```
 OPTIONS NODECK,LIST,XREF,NOREL,OBJ(P)

THE LIST OF OPTIONS USED DURING THIS ASSEMBLY IS--   NODECK,LIST,XREF,NOREL,OBJ
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```
                          EXTERNAL SYMBOL LIST

SYMBOL   TYPE                                        VER 15, MOD 00  03/02/22  PAGE   1

#KCTLO    MODULE
```

```
     0000                         1 #KCTLO START 0
                                  2        PRINT ON,NODATA
                                  3 *      @SYS  EXP-N
                               214+        PRINT ON
                               215 *      @FXD  EXP-N
                               620+        PRINT ON
                               621 *      @HDW  EXP-N
                               806+        PRINT ON
                               807 *      @CAN  EXP-N
                               910+        PRINT ON
                               911 *      @WKA  EXP-N
                               981+        PRINT ON
                               982 *      @DIR  EXP-N
                              1102+        PRINT ON
                              1103 *      @SPF  EXP-N
                              1566+        PRINT ON
                              1567 *      @ERM  EXP-N
                              2189+        PRINT ON
```

```
                      2191 ****************************************************************************
                      2192 *  5703-XM1 COPYRIGHT IBM CORP. 1970                                      *
                      2193 *          REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083            *
                      2194 *                                                                         *
                      2195 ****************************************************************************
                      2196 *STATUS                                                                   *
                      2197 *    VERSION 1 MODIFICATION 0                                              *
                      2198 *                                                                         *
                      2199 *FUNCTION                                                                  *
                      2200 *    KCTLOG WILL PRINT THE FILENAMES AND IDENTIFICATIONS OF ENTRIES        *
                      2201 *    IN THE USER LIBRARY IF LISCAT IS ENTERED WITHOUT THE ALL PARA-        *
                      2202 *    METER.  IF 'LISTCAT ALL' IS ENTERED, ALL OF THE FOLLOWING DATA        *
                      2203 *    FOR EACH ENTRY IN THE CURRENT USER'S LIBRARY WILL BE OUTPUT:          *
                      2204 *    *  FILENAME                                                           *
                      2205 *    *  IDENTIFICATION HEADER                                              *
                      2206 *    *  FILE TYPE                                                          *
                      2207 *    *  DATE LAST MODIFIED                                                 *
                      2208 *    *  LINE COUNT                                                         *
                      2209 *    *  SECTOR COUNT                                                       *
                      2210 *    *  FILE PRECISION                                                     *
                      2211 *    *  POOLED STATUS                                                      *
                      2212 *    *  PROTECTED STATUS                                                   *
                      2213 *    *  OPEN/CLOSE STATUS                                                  *
                      2214 *    IF LISTCAT * OR LISTCAT ** IS ENTERED, THE FILENAMES AND HEADERS      *
                      2215 *    OF ALL OF THE FILES IN ALL OF THE ONE-STAR OR TWO-STAR LIBRARIES      *
                      2216 *    ON ALL THE DISKS ON THE SYSTEM ARE OUTPUT.                            *
                      2217 *    ON ALL FOUR (4) VARIATIONS OF THE COMMAND, THE OPTION TO SPECIFY      *
                      2218 *    THE OUTCUT TO THE PRINTER OR CRT, IF AVAILABLE, IS PROVIDED.          *
                      2219 *    THE DEFAULT IS TO THE SYSTEM PRINT DEVICE.                            *
                      2220 *                                                                         *
                      2221 *ENTRY POINTS                                                              *
                      2222 *    THE FIRST EXECUTABLE INSTRUCTION FOLLOWING THE PROGRAM HEADER         *
                      2223 *    INDEX REGISTER 2 (@XR) IS ADDRESSING THE FIRST BYTE IN THE            *
                      2224 *    COMMAND LINE FOLLOWING THE KEYWORD.                                   *
                      2225 *                                                                         *
                      2226 *INPUT                                                                     *
                      2227 *    INPUT TO THE KEYWORD IS THE ADDRESS WITHIN THE INPUT LINE BUFFER      *
                      2228 *    OF THE COMMAND LINE TO BE SYNTAX CHECKED-SAVED IN $XRSAV.             *
                      2229 *                                                                         *
                      2230 *OUTPUT                                                                    *
                      2231 *    NONE                                                                  *
                      2232 *                                                                         *
                      2233 *EXTERNAL REFERENCES                                                       *
                      2234 *        C2DEC5 - CONVERT BINARY TO DECIMAL                                *
                      2235 *        DLPRNT - LIST OUTPUT INTERFACE                                    *
                      2236 *        DSVPRI - DLPRNT INTERFACE                                         *
                      2237 *        DL2ICS - TWO TRACK LOGICAL DISK IOCS                              *
                      2238 *        DL2RAD - ADDR IN DL2ICS - BASE ADDR FOR LOGICAL 2 TRACK USE       *
                      2239 *        SCANIT - DELIMITER SCAN ROUTINE                                   *
                      2240 *        SCAMMA - ADDR IN SCANIT-SWITCH FOR DELIMITER SCAN                 *
                      2241 *        SCACOM - MASK FOR SCANIT TO BYPASS ONE COMMA                      *
                      2242 *        SCKOUT - CHECK OUTPUT SPECIFICATION                               *
                      2243 *        SCKDEV - ENTRY IN SCKOUT TO SET DEVICE INDRS                      *
                      2244 *        SCAERR - ADDR IN SYSTEM NUCLEUS-ERROR CODE SAVE AREA              *
                      2245 *        SCAERK - ADDR IN SYSTEM NUCLEUS-ERROR EXIT ROUTINE                *
                      2246 *        SCARPL - ADDR IN SYSTEM NUCLEUS-NORMAL EXIT ROUTINE               *
```

```
                          2247 *      $XRSAV - ADDR IN SYSTEM NUCLEUS-INDEX REGISTER 2 SAVE AREA    *
                          2248 *      $VOLID - ADDR IN SYSTEM NUCLEUS-ADDR VOLUME ID TABLE          *
                          2249 *      $WAITF - ADDR IN SYSTEM NUCLEUS-DISK WAIT DPL                 *
                          2250 *      $FILIB - ADDR IN SYSTEM NUCLEUS-CURRENT FILE LIBRARY DADDR    *
                          2251 *      $USRDR - ADDR IN SYSTEM NUCLEUS-REL DISP 1ST USER BLOCK       *
                          2252 *      $INDR3 - ADDR IN SYSTEM NUCLEUS-SYSTEM INDRS                  *
                          2253 *      $LIST  - ADDR IN SYSTEM NUCLEUS-DOWN KEY ACCEPT               *
                          2254 *                                                                   *
                          2255 *EXITS, NORMAL                                                      *
                          2256 *   $CARPL - NORMAL EXIT ADDRESS IN SYSTEM NUCLEUS                  *
                          2257 *                                                                   *
                          2258 *EXITS, ERROR                                                       *
                          2259 *   $CAERK - ERROR EXIT ADDRESS IN SYSTEM NUCLEUS                   *
                          2260 *            (NOTE ERROR PROCEDURES)                                *
                          2261 *                                                                   *
                          2262 *TABLES/WORK AREAS                                                  *
                          2263 *   ALL CHARACTER CONSTANTS & PPL'S USED TO PRINT MESSAGES FOR THE  *
                          2264 *   INTERACTION WITH THE USER ARE LOCATED AT THE BEGINNING OF THE   *
                          2265 *   MODULE TO ENABLE THEM TO BE MODIF FOR WORLD TRADE CONSIDERATION.*
                          2266 *   KCTLOG'S OTHER CONSTANTS, DPL'S, AND WORK AREAS ARE LOCATED     *
                          2267 *   AT THE END OF THE MODULE.                                       *
                          2268 *   (NOTE: CHARACTER CODE DEPENDENCY)                               *
                          2269 *                                                                   *
                          2270 *ATTRIBUTES                                                         *
                          2271 *   RELOCATABLE                                                     *
                          2272 *                                                                   *
                          2273 *CHARACTER CODE DEPENDENCY                                          *
                          2274 *   CHARACTER CODE DEPENDENCY CLASS - C                             *
                          2275 *   THE OPERATION OF THIS MODULE DEPENDS UPON AN INTERNAL REPRESENTA-*
                          2276 *   TION OF THE EXTERNAL CHARACTER SET WHICH IS EQUIVALENT TO THE ONE*
                          2277 *   USED AT ASSEMBLY TIME. THE CODING HAS BEEN ARRANGED SO THAT RE- *
                          2278 *   DEFINITION OF CHARACTER CONSTANTS, BY REASSEMBLY, WILL RESULT IN *
                          2279 *   A CORRECT MODULE FOR THE NEW DEFINITIONS. THE FOLLOWING ARE THE *
                          2280 *   SPECIAL CONSIDERATIONS FOR THIS MODULE:                         *
                          2281 *   *  CHARACTER CONSTANT STRINGS WHICH ARE USED AS INFORMATIVE     *
                          2282 *      MESSAGES OR ERROR MESSAGES FOR THE USER ARE LOCATED IN A      *
                          2283 *      GROUP AT THE BEGINNING OF THE MODULE WITH ADEQUATE EXPANSION  *
                          2284 *      AREA INCLUDED FOR WORLD TRADE CONSIDERATIONS FOR TRANSLATION  *
                          2285 *      TO FOREIGN LANGUAGES.                                        *
                          2286 *   *  PPL'S USED TO PRINT THE ABOVE MENTIONED CHARACTER CONSTANTS  *
                          2287 *      ARE LOCATED ADJACENT TO THEM FOR LENGTH REVISION             *
                          2288 *   *  THE FOLLOWING ARE OTHER CHARACTER CONSTANTS TO CONSIDER:     *
                          2289 *      *  KCTALL - DC CONSTANT OF PARAMETER 'ALL'                   *
                          2290 *      *  KCTDAT - FORMAT FOR PRINTING DATE.                        *
                          2291 *      *  KCTBLK - DC CONSTANT OF BLANKS FOR SEPARATING PRINTOUT.   *
                          2292 *   *   @SYSE0 TO CONSIDER - USED FOR IMMEDIATE COMPARES ETC.       *
                          2293 *      *  @EOS                                                      *
                          2294 *      *  @B1                                                       *
                          2295 *      *  @ZERO                                                     *
                          2296 *      *  @ASTER                                                    *
                          2297 *                                                                   *
                          2298 *NOTES                                                              *
                          2299 *   ERROR PROCEDURES                                                *
                          2300 *      THE FOLLOWING CONDITIONS WILL CAUSE AN ERROR CODE TO BE SAVED *
                          2301 *      IN $CAERR, AND AN ERROR EXIT TO BE MADE TO SCAERK IN IHE     *
                          2302 *      SYSTEM NUCLEUS,                                              *
```

```
      #KCTLO - LIST CAT COMMAND
```

```
                        2303 *       *  A SYNTAX ERROR IS DETECTED IN THE COMMAND LINE BY SCKOUT,    *
                        2304 *          SCANIT, OR KCTLOG.                                          *
                        2305 *       *  INVALID I/O REQUESTED (IE. CRT SPECIFIED WHEN NOT ON THE     *
                        2306 *          SYSTEM OR WHEN IN CARD MODE).                               *
                        2307 *       *  NO LIBRARIES ON THE SYSTEM WHEN LISTCAT * OR LISTCAT **      *
                        2308 *          IT SPECIFIED.                                               *
                        2309 *       *  A CURRENT USER IS NOT IN EFFECT WHEN LISTCAT OR LISTCAT ALL  *
                        2310 *          IS SPECIFIED.                                                *
                        2311 *                                                                       *
                        2312 *    REGISTER USAGE                                                     *
                        2313 *       INITIALLY, INDEX REGISTER 1 (@BR) IS USED AS A BASE REGISTER,   *
                        2314 *       WHILE INDEX REGISTER 2 (@XR) ADDRESSES THE INPUT LINE BUFFER    *
                        2315 *       DURING THE SYNTAX CHECK.                                         *
                        2316 *       DURING EXECUTION OF LISTCAT * OR LISTCAT **, @XR IS USED AS A    *
                        2317 *       POINTER INTO THE VOL-ID TABLE, WHILE BOTH REGISTERS ARE USED    *
                        2318 *       AS POINTERS DURING THE COMMON PRINT ROUTINE (KCT500).           *
                        2319 *                                                                       *
                        2320 *    SAVED/RESTORED AREAS                                               *
                        2321 *       NONE                                                            *
                        2322 *                                                                       *
                        2323 *    MODIFICATION CONSIDERATIONS                                        *
                        2324 *       NOTE THAT THE TSMLES COMMUNICATIONS REGION HAS BEEN BROKEN      *
                        2325 *       UP (IE. PART OF THE FIELDS OVERLAY EXECUTABLE CODE) SO          *
                        2326 *       THAT A BASE REGISTER MAY BE USED TO ADDRESS THE FIELDS OR       *
                        2327 *       SO THAT OPTIMUM USE OF BUFFER SPACE COULD BE MADE.              *
