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PS      LOC  OBJECT CODE        STMT SOURCE STATEMENT

                                1377 ************************************************************************
                                1378 *                                                                      *
                                1379 *              T A P E    B O O T S T R A P    L O A D E R          *
                                1380 *                                                                      *
                                1381 ************************************************************************
                                1382           DROP  0,1,2,3,4,5,6,7
                                1383 *
                                1384 * FIRST BLOCK OF BOOTSTRAP LOADER
                                1385 *
     2B2C                       1386 BOOTBLK1 DS    0H
     2B2C                       1387           USING BOOTBLK1,11            LOCATIONS 36-37 MUST REMAIN ZERO
     2B2C  E5D6D3               1388           DC    2CL3'VOL'              00
     2B32  47F0                 1389           DC    XL2'47F0'              06 INITIAL MIR
     2B34  002C                 1390           DC    Y(BOOTSTRT-BOOTBLK1)   08
     2B36  000000000000         1391           DC    XL6'0'                 0A
     2B3C  00000020             1392           DC    YL4(BOOTSTRT-BOOTBLK1) INITIAL I/O PSC
     2B40  FFFF                 1393 BOOTXFFF DC    XL2'FFFF'              14 CONSTANT X'FFFF'
     2B42  47F0B016             1394           B     *                      16 AMIR
     2B46  000000000000         1395           DC    XL6'0'                 1A
     2B4C  A854B072             1396 BOOTSTRT LPSC  BOOTIWTP,X'54'         20 PROC PSC FOR INTERRUPT WAIT LOOP
     2B50  A8F4B048             1397           LPSC  BOOTINTP,X'F4'         24 LOAD I/O PSC, SWITCH TO PROC
     2B54  000000C0             1398 BOOTPROC DC    YL4(BOOTDONE-BOOTBLK2) PPSC FOR LOADER EXIT (BUTLT)
     2B58  00F6                 1399 BOOTTBCW DC    H'246'                 2C TAPE READ BCW
     2B5A  3B00                 1400           DC    Y(X'3B00')             2E
     2B5C  3B0C                 1401           DC    Y(X'3B00')             30 BOOT LOADER BLOCK 2 BASE REG.
     2B5E  00000044             1402 BOOTIWTP DC    YL4(BOOTIDWT-BOOTBLK1) PPSC FOR INTERRUPT WAIT LOOP
     2B62  0000                 1403           DC    5H'0'                  36 I/O REGISTERS 11-15
     2B6C  00000000             1404           DC    XL4'0'                 40
     2B70  47F0B044             1405 BOOTIDWT B     *                      44 WAIT HERE FOR DEVICE INTERRUPT
     2B74  000C0074             1406 BOOTINTP DC    YL4(BOOTINT1-BOOTBLK1) I/O PSC FOR DEVICE INTERRUPT RTN
     2B78  010C                 1407 BOOTX100 DC    XL2'100'               4C CONSTANT OF X'100'
     2B7A  020C                 1408 BOOTX200 DC    XL2'200'               4E CONSTANT OF X'200'
     2B7C  D10A                 1409 BOOTD10A DC    XL2'D10A'              50 TEXT RECORD IDENTIFICATION CODES
     2B7E  D10C                 1410 BOOTD10C DC    XL2'D10C'              52 TRANSFER RECORD IDENTIFICATION
     2B80  00000058             1411           DC    XL4'58'                54 BCW AREAS--
     2B84  0000005C             1412           DC    XL4'5C'                58  ALL BCW'S FOR CHANNELS
     2B88  00000060             1413           DC    XL4'60'                5C  5 THROUGH 12
     2B8C  00000064             1414           DC    XL4'64'                60  ARE SET UP TO PERMIT
     2B90  00000068             1415           DC    XL4'68'                64  A SUCCESSFUL READ
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CRS     LOC   OBJECT CODE        STMT SOURCE STATEMENT

        2B94  0000006C            1416          DC    XL4'6C'              68  FROM ANY VALID TAPE ADDRESS
        2B98  00000070            1417          DC    XL4'70'              6C
        2B9C  00000074            1418          DC    XL4'74'              70
        2BA0  D2000003F0043       1419 BOOTINT1 MVC   X'3F'(1),X'43'       74 ADDRESS OF IPL DEVICE
        2BA6  9478003F            1420          NI    X'3F',X'78'          7A ISOLATE CONTROL UNIT BITS
        2BAA  AAF0003F            1421          AH    15,X'3F'             7E
        2BAE  F1210003F003F       1422          MVC   X'3E'(3),X'3F'(2)    82 CONTROL UNIT NUMBER
        2BB4  AAF0003E            1423          AH    15,X'3E'             88 DOUBLE IT TWICE TO GET
        2BB8  AAF0003E            1424          AH    15,X'3E'             8C  BCW ADDRESS DISPLACEMENT
        2BBC  D2008C0B0043        1425          MVC   BOOTXIOF+1(1),X'43'  90 INSERT DEVICE ADDRESS INTO
        2BC2  D2003B0D0043        1426          MVC   BOOTTIO+1(1),X'43'   96  XIOF AND TIO INSTRUCTIONS
        2BC8  4550B0C2            1427          BAL   14,BOOTREAD          9C READ SECOND BLOCK OF BOOT LOADER
        2BCC  923CB02E            1428          MVI   BOOTTBCW+2,X'3C'     A0 CHANGE READ BCW TO INPUT AREA
        2BD0  D501C000B050        1429 BOOTTXT1 CLC   0(2,12),BOOTD10A     A4 IS THIS THE FIRST TEXT RECORD?
