1	4157	
SCSWPROT	U	000010	1	4158	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
SCSWSAS	U	000010	1	4136	
SCSWSINT	U	000008	1	4137	
SCSWSM	U	000040	1	4146	
SCSWSPEN	U	000001	1	4140	
SCSWSPRI	U	000004	1	4138	3787
SCSWSSEC	U	000002	1	4139	
SCSWSSIC	U	000008	1	4118	
SCSWSUSC	U	000008	1	4106	
SCSWUC	U	000002	1	4151	
SCSWUS	X	000008	1	4144	3618 3632 3648 3786
SCSWUX	U	000001	1	4152	
SKIP	U	000010	1	3856	
SLI	U	000020	1	3855	3869 3872 3875
SSARCHMD	X	0000A3	1	4253	
SSARS	F	000120	4	4309	
SSCLKCMP	F	0000E0	8	4303	
SSCPUTIM	F	0000D8	8	4302	
SSCRS	F	0001C0	4	4312	
SSFPRS	D	000160	8	4310	
SSGRS	F	000180	4	4311	
SSMODEL	F	00010C	4	4307	
SSPREFIX	F	000108	4	4306	
SSPSW	F	000100	8	4305	
SSXSAA	A	0000D4	4	4301	
STFLDATA	F	0000C8	4	4274	
SVCICODE	H	00008A	2	4233	
SVCIID	F	000088	4	4229	
SVCIILC	X	000089	1	4231	
SVCIILCM	U	00000C	1	4232	
SVCNPSW	F	000060	8	4216	
SVCOPSW	F	000020	8	4188	4195
TEST01	I	000212	4	3608	3599
TESTADDR	U	000FFF	1	3839	3891
TESTCCWA	A	000800	4	3884	3631 3647
TESTCS	X	000805	1	3886	3633 3649
TESTNUM	X	000FFF	1	3893	3608
TESTRES	H	000806	2	3887	3634 3650
TESTRSLT	X	000800	8	3883	3636 3652
TESTTAPE	J	000000	8448	3522	3525 3532 3546 3548 3559 3561 3881 3891 3895 3925
TESTUS	X	000804	1	3885	3632 3648
TIC	U	000008	1	3862	3870 3873
TIMER	F	000050	4	4212	
TTDES	F	000054	4	4213	
UA0	F	000010	8	4185	
UA1	F	00004C	4	4210	
UA2	F	0000A4	4	4255	
UA3	F	0000B4	4	4264	
UA4	X	0000B8	1	4265	
UA5	X	0000CC	8	4275	
UA6	X	0000EC	8	4281	
UA7	F	000118	8	4292	
UA8	X	000180	32	4321	

SYMBOL	TYPE	VALUE	LENGTH	DEFN	REFERENCES
WPSW0017	U	0003A0	16	3770	3769
ZBRKADDR	A	000110	8	4291	
ZEMONCNT	F	00010C	4	4290	
ZEMONCTR	A	000100	8	4288	
ZEMONSIZ	F	000108	4	4289	
ZEXTNPSW	X	0001B0	16	4324	
ZEXTOPSW	X	000130	16	4316	
ZIONPSW	X	0001F0	16	4328	
ZIOOPSW	X	000170	16	4320	
ZMCKNPSW	X	0001E0	16	4327	
ZMCKOPSW	X	000160	16	4319	
ZMKFAILA	F	0000F8	8	4283	
ZMONCODE	F	0000B0	8	4258	
ZPGMNPSW	X	0001D0	16	4326	
ZPGMOPSW	X	000150	16	4318	
ZPGMTRX	F	0000A8	8	4257	
ZRSTNPSW	X	0001A0	16	4323	
ZRSTOPSW	X	000120	16	4315	
ZSASDISP	U	0011C0	1	4329	
ZSVCNPSW	X	0001C0	16	4325	
ZSVCOPSW	X	000140	16	4317	

```
 MACRO     DEFN  REFERENCES

ANTR        117
APROB       249
ARCHIND     409   3439
ARCHLVL     550   3438
ASAIPL      676   3557
ASALOAD     756   3521
ASAREA      811   4175
ASAZAREA    996
CPUWAIT    1079   3766
DSECTS     1405   4007   4039   4086   4101   4172
DWAIT      1608   3679   3684   3689   3694   3699
DWAITEND   1665   3678
ENADEV     1673   3719
ESA390     1773
IOCB       1784   3803
IOCBDS     1960   4008
IOFMT      1994   4040   4087   4102   4334   4352   4360   4397
IOINIT     2332   3708
IOTRFR     2373
ORB        2421   3819
POINTER    2610
PSWFMT     2638
RAWAIT     2772
RAWIO      2868   3753
SIGCPU     3026
SMMGR      3084
SMMGRB     3184
TRAP128    3233   3533
TRAP64     3210   3523   3526
TRAPS      3246
ZARCH      3320
ZEROH      3332
ZEROL      3360
ZEROLH     3388
ZEROLL     3411
```

```
   DESC      SYMBOL    SIZE      POS         ADDR

Entry: 0

Image       IMAGE     8448  0000-20FF  0000-20FF
  Region    CODE      8448  0000-20FF  0000-20FF
    CSECT   TESTTAPE  8448  0000-20FF  0000-20FF
```

```
   STMT                                          FILE NAME

1     c:\Users\Fish\Documents\Visual Studio 2008\Projects\MyProjects\ASMA-0\tape\tape.asm
2     C:\Users\Fish\Documents\Visual Studio 2008\Projects\Hercules\_Git\_Harold\SATK-0\srcasm\satk.mac


** NO ERRORS FOUND **
```