                        2328 *                                                                       *
                        2329 *    REQUIRED MODULES                                                   *
                        2330 *          @SYSEq - COMMON SYSTEM SOFTWARE EQUATES                      *
                        2331 *          @FXDEq - FIXED ADDRESSES IN SYSTEM NUCLEUS                   *
                        2332 *          @CANEq - FIXED ADDRESSES OUTSIDE SYSTEM NUCLEUS              *
                        2333 *          @HDWEq - HARDWARE I/O EQUATES                                *
                        2334 *          @WKAEq - WORK AREA EQUATES                                   *
                        2335 *          @DIREq - SYSTEM LIBRARY DIRECTORY EQUATES                    *
                        2336 *          @ERMEq - ERROR MESSAGE EQUATES                               *
                        2337 *          C2DEC5 - CONVERT BINARY TO DECIMAL                           *
                        2338 *          DL2ICS - TWO TRACK LOGICAL DISK IOCS                         *
                        2339 *          DLPRNT - LIST OUTPUT INTERFACE                               *
                        2340 *          DSVPRI - DLPRNT INTERFACE                                    *
                        2341 *          SCANIT - DELIMITER SCAN ROUTINE                              *
                        2342 *          SCKOUT - CHECK OUTPUT SPECIFICATION                          *
                        2343 *                                                                       *
                        2344 *    OTHER                                                              *
                        2345 *       SPECIAL NOTES:                                                   *
                        2346 *       *  THE I/O ROUTINES ARE REQUIRED TO BE CORE RESIDENT FOR         *
                        2347 *          EXECUTION.                                                   *
                        2348 *       *  THIS MODULE MAY BE ABORTED AT ANY TIME DURING EXECUTION      *
                        2349 *          VIA INQUIRY REQUEST.                                         *
                        2350 ***********************************************************************
                        2351 ***********************************************************************
                        2352 *                                                                       *
                        2353 *             KCTL0G - MISCELLANEOUS EQUATES                            *
                        2354 *                                                                       *
                        2355 ***********************************************************************
                        2356 *
                   00FF 2357 KCTXFF EQU   X'FF'                    XR INCREMENT
                        2358 *
```

```
                        0007 2359 KCTDS7 EQU   7                       DISPLACEMENT
                        000C 2360 KCTD12 EQU   12                      DISPLACEMENT
                        007E 2361 KCT126 EQU   126                     DISPLACEMENT
                        007F 2362 KCT127 EQU   127                     DISPLACEMENT
                        00FF 2363 KCT255 EQU   255                     DISPLACEMENT
                             2364 *
                        0003 2365 KCTLN3 EQU   3                       LENGTH CODE
                        0004 2366 KCTLN4 EQU   4                       LENGTH CODE
                        0005 2367 KCTLN5 EQU   5                       LENGTH CODE
                        0006 2368 KCTLN6 EQU   6                       LENGTH CODE
                        0008 2369 KCTLN8 EQU   8                       LENGTH CODE
                        0009 2370 KCTLN9 EQU   9                       LENGTH CODE
                        000D 2371 KCTL13 EQU   13                      LENGTH CODE
                        000F 2372 KCTL15 EQU   15                      LENGTH CODE
                        0012 2373 KCTL18 EQU   18                      LENGTH CODE
                        0100 2374 KCT256 EQU   256                     LENGTH CODE
                             2375 *                                                            *
                             2376 ***********************************************************************
```

```
          #KCTLO - LIST CAT COMMAND


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  03/02/22  PAGE   7
                           2378 *****************************************************************************
                           2379 *                                                                           *
                           2380 *               KCTL0G - PROGRAM INITIALIZATION                             *
                           2381 *                                                                           *
                           2382 *****************************************************************************
                           2383 *
                           2384 *        HDR    #KCTLO
                           2385 *****************************************************************************
                           2386 *   PROGRAM HEADER FOR DISK LOAD                                            *
                           2387 *****************************************************************************
                           2388 *#$KCTL EQU   X'03BC'                       DISK ADDR OF #KCTLO
                           2389 *#$$KCT EQU   X'0C00'                       CORE LOAD ADDRESS OF OKCTLO
                           2390 *#$@KCT EQU   009                           SECTOR CNT OF #KCTLO
   0C00                    2391        ORG    #$$KCT                        CORE LOAD ADDRESS
   0C00                    2392 $$$$$$ EQU    *                             FIRST LOCATION IN PROGRAM
   0C00 7BD2C3E3D3D6  0C05 2393        DC     CL6'#KCTLO'                   PROGRAM NAME
   0C06 1C             0C06 2394        DC     IL1'028'                     PROGRAM NUMBER OF #KCTLO
                       0C07 2395 $KCTLO EQU    *                           ENTRY POINT TO PROGRAM
                           2396 *** END OF EXPANSION ***

   0C07 C0 87 0D2B          2398 KCTLOG B      KCT025                       BYPASS MTEXT
                           2399 *
                           2400 *        MTEXT @@M031=@PRINT,@@M032=@PRINT,@@M035=@PRETR,@@M036=@PRINT,
                           2401 *        @@M037=@PRINT,@@M038=@PRINT,@@M039=@PRINT,@@M054=@PRETR,
                           2402 *        @@M055=@PRETR,@@M080=@PRINT,@@M081=@PRINT,@@M084=@PRINT,
                           2403 *        @@M087=@PRINT,@@M085=@PRETR,PATCH=040
                           2404 *****************************************************************************
                           2405 * PPL'S AND TEXT FOR MESSAGE                                                *
                           2406 *****************************************************************************
   0C0B 40             0C0B 2407 @@M031 DC     AL1(@PRINT)                  PRINT CONTROL FUNCTION
   0C0C 0C             0C0C 2408        DC     IL1'12'                      LENGTH OF MESSAGE
   0C0D 0C43           0C0E 2409        DC     AL(@CADDR)(@@T031)           ADDR OF MESSAGE
                           2410 *
   0C0F 40             0C0F 2411 @@M032 DC     AL1(@PRINT)                  PRINT CONTROL FUNCTION
   0C10 0A             0C10 2412        DC     IL1'10'                      LENGTH OF MESSAGE
   0C11 0C4F           0C12 2413        DC     AL(@CADDR)(@@T032)           ADDR OF MESSAGE
                           2414 *
   0C13 C0             0C13 2415 @@M035 DC     AL1(@PRETR)                  PRINT CONTROL FUNCTION
   0C14 12             0C14 2416        DC     IL1'18'                      LENGTH OF MESSAGE
   0C15 0C59           0C16 2417        DC     AL(@CADDR)(@@T035)           ADDR OF MESSAGE
                           2418 *
   0C17 40             0C17 2419 @@M036 DC     AL1(@PRINT)                  PRINT CONTROL FUNCTION
   0C18 15             0C18 2420        DC     IL1'21'                      LENGTH OF MESSAGE
   0C19 0C6B           0C1A 2421        DC     AL(@CADDR)(@@T036)           ADDR OF MESSAGE
                           2422 *
   0C1B 40             0C1B 2423 @@M037 DC     AL1(@PRINT)                  PRINT CONTROL FUNCTION
   0C1C 14             0C1C 2424        DC     IL1'20'                      LENGTH OF MESSAGE
   0C1D 0C80           0C1E 2425        DC     AL(@CADDR)(@@T037)           ADDR OF MESSAGE
                           2426 *
   0C1F 40             0C1F 2427 @@M038 DC     AL1(@PRINT)                  PRINT CONTROL FUNCTION
   0C20 0B             0C20 2428        DC     IL1'11'                      LENGTH OF MESSAGE
   0C21 0C94           0C22 2429        DC     AL(@CADDR)(@@T038)           ADDR OF MESSAGE
                           2430 *
   0C23 40             0C23 2431 @@M039 DC     AL1(@PRINT)                  PRINT CONTROL FUNCTION
   0C24 10             0C24 2432        DC     IL1'16'                      LENGTH OF MESSAGE
   0C25 0C9F           0C26 2433        DC     AL(@CADDR)(@@T039)           ADDR OF MESSAGE
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                          2434 *
    0C27 C0              0C27 2435 @@M054 DC     AL1(@PRETR)              PRINT CONTROL FUNCTION
    0C28 0E              0C28 2436        DC     IL1'14'                 LENGIN OF MESSAGE
    0C29 0CAF            0C2A 2437        DC     AL(@CADDR)(@@T054)       ADDR OF MESSAGE
                          2438 *
    0C2B C0              0C2B 2439 @@M055 DC     AL1(@PRETR)              PRINT CONTROL FUNCTION
    0C2C 0F              0C2C 2440        DC     IL1'15'                 LENGTH OF MESSAGE
    0C2D 0CBD            0C2E 2441        DC     AL(@CADDR)(@@T055)       ADDR OF MESSAGE
                          2442 *
    0C2F 40              0C2F 2443 @@M080 DC     AL1(@PRINT)              PRINI CONTROL FUNCTION
    0C30 07              0C30 2444        DC     IL1'07'                 LENGTH OF MESSAGE
    0C31 0CCC            0C32 2445        DC     AL(@CADDR)(@@T080)       ADDR OF NESSAA
                          2446 *
    0C33 40              0C33 2447 @@M081 DC     AL1(@PRINT)              PRINT CONTROL FUNCTION
    0C34 0A              0C34 2448        DC     IL1'10'                 LENGTH OF MESSAGE
    0C35 0CD3            0C36 2449        DC     AL(@CADDR)(@@T081)       ADDR OF MESSAGE
                          2450 *
    0C37 40              0C37 2451 @@M084 DC     AL1(@PRINT)              PRINT CONTROL FUNCTION
    0C38 06              0C38 2452        DC     IL1'06'                 LENGTH OF MESSAGE
    0C39 0CDD            0C3A 2453        DC     AL(@CADDR)(@@T084)       ADDR OF MESSAGE
                          2454 *
    0C3B C0              0C3B 2455 @@M085 DC     AL1(@PRETR)              PRINT CONTROL FUNCTION
    0C3C 18              0C3C 2456        DC     IL1'24'                 LENGTH OF MESSAGE
    0C3D 0CE3            0C3E 2457        DC     AL(@CADDR)(@@T085)       ADDR OF MESSAGE
                          2458 *
    0C3F 40              0C3F 2459 @@M087 DC     AL1(@PRINT)              PRINT CONTROL FUNCTION
    0C40 08              0C40 2460        DC     IL1'08'                 LENGTH OF MESSAGE
    0C41 0CFB            0C42 2461        DC     AL(@CADDR)(@@T087)       ADDR OF MESSAGE
                          2462 *
                    0C43 2463 @@T031 EQU    *                       LEFT BYTE OF MESSAGE
    0C43 4040E2E3C1E3E4E2 0C4E 2464        DC     CL012'  STATUS: '
                          2465 *
                    0C4F 2466 @@T032 EQU    *                       LEFT BYTE OF MESSAGE
    0C4F 4040E3E8D7C57A40 0C58 2467        DC     CL010'  TYPE: '
                          2468 *
                    0C59 2469 @@T035 EQU    *                       LEFT BYTE OF MESSAGE
    0C59 C2C1E2C9C340D7D9 0C6A 2470        DC     CL018'BASIC PROGRAM FILE'
                          2471 *
                    0C6B 2472 @@T036 EQU    *                       LEFT BYTE OF MESSAGE
    0C6B D2C5E8C2D6C1D9C4 0C7F 2473        DC     CL021'KEYBOARD DATA FILE - '
                          2474 *
                    0C80 2475 @@T037 EQU    *                       LEFT BYTE OF MESSAGE
    0C80 D7D9D6C7D9C1D440 0C93 2476        DC     CL020'PROGRAM DATA FILE - '
                          2477 *
                    0C94 2478 @@T038 EQU    *                       LEFT BYTE OF MESSAGE
    0C94 4040D3C9D5C5E27A 0C9E 2479        DC     CL011'  LINES: '
                          2480 *
                    0C9F 2481 @@T039 EQU    *                       LEFT BYTE OF MESSAGE
    0C9F 4040C4C9E2D240E4 0CAE 2482        DC     CL016'  DISK UNITS:  '
                          2483 *
                    0CAF 2484 @@T054 EQU    *                       LEFT BYTE OF MESSAGE
    0CAF D3D6D5C740D7D9C5 0CBC 2485        DC     CL014'LONG PRECISION'
                          2486 *
                    0CBD 2487 @@T055 EQU    *                       LEFT BYTE OF MESSAGE
    0CBD E2C8D6D9E340D7D9 0CCB 2488        DC     CL015'SHORT PRECISION'
                          2489 *
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                           0CCC 2490 @@T080 EQU   *                         LEFT BYTE OF MESSAGE
     0CCC 40D7D6D6D3C5C4   0CD2 2491        DC    CL007' POOLED'
                                2492 *
                           0CD3 2493 @@T081 EQU   *                         LEFT BYTE OF MESSAGE
     0CD3 40D7D9D6E3C5C3E3 0CDC 2494        DC    CL010' PROTECTED'
                                2495 *
                           0CDD 2496 @@T084 EQU   *                         LEFT BYTE OF MESSAGE
     0CDD 40D6D7C5D540     0CE2 2497        DC    CL006' OPEN'
                                2498 *
                           0CE3 2499 @@T085 EQU   *                         LEFT BYTE OF MESSAGE
     0CE3 D5D640C6C9D3C5E2 0CFA 2500        DC    CL024'NO FILES IN THIS LIBRARY'
                                2501 *
                           0CFB 2502 @@T087 EQU   *                         LEFT BYTE OF MESSAGE
     0CFB E5D6D3E4D4C57A40 0D02 2503        DC    CL008'VOLUME: '
                                2504 *
                                2505 * PATCH AREA FOR MESSAGES
                                2506 *
     0D03                  0D2A 2507 $$$001 DS    CL040                     MSG EXPANSION PATCH AREA
                                2508 *** END OF EXPANSION ***
                                2509 *
                           0FA3 2510        USING KCTBSE,@BR               BASE ADDR
     0D2B C2 01 0FA3            2511 KCT025 LA    KCTBSE,@BR                LOAD BASE ADDR
                                2512 *
     0D2F 35 02 03C7            2513        L     $XRSAV,@XR                LOAD INPUT BUFFER ADDR FOR
                                2514 *                                     * SYNTAX CHECK
                                2515 *                                                                     *
                                2516 ***********************************************************************
```