        2BD6  4780B004            1430          BE    BOOTSIZE-BOOTBLK2(,9)   YES--CHECK FOR MEMORY SIZE
        2BDA  45E0B0B6            1431          BAL   14,BOOTGET           AE TRY THE NEXT RECORD
        2BDE  47F0B0A4            1432          B     BOOTTXT1             B2
                                  1433 * TAPE READ ROUTINE FOR THE BOOTSTRAP LOADER
        2BE2  A8500038            1434 BOOTGET  AI    X'38',80             B6 INCREMENT BLOCK POINTER
        2BE6  95F40039            1435          CLI   X'39',X'F4'          BA IS THIS BLOCK EXHAUSTED?
        2BEA  4740B000            1436          BL    0(,14)               BE NO--R12 -> NEXT RECORD
        2BEE  D203B040B02C        1437 BOOTREAD MVC   X'40'(4,15),BOOTTBCW  C2 SET UP TAPE READ BCW
        2BF4  A4000002            1438 BOOTXIOF XIOF  2,0                  C8 READ THE NEXT TAPE BLOCK
        2BF8  4780B0DC            1439          BC    8,BOOTTIO            CC ACCEPTED
        2BFC  4720B0C8            1440          BC    2,BOOTXIOF           D0 BUSY--TRY AGAIN
        2C00  A9006000            1441 BOOTERR  HPR   X'6000'              D4 ERROR DURING BOOTSTRAP PROCEDURE
        2C04  47F0B0D4            1442          B     BOOTERR              D8 RESTART THE IPL PROCEDURE
        2C08  A8000001            1443 BOOTTIO  TIO   1,0                  DC GET DEVICE STATUS
        2C0C  4720B0DC            1444          BC    2,BOOTTIO            E0 BUSY--WAIT FOR IT
        2C10  91020001            1445          TM    1,X'02'              E4 UNIT CHECK?
        2C14  4710B0D4            1446          BO    BOOTERR              E8 YES--ERROR
        2C18  91040001            1447          TM    1,X'04'              EC DEVICE END?
        2C1C  4780B0D4            1448          BZ    BOOTERR              F0 NO--ERROR
        2C20  48C0002E            1449          LH    12,X'2E'             F4 RESET BLOCK POINTER
        2C24  A8040039            1450          AI    X'38',4              F8 ADJUST FOR BLOCK NUMBER, ETC.
        2C28  47F0E000            1451          B     0(,14)               FC EXIT
        2C2C                      1452 BOOT1END EQU   *
                                  1453 *
                                  1454 * SECOND BLOCK OF BOOTSTRAP LOADER
                                  1455 *
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   LOC  OBJECT CODE      STMT SOURCE STATEMENT
                         1456 BOOTBLK2 DS     0H
   2C2C                  1457          USING  BOOTBLK2,8
   2C2C                  1458          DC     CL4'HDR1'                  BASE ADDRESS OF THIS BLOCK
   2C2C  C8C4D9F1        1459 BOOTSIZE LH     14,X'30'                   MEMORY SIZE TEXT RECORD?