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                              2518 ********************************************************************
                              2519 *                                                                  *
                              2520 *              SYNTAX CHECK                                         *
                              2521 *                                                                  *
                              2522 ********************************************************************
                              2523 *
    0D33 BD 1E 00             2524 KCT050 CLI   @ZERO(,@XR),@EOS          AT EOS ?
    0D36 F2 81 51             2525        JE    KCT175                    YES CHECK OUT PRINT DEVICE
                              2526 *
    0D39 D0 87 18             2527 KCT100 B     SCANIT(,@BR)              BYPASS BLANKS
    0D3C 3C 18 03CD           2528        MVI   $CAERR,@@E139             INVALID DELIMITER
    0D40 F2 81 DF             2529        JZ    KCT490                    ERROR EXIT
                              2530 *
    0D43 34 02 0DA1           2531        ST    KCT195+@OP1,@XR           SAVE INDEX POINTER TO PARAM
    0D47 BD 5C 00             2532        CLI   @ZERO(,@XR),@ASTER        IS IT A * OR ** LIBRARY REQUEST
    0D4A F2 01 1B             2533        JNE   KCT125                    NO, CHECK FOR 'ALL'
                              2534 *
    0D4D 3C 07 0DEE           2535        MVI   KCT430+@Q,##R1            SET DISP TO * DIRECTORY
    0D51 E2 02 01             2536        LA    @B1(,@XR),@XR             INDEX SCAN POINTER
                              2537 *
    0D54 BD 5C 00             2538        CLI   @ZERO(,@XR),@ASTER        IS IT A ** REQUEST ?
    0D57 F2 01 07             2539        JNE   KCT115                    NO, CHECK FOR CRT OR PRINTER
                              2540 *
    0D5A E2 02 01             2541        LA    @B1(,@XR),@XR             INDEX INPUT SCAN POINTER
    0D5D 3C 05 0DEE           2542        MVI   KCT430+@Q,##R2            SET DISP TO ** DIRECTORY
                              2543 *
    0D61 3C 87 0DAE           2544 KCT115 MVI   KCT250+@Q,@UCB            UCB BRANCH AROUND USER LIB REQ
    0D65 F2 87 12             2545        J     KCT150                    CHECK FOR CRT OR PRINTER
    0D68 9D 00 02 17          2546 KCT125 CLC   @B1+@B1(,@XR),KCTALL(,@BR)  IS IT AN ALL REQUEST ?
    0D6C F2 01 1B             2547        JNE   KCT175                     NO, CHECK FOR CRT OR PRINTER
                              2548 *
    0D6F E2 02 03             2549        LA    3*@B1(,@XR),@XR           INDEX SCAN POINTER
    0D72 3C 80 0E9A           2550        MVI   KCT600+@Q,@NOP            SET 'ALL' SWITCH
    0D76 3C 80 0E83           2551        MVI   KCT590+@Q,@NOP            NOP EACH PRINT JUMP
                              2552 *
    0D7A 7C 01 35             2553 KCT150 MVI   SCAMMA(,@BR),SCACOM       PRIME SCANIT TO BYPASS 1 COMMA
    0D7D D0 87 18             2554        B     SCANIT(,@BR)              BYPASS DELIMITERS
    0D80 F2 82 9F             2555        JL    KCT490                    ERROR EXIT
    0D83 3C 11 03CD           2556        MVI   $CAERR,@@E131             INVALID PARAMETER
    0D87 F2 81 0E             2557        JZ    KCT190                    CHECK FOR LOS
                              2558 *                                                                  *
                              2559 ********************************************************************
```

```
                             2561 ***********************************************************************
                             2562 *                                                                     *
    0D8A D0 87 59            2563 KCT175 B    SCKOUT(,@BR)              ESTABLISH PRINT DEVICES
    0D8D F2 82 92            2564        JL   KCT490                    ERROR EXIT
    0D90 34 02 0DA1          2565        ST   KCT195+@OP1,@XR           SAVE INDEX POINTER TO PARAM
                             2566 *
    0D94 3C 11 03CD          2567 KCT180 MVI  $CAERR,@@E131             INVALID PARAMETER
    0D98 BD 1E 00            2568 KCT190 CLI  @ZERO(,@XR),@EOS          IS IT EOS ?
    0D9B F2 81 07            2569        JE   KCT200                    YES CONTINUE PROCESSING
    0D9E C2 02 0000          2570 KCT195 LA   *-*,@XR                   RESTORE ERROR POINTER
    0DA2 F2 87 7D            2571        J    KCT490                    NO, ERROR EXIT
                             2572 *                                                                     *
                             2573 ***********************************************************************
```

```
                           2575 ********************************************************************************
                           2576 *                                                                              *
                           2577 *              PROCESS OF LISTCAT OR LISTCAT ALL                               *
                           2578 *                                                                              *
                           2579 ********************************************************************************
                           2580 *
     0DA5 C0 87 10A0        2581 KCT200 B     SCKDEV                   CHECK CRT AVAILABLE
                      0469  2582 SCKERR EQU   $CAERK                   ERROR EXIT
                           2583 *
     0DA9 3B 02 03D6        2584        SBF   $INDR3,$LIST             INHIBIT ROLL DOWN
                           2585 *
     0DAD F2 80 27          2586 KCT250 JC    KCT400,@NOP              JUMP IF NOT LISTCAT OR LISTCAT
                           2587 *                                     * ALL
     0DB0 3D 00 03D9        2588        CLI   $FILIB-@B1,@ZERO         VALID USER LOGGED ON ?
     0DB4 3C 21 03CD        2589        MVI   $CAERR,@@E200            INVALID USER
     0DB8 F2 81 64          2590        JE    KCT485                   NO, ERROR EXIT
                           2591 *
     0DBB 0C 01 13F2 03DA   2592        MVC   DL2RAD(@DADDR),$FILIB    DISP TO FILIB ADDR
     0DC1 4C 01 02 03DC     2593        MVC   KCTDP1+@DSAD(@DADDR,@BR),$USRDR  DISP TO USER BLOCK
                           2594 *
                           2595 *      DSKL2 KCTDPI                    READ FIRST USER BLOCK
     0DC6 C0 87 135A        2596        B     DL2ICS                   PERFORM RELATIVE DISK OP
     0DCA 0FA3        0DCB  2597        DC    AL2(KCTDP1)              DPL ADDRESS
                           2598 *** END OF EXPANSION ***
                           2599 *
     0DCC C0 87 0E30        2600        B     KCT500                   PRINT FILENAMES
     0DD0 3C 80 0E23        2601        MVI   KCT490+@Q,@NOP           NOP ERROR EXIT
     0DD4 F2 87 48          2602        J     KCT485                   EXIT
                           2603 *                                                                              *
                           2604 ********************************************************************************
```