   2C30  48E00030        1460          CLC    10(2,12),BOOTXFFS          NO--ASSUME 16K
   2C34  D501C00AB014    1461          BNE    BOOTMOVE                   HIGH-MEMORY ADDRESS
   2C3A  47708040        1462          LH     14,12(,12)                 REDUCE TO A MULTIPLE OF 256
   2C3E  48E0C00C        1463          MVI    X'3D',0                    LEAVE ROOM FOR BOOT LOADER
   2C42  92000030        1464          SH     14,BOOTX200                MOVE BOOTSTRAP LOADER AND FIRST
   2C46  ABE0B04E        1465          MVC    0(256,14),X'3B00'           TEXT BLOCK TO END OF MEMORY
   2C4A  D2FFE0003B00    1466          MVC    256(256,14),X'3C00'        UPDATE BASE REGISTER
   2C50  D2FFE1003C00    1467          STH    14,X'30'                   CHANGE READ BCW
   2C56  40E00030        1468          STH    14,X'2E'                   READ AREA IS X'100' BYTES HIGHER
   2C5A  40E00C2E        1469          MVI    X'2F',X'FF'
   2C5E  92FF002F        1470          AI     X'2E',1                    UPDATE TEXT BLOCK POINTER ALSO
   2C62  A6010C2E        1471          MVC    X'38'(1),X'2E'             CALCULATE NEW PPSC ADDRESS
   2C66  D2000038002E    1472 BOOTMOVE AH     14,BOOTPRGC+2              ADJUST FINAL PPSC FOR EXIT
   2C6C  AAE0B02A        1473          STH    14,BOOTPRGC+2              BRANCH INTO RELOCATED BLOCK
   2C70  40E0B02A        1474          B      BOOTCLR
   2C74  47F0B04C        1475 * MEMORY CLEAR ROUTINE
                         1476 BOOTCLR  MVI    X'104',0                   CLEAR LOCATIONS 104-200
   2C78  92000104        1477          MVC    X'105'(251),X'104'
   2C7C  D2FA01050104    1478          LH     14,BOOTX200                START LOOP AT LOCATION 0200
   2C82  48E0B04E        1479 BOOTCLR1 MVC    0(256,14),X'1FF'           CLEAR 256 BYTES AT A TIME
   2C86  D2FFE00001FF    1480          AH     14,BOOTX100
   2C8C  AAE0BC4C        1481          CH     14,X'30'                   HAVE WE CLEARED RIGHT TO LOADER?
   2C90  49E00030        1482          BL     BOOTCLR1                   NO--CLEAR ANOTHER 256 BYTES
   2C94  4740B05A        1483          CLC    10(2,12),BOOTXFFS          WAS MEMORY SIZE RECORD READ?
   2C98  D501C00ABC14    1484          BNE    BOOTLTXT                   NO--WE HAVE THE FIRST TEXT REC.
   2C9F  47708084        1485 * TEXT RECORD LOADING ROUTINE
                         1486 BOOTLOAD BAL    14,BOOTGET                 GET THE NEXT RECORD
   2CA2  45E0B0B6        1487          CLC    0(2,12),BOOTD10A           IS IT A TEXT RECORD?
   2CA6  D501C000B050    1488          BNE    BOOTXFER                   NO
   2CAC  47708098        1489 BOOTLTXT MVC    BOOTLMVC+1(1),2(12)        LENGTH OF TEXT TO BE LOADED
   2CB0  D200B08FC002    1490          LH     14,4(,12)                  ADDRESS TO LOAD TEXT
   2CB6  48E0C004        1491 BOOTLMVC MVC    0(0,14),10(12)             LOAD THE CURRENT TEXT RECORD
   2CBA  D200E000C00A    1492          B      BOOTLOAD                   READ ANOTHER RECORD
   2CC0  47F08076        1493 BOOTXFER CLC    0(2,12),BOOTD10C           TRANSFER RECORD?
   2CC4  D501C000B052    1494          BNE    BOOTLOAD                   NO--IGNORE IT
   2CCA  47708076
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RS     LOC   OBJECT CODE        STMT SOURCE STATEMENT

       2CCE  4700C0AE          1495 BOOTXFR1 BC     0,BOOTXFR2              SET TO BRANCH AFTER FIRST TIME
       2CD2  92F080A3          1496          MVI    BOOTXFR1+1,X'F0'        THE SUPERVISOR HAS BEEN LOADED--
       2CD6  47F08070          1497          B      BOOTLOAD                 NOW LOAD JOB CONTROL
       2CDA  A8538028          1498 BOOTXFR2 LPSC   BOOTPROC,X'58'          SET UP PROCESSOR PSC FOR EXIT
       2CDE  A4800023          1499          XIOF   X'23',X'80'             ALLOW OPERATOR REQUESTS
       2CE2  D2018CC6C00F      1500          MVC    BOOTEXIT+2(2),14(12)    TRANSFER ADDRESS INTO JBCN
       2CE8  A8640126          1501          LPSC   X'126',X'64'            SWITCH TO PROCESSOR STATE
       2CEC  92000043          1502 BOOTDONE MVI    X'43',0                 CLEAR DEVICE ADDRESS STORAGE
       2CF0  47F08004          1503 BOOTEXIT B      *                       BRANCH INTO JOB CONTROL
       2CF4                    1504 BOOT2END EQU    *
                               1505          DROP   3,11
       2CF4                    1506          USING  *,0,1,2,3,4,5,6,7       RESTORE NORMAL BASE REGISTERS
       2CF4  8100              1507 BOOTBCW1 DC     Y(BOOT1END-BOOTBLK1+X'8000') TAPE BOOT BLOCK 1 WRITE BCW
       2CF6  2820              1508          DC     Y(BOOTBLK1)
       2CF8  8008              1509 BOOTBCW2 DC     Y(BOOT2END-BOOTBLK2+X'8000') TAPE BOOT BLOCK 2 WRITE BCW
       2CFA  2C20              1510          DC     Y(BOOTBLK2)
                               1511 *-------------------- END OF CTL OVERLAY CODING ----------------------*
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