```
                            2606 ****************************************************************************
                            2607 *                                                                          *
                            2608 *              PROCESS OF LISTCAT * OR LISTCAT **                           *
                            2609 *                                                                          *
                            2610 ****************************************************************************
                            2611 *
    0DD7 C2 02 03F3          2612 KCT400 LA    $VOLID-@DADDR-@B1,@XR     POINTER TO VOLID TABLE
                            2613 *
    0DDB E2 02 08            2614 KCT410 LA    @VOLID+@DADDR(,@XR),@XR   POINTER TO DADDR AND VOLUME
                            2615 *
    0DDE BD 00 01            2616        CLI   @B1(,@XR),@ZERO          LIBRARY EXIST ?
    0DE1 F2 81 2F            2617        JE    KCT450                   NO, CHECK NEXT ONE
                            2618 *
    0DE4 3C 80 0E23          2619        MVI   KCT490+@Q,@NOP           NOP ERROR EXIT
    0DE8 2C 01 13F2 02       2620        MVC   DL2RAD(@DADDR),@DADDR(,@XR)  SET LIB ADDR
    0DED 7C 00 02            2621 KCT430 MVI   KCTSTR(,@BR),*-*
    0DF0 7C 00 01            2622        MVI   KCTSTR-@B1(,@BR),@ZERO
                            2623 *
                            2624 *     DSKL2 KCTDP1                     READ FIRST DIRECTORY BLOCK
    0DF3 C0 87 135A          2625        B     DL2ICS                   PERFORM RELATIVE DISK OP
    0DF7 0FA3          0DF8  2626        DC    AL2(KCTDP1)              DPL ADDRESS
                            2627 *** END OF EXPANSION ***
                            2628 *
    0DF9 6C 05 1A 00         2629        MVC   KCTMS1+@VOLID-@B1(@VOLID,@BR),@ZERO(,@XR)   VOLUME NAME
                            2630 *
    0DFD C0 87 13F3          2631        B     DSVPRI                   PRINT VOLUME MESSAGE
    0E01 0C3F          0E02  2632        DC    AL2(@@M087)
    0E03 C0 87 13F3          2633        B     DSVPRI                   PRINT ID
    0E07 0F7D          0E08  2634        DC    AL2(KCTPP1)
    0E09 C0 87 13F3          2635        B     DSVPRI                   PRINT BLANK LINE
    0E0D 0F8D          0E0E  2636        DC    AL2(KCTPP5)
                            2637 *
    0E0F C0 87 0E30          2638        B     KCT500                   PRINT ALL FILENAMES
                            2639 *
    0E13 5F 00 06 09         2640 KCT450 SLC   KCTCTR(@B1,@BR),KCTONE(,@BR)  DECREMENT COUNTER
    0E17 C0 01 0DDB          2641        BNZ   KCT410
                            2642 *
    0E1B 3C 52 03CD          2643        MVI   $CAERR,@@E340            NO LIBRARIES
    0E1F E2 02 FF            2644 KCT485 LA    KCTXFF(,@XR),@XR         GET XR OUT OF INPUT BUFFER
    0E22 C0 87 0469          2645 KCT490 BC    $CAERK,@UCB              ERROR EXIT
                            2646 *
    0E26 C0 87 1463          2647        B     DLPRNT                   WAIT FOR LAST PRINT
    0E2A 057F          0E2B  2648        DC    AL2($WAITF)
    0E2C C0 87 04A1          2649        B     $CARPL                   EXIT
                            2650 *                                                                          *
                            2651 ****************************************************************************
```

```
      #KCTLO - LIST CAT COMMAND


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT            VER 15, MOD 00  03/02/22  PAGE  14

                           2653 ******************************************************************************
                           2654 *                                                                            *
                           2655 *                  LIBRARY INFORMATION PRINT ROUTINE                         *
                           2656 *                                                                            *
                           2657 ******************************************************************************
                      0E30 2658 KCT500 EQU   *
   0E30 34 08 0F7C         2659        ST    KCT900+@OP1,@ARR            SAVE RETURN ADDR
   0E34 34 02 0F78         2660        ST    KCT890+@OP1,@XR             SAVE INDEX REGISTER
                           2661 *
                           2662 *KCT520 DISK  $WAITF                      WAIT FOR DATA
   0E38 C0 87 0025         2663 KCT520 B     $DISKN                      PERFORM PHYSICAL DISK OP
   0E3C 057F          0E3D 2664        DC    AL2($WAITF)                 DPL ADDRESS
                           2665 *** END OF EXPANSION ***
                           2666 *
   0E3E C2 02 189D         2667        LA    KCTBF2,@XR                  PROCESS WORK AREA
   0E42 8C FF FF 179C      2668        MVC   KCT255(KCT256,@XR),KCT1BF MOVE DATA TO BUFFER FOR
   0E47 0C FF 1A9C 189C    2669        MVC   KCT2BF(KCT256),KCTBF2-@B1 * PROCESSING OF PRINT
                           2670 *
   0E4D 9D 01 03 08        2671        CLC   ##DUHB(@DADDR,@XR),KCTZER(,@BR)  IS BLOCK LINKED ?
   0E51 F2 81 0D           2672        JE    KCT540                      NO, PRINT FILENAME, HEADER
                           2673 *
   0E54 6C 01 02 03        2674        MVC   KCTDP1+@DSAD(@DADDR,@BR),##DUHB(,@XR)  ADDR NEXT BLOCK
                           2675 *
                           2676 *      DSKL2 KCTDP1                       READ LINKED BLOCK
   0E58 C0 87 135A         2677        B     DL2ICS                      PERFORM RELATIVE DISK OP
   0E5C 0FA3          0E5D 2678        DC    AL2(KCTDP1)                 DPL ADDRESS
                           2679 *** END OF EXPANSION ***
   0E5E F2 87 13           2680        J     KCT550                      JUMP AROUND NOT LINKED SWITCH
                           2681 *
   0E61 3C 80 0F6E         2682 KCT540 MVI   KCT850+@Q,@NOP              SET UP EXIT BRANCH - NOT LINKED
   0E65 BD 00 04           2683        CLI   ##DUHC(,@XR),@ZERO          ANY ENTRIES ?
   0E68 F2 01 09           2684        JNE   KCT550                      YES, CONTINUE PROCESSING
                           2685 *
   0E6B C0 87 13F3         2686        B     DSVPRI                      PRINT NO FILES MESSAGE
   0E6F 0C3B          0E70 2687        DC    AL2(@@M085)                 PPL
   0E71 F2 87 F9           2688        J     KCT850                      RETURN
                           2689 *                                                                            *
                           2690 ******************************************************************************
```

```
      #KCTLO - LIST CAT COMMAND


ERR LOC   OBJECT CODE     ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  03/02/22  PAGE  15

                          2692 *********************************************************************
                          2693 *                                                                   *
    0E74 6C 00 17 04      2694 KCT550 MVC    KCTCNT(@B1,@BR),##DUHC(,@XR)   SAVE ENTRY COUNT
    0E78 E2 02 0C         2695        LA     ##DUE1(,@XR),@XR              GET 1ST ENTRY
    0E7B 7C 40 3F         2696 KCT580 MVI    KCTMS2+KCTX24(,@BR),@BLANK   BLANK MESSAGE AREA
    0E7E 5C 23 3E 3F      2697        MVC    KCTMS2+KCTX24-@B1(KCTX24,@BR),KCTMS2+KCTX24(,@BR)
                          2698 *
    0E82 F2 87 06         2699 KCT590 JC     KCT595,@UCB                  JUMP IF NOT LISTCAT ALL
    0E85 C0 87 13F3       2700        B      DSVPRI                       PRINT BLANK LINE
    0E89 0F8D        0E8A 2701        DC     AL2(KCTPP5)
                          2702 *
    0E8B 6C 07 22 07      2703 KCT595 MVC    KCTMS2+##DUEN(##LUEN,@BR),##DUEN(,@XR)   FILENAME
    0E8F 6C 18 3E 2B      2704        MVC    KCTMS2+##DUEN+3*@B1+##LUEH(##LUEH,@BR),##DUEH(,@XR) HEAD
    0E93 C0 87 13F3       2705        B      DSVPRI                       PRINT FILENAME & HEADER
    0E97 0F81        0E98 2706        DC     AL2(KCTPP2)
                          2707 *
    0E99 F2 87 C6         2708 KCT600 JC     KCT800,@UCB                  JUMP IF NOT 'ALL'
                          2709 *                                                                   *
                          2710 *********************************************************************
```

```
                              2712 ****************************************************************
                              2713 *                                                              *
                              2714 *              PROCESS OF 'ALL' INFORMATION                    *
                              2715 *                                                              *
                              2716 ****************************************************************
                              2717 *
      0E9C C0 87 13F3         2718          B     DSVPRI                PRINT 'TYPE'
      0EA0 0C0F          0EA1 2719          DC    AL2(@@M032)           PPL
                              2720 *
      0EA2 B8 01 0D           2721          TBN   ##DUES(,@XR),$PROCI   IS IT A PROCEDURE ?          1-4
      0EA5 F2 90 09           2722          JF    KCT615                                             1-4
      0EA8 C0 87 13F3         2723          B     DSVPRI                PRINT 'PROCEDURE FILE' TYPE  1-4
      0EAC 0F91          0EAD 2724          DC    AL2(@@M040)           PPL                          1-4
      0EAE F2 87 39           2725          J     KCT660
      0EB1 B8 80 0D           2726 KCT615   TBN   ##DUES(,@XR),##MUEP   IS IT A BASIC PROGRAM ?      1-4
      0EB4 F2 90 09           2727          JF    KCT620                NO, TEST DATA TYPE
                              2728 *
      0EB7 C0 87 13F3         2729          B     DSVPRI                PRINT 'BASIC' TYPE
      0EBB 0C13          0EBC 2730          DC    AL2(@@M035)           PPL
      0EBD F2 87 2A           2731          J     KCT660                GO AROUND PRECISION CHECK
                              2732 *
      0EC0 B8 20 0D           2733 KCT620   TBN   ##DUES(,@XR),##MUEG   IS IT PROGRAM GENERATED ?
      0EC3 F2 90 09           2734          JF    KCT630                NO, PRINT 'KEYBOARD'
                              2735 *
      0EC6 C0 87 13F3         2736          B     DSVPRI                PRINT 'PROGRAM GENERATED'
      0ECA 0C1B          0ECB 2737          DC    AL2(@@M037)           PPL
      0ECC F2 87 06           2738          J     KCT640                TEST PRECISION
                              2739 *
      0ECF C0 87 13F3         2740 KCT630   B     DSVPRI                PRINT 'KEYBOARD'
      0ED3 0C17          0ED4 2741          DC    AL2(@@M036)           PPL
                              2742 *
      0ED5 B8 02 0D           2743 KCT640   TBN   ##DUES(,@XR),##MUEV   IS FILE LONG ?
      0ED8 F2 90 09           2744          JF    KCT650                NO, PRINT SHORT
                              2745 *
      0EDB C0 87 13F3         2746          B     DSVPRI                PRINT LONG
      0EDF 0C27          0EE0 2747          DC    AL2(@@M054)           PPL
      0EE1 F2 87 06           2748          J     KCT660                CHECK STATUS
                              2749 *
      0EE4 C0 87 13F3         2750 KCT650   B     DSVPRI                PRINT SHORT
      0EE8 0C2B          0EE9 2751          DC    AL2(@@M055)           PPL
                              2752 *
      0EEA C0 87 13F3         2753 KCT660   B     DSVPRI                PRINT 'STATUS'
      0EEE 0C0B          0EEF 2754          DC    AL2(@@M031)           PPL
                              2755 *
      0EF0 B8 10 0D           2756          TBN   ##DUES(,@XR),##MUEX   IS FILE POOLED ?
      0EF3 F2 90 06           2757          JF    KCT670                NO, CHECK PROTECTED
                              2758 *
      0EF6 C0 87 13F3         2759          B     DSVPRI                PRINT 'POOLED'
      0EFA 0C2F          0EFB 2760          DC    AL2(@@M080)           PPL
                              2761 *
      0EFC B8 08 0D           2762 KCT670   TBN   ##DUES(,@XR),##MUER   IS IT PROTECTED ?
      0EFF F2 90 06           2763          JF    KCT680                NO, CHECK OPEN
                              2764 *
      0F02 C0 87 13F3         2765          B     DSVPRI                PRINT 'PROTECTED'
      0F06 0C33          0F07 2766          DC    AL2(@@M081)           PPL
                              2767 *
```

```
   0F08 B8 04 0D            2768 KCT680 TBN   ##DUES(,@XR),##MUEO       IS FILE OPEN ?
   0F0B F2 90 06            2769        JF    KCT690                    NO, PRINT DATE
   0F0E C0 87 13F3          2770        B     DSVPRI                    PRINT 'OPEN'
   0F12 0C37           0F13 2771        DC    AL2(@@M084)               PPL
                            2772 *                                                                   *
                            2773 *************************************************************************
```

```
                           2775 ************************************************************************
                           2776 *                                                                      *
                           2777 *              PROCESS 'ALL' LINE COUNT AND DATE                        *
                           2778 *                                                                      *
                           2779 ************************************************************************
                           2780 *
     0F14 68 02 0D 10      2781 KCT690 MNZ    KCTDAT(,@BR),##DUED-2*@B1(,@XR)   CHANGE DATE TO PRINT MOD
     0F18 68 03 0E 10      2782        MNN    KCTDAT+@B1(,@BR),##DUED-2*@B1(,@XR)
     0F1C 68 02 10 11      2783        MNZ    KCTDAT+3*@B1(,@BR),##DUED-@B1(,@XR)
     0F20 68 03 11 11      2784        MNN    KCTDAT+4*@B1(,@BR),##DUED-@B1(,@XR)
     0F24 68 02 13 12      2785        MNZ    KCTDAT+6*@B1(,@BR),##DUED(,@XR)
     0F28 68 03 14 12      2786        MNN    KCTDAT+7*@B1(,@BR),##DUED(,@XR)
                           2787 *
     0F2C C0 87 13F3       2788        B      DSVPRI                    PRINT DATE
     0F30 0F85        0F31 2789        DC     AL2(KCTPP3)               PPL
                           2790 *
     0F32 E2 02 0A         2791 KCT700 LA     ##DUEF-@B1(,@XR),@XR  INDEX TO FILE LENGTH
     0F35 C0 87 1659       2792        B      C2DEC5                    CONVERT TO DECIMAL
                           2793 *
     0F39 C0 87 13F3       2794        B      DSVPRI                    PRINT 'DISK UNITS'
     0F3D 0C23        0F3E 2795        DC     AL2(@@M039)               PPL
     0F3F C0 87 13F3       2796        B      DSVPRI                    PRINT # UNITS
     0F43 0F89        0F44 2797        DC     AL2(KCTPP4)               PPL
                           2798 *
     0F45 E2 02 04         2799 KCT730 LA     ##LUEF+##LUEI+##LUES(,@XR),@XR   INDEX TO LINE COUNT
     0F48 9F 01 01 09      2800        SLC    @B1(##LUEL,@XR),KCTONE(,@BR)  DECREMENT COUNT BY ONE
     0F4C C0 87 1659       2801        B      C2DEC5                    CONVERT TO DECIMAL
                           2802 *
     0F50 C0 87 13F3       2803        B      DSVPRI                    PRINT 'LINES'
     0F54 0C1F        0F55 2804        DC     AL2(@@M038)               PPL
     0F56 C0 87 13F3       2805        B      DSVPRI                    PRINT ? LINES
     0F5A 0F89        0F5B 2806        DC     AL2(KCTPP4)               PPL
                           2807 *
     0F5C E2 02 24         2808 KCT750 LA     ##LUEL+##LUED+##LUEH+##LUEZ(,@XR),@XR   INDEX TO NEXT ENTRY
     0F5F F2 87 03         2809        J      KCT830

                           2811 ************************************************************************
                           2812 *                                                                      *
                           2813 *              END OF SUBROUTINE PROCESSING                             *
                           2814 *                                                                      *
                           2815 ************************************************************************
                           2816 *
     0F62 E2 02 32         2817 KCT800 LA     ##LUE(,@XR),@XR           GET NEXT ENTRY
                           2818 *
     0F65 5F 00 17 09      2819 KCT830 SLC    KCTCNT(@B1,@BR),KCTONE(,@BR)  DECREMENT COUNT
     0F69 C0 01 0E7B       2820        BNZ    KCT580                    IF NOT ZERO, PRINT NEXT ENTRY
                           2821 *
     0F6D C0 87 0E38       2822 KCT850 BC     KCT520,@UCB               BRANCN IF LINKED
     0F71 3C 87 0F6E       2823        MVI    KCT850+@Q,@UCB            RESET FOR RE-ENTRY
     0F75 C2 02 0000       2824 KCT890 LA     *-*,@XR                   RESTORE INDEX REGISTER
     0F79 C0 87 0000       2825 KCT900 B      *-*
                           2826 *                                                                      *
                           2827 ************************************************************************
```

```
                              2829 ************************************************************************
                              2830 *                                                                      *
                              2831 *              DATA CONSTANTS, BUFFERS, AND WORK AREAS                  *
                              2832 *                                                                      *
                              2833 ************************************************************************
                              2834 *
                              2835 *KCTPP1 PPL    FUNC=@PRETR,CNT=@VOLID,CADDR=KCTMS1
                         0F7D 2836 KCTPP1 EQU    *                         PPL ADDRESS
   0F7D C0               0F7D 2837        DC     AL1(@PRETR)               FUNCTION REQUESTED
   0F7E 06               0F7E 2838        DC     AL1(@VOLID)               PRINT COUNT
   0F7F 0FB8             0F80 2839        DC     AL2(KCTMS1)               DATA ADDRESS
                              2840 *** END OF EXPANSION ***
                              2841 *
                         0024 2842 KCTX24 EQU    X'24'                     MESSAGE LENGTH
                              2843 *KCTPP2 PPL    FUNC=@PRETR,CNT=KCTX24,CADDR=KCTMS2
                         0F81 2844 KCTPP2 EQU    *                         PPL ADDRESS
   0F81 C0               0F81 2845        DC     AL1(@PRETR)               FUNCTION REQUESTED
   0F82 24               0F82 2846        DC     AL1(KCTX24)               PRINT COUNT
   0F83 0FBE             0F84 2847        DC     AL2(KCTMS2)               DATA ADDRESS
                              2848 *** END OF EXPANSION ***
                              2849 *
                         000B 2850 KCTDTE EQU    11                        MESSAGE LENGTH
                              2851 *KCTPP3 PPL    FUNC=@PRETR,CNT=KCTDTE,CADDR=KCTBLK-2*@B11
                         0F85 2852 KCTPP3 EQU    *                         PPL ADDRESS
   0F85 C0               0F85 2853        DC     AL1(@PRETR)               FUNCTION REQUESTED
   0F86 0B               0F86 2854        DC     AL1(KCTDTE)               PRINT COUNT
   0F87 0FAD             0F88 2855        DC     AL2(KCTBLK-2*@B1)         DATA ADDRESS
                              2856 *** END OF EXPANSION ***
                              2857 *
                         0004 2858 KCTX04 EQU 4                     FIELD LENGTH                          1-4
                              2859 *KCTPP4 PPL    FUNC=@PRETR,CNT=KCTX04,CADDR=C2DVAL-3                    1-4
                         0F89 2860 KCTPP4 EQU    *                         PPL ADDRESS
   0F89 C0               0F89 2861        DC     AL1(@PRETR)               FUNCTION REQUESTED
   0F8A 04               0F8A 2862        DC     AL1(KCTX04)               PRINT COUNT
   0F8B 1694             0F8C 2863        DC     AL2(C2DVAL-3)             DATA ADDRESS
                              2864 *** END OF EXPANSION ***
                              2865 *
                              2866 *KCTPP5 PPL    FUNC=@PRETR,CNT=@B1,CADDR=KCTBLK
                         0F8D 2867 KCTPP5 EQU    *                         PPL ADDRESS
   0F8D C0               0F8D 2868        DC     AL1(@PRETR)               FUNCTION REQUESTED
   0F8E 01               0F8E 2869        DC     AL1(@B1)                  PRINT COUNT
   0F8F 0FAF             0F90 2870        DC     AL2(KCTBLK)               DATA ADDRESS
                              2871 *** END OF EXPANSION ***
                              2872 *@@M040 PPL    FUNC=@PRETR,CNT=14,CADDR=@@T040                         1-4
                         0F91 2873 @@M040 EQU    *                         PPL ADDRESS
   0F91 C0               0F91 2874        DC     AL1(@PRETR)               FUNCTION REQUESTED
   0F92 0E               0F92 2875        DC     AL1(14)                   PRINT COUNT
   0F93 0F95             0F94 2876        DC     AL2(@@T040)               DATA ADDRESS
                              2877 *** END OF EXPANSION ***
                         0F95 2878 @@T040 EQU    *                                                        1-4
   0F95 D7D9D6C3C5C4E4D9 0FA2 2879        DC     CL014'PROCEDURE FILE'                                    1-4
                              2880 *                                                                      *
                              2881 ************************************************************************
```

```
                              2883 ********************************************************************
                              2884 *                                                                  *
                         0FA3 2885 KCTBSE EQU    *                        BASE ADDR
                              2886 *
                              2887 *KCTDP1 DPL    FUNC=@DGET,DADDR=##RN,CNT=##LU,CADDR=KCTBF1
                         0FA3 2888 KCTDP1 EQU    *                        DISK PARAMETER LIST
     0FA3 01             0FA3 2889        DC    AL1(@DGET)               REQUESTED FUNCTION
     0FA4 0000           0FA5 2890        DC    AL2(##RN)                DISK ADDRESS
     0FA6 02             0FA6 2891        DC    AL1(##LU)                SECTOR COUNT
     0FA7 169D           0FA8 2892        DC    AL2(KCTBF1)              BUFFER ADDRESS
                              2893 *** END OF EXPANSION ***
                              2894 *
                         0FA5 2895 KCTSTR EQU    KCTDP1+@DSAD             DISK LIBRARY DISPLACEMENT
                              2896 *                                                                  *
                              2897 ********************************************************************
```

```
                                  2899 ********************************************************************
                                  2900 *                                                                  *
     0FA9                    0FA9 2901 KCTCTR DS    IL1                          COUNTER OF VOLUMES
     0FA9                         2902        ORG   KCTCTR                       RESET LOCATION COUNTER
     0FA9 04                 0FA9 2903        DC    IL1'4'                       INITIALIZED TO 4
     0FAA 0000               0FAB 2904 KCTZER DC    XL2'0000'                    ZERO COMPARE
     0FAC 01                 0FAC 2905 KCTONE DC    XL1'01'                      DECREMENT
                                  2906 *
     0FAD 404040             0FAF 2907 KCTBLK DC    CL3'   '                     BLANKS FOR MESSAGES
                             0FB0 2908 KCTDAT EQU   *
     0FB0 F0F061F0F061F0F0   0FB7 2909        DC    CL8'00/00/00'                DATE FORMAT
                                  2910 *
                             0FB8 2911 KCTMS1 EQU   *
     0FB8 C1D3D3             0FBA 2912 KCTALL DC    CL3'ALL'                     COMPARE CONSTANT
     0FBA                         2913        ORG   KCTALL                       RESET LOCATION COUNTER
     0FBA                    0FBA 2914 KCTCNT DS    AL(@B1)                      COUNTER
                             0FBE 2915 KCTMS2 EQU   KCTMS1+@VOLID                MESSAGE P BUFFER
                             0FE2 2916 DSVBUF EQU   KCTMS2+36                    DSVPRI BUFFER
                                  2917 *
                                  2918 *      $CANI
```

```
                              2920+*******************************************************************
                              2921+*  5703-XM1     COPYRIGHT IBM CORP. 1970                          *
                              2922+*                   REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083   *
                              2923+*                                                                 *
                              2924+*******************************************************************
                              2925+*STATUS                                                           *
                              2926+*    VERSION 1 MODIFICATION 0                                     *
                              2927+*                                                                 *
                              2928+*FUNCTION                                                         *
                              2929+*    THE FUNCTION OF SCANIT IS TO SCAN PAST VALID DELIMITERS AND  *
                              2930+*    RETURN A POINTER TO THE FIRST CHARACTER THAT'S NOT A DELIMITER.  *
                              2931+*                                                                 *
                              2932+*ENTRY POINTS                                                     *
                              2933+*    * THE ENTRY POINT IS SCANIT.                                 *
                              2934+*    * THE CALLING SEQUENCE IS AS FOLLOWS:                        *
                              2935+*              B     SCANIT                                       *
                              2936+*      WITH REGISTER 2 (@XR) POINTING TO THE FIRST CHARACTER TO BE  *
                              2937+*      EXAMINED.                                                  *
                              2938+*                                                                 *
                              2939+*INPUT                                                            *
                              2940+*    NONE                                                         *
                              2941+*                                                                 *
                              2942+*OUTPUT                                                           *
                              2943+*    NONE                                                         *
                              2944+*                                                                 *
                              2945+*EXTERNAL REFERENCES                                              *
                              2946+*    $CAERR - ERROR CODE SAVE AREA                                *
                              2947+*                                                                 *
                              2948+*EXITS, NORMAL                                                    *
                              2949+*    NORMAL EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO  *
                              2950+*    SCANIT IN THE CALLING ROUTINE. THE PSR (REGISTER 4) WILL CONTAIN  *
                              2951+*    A ZERO IF NO DELIMITERS WERE FOUND OR A HIGH CONDITION IF ONE OR  *
                              2952+*    MORE DELIMITERS WERE SCANNED.                                *
                              2953+*                                                                 *
                              2954+*EXITS, ERROR                                                     *
                              2955+*    ERROR EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO  *
                              2956+*    SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A LOW     *
                              2957+*    CONDITION.                                                   *
                              2958+*                                                                 *
                              2959+*TABLES/WORKAREAS                                                 *
                              2960+*    * SCACNT - AREA CONTAINING NUMBERS OF DELIMITERS SCANNED      *
                              2961+*    * SCAMMA - LOC WHERE SCACOM MAY BE MOVED IF ONE COMMA IS ALSO  *
                              2962+*      TO BE CONSIDERED A DELIMITER. MOVING SCACOF BACK INTO SCAMMA  *
                              2963+*      INDICATES THAT ONLY BLANKS SHOULD BE CONSIDERED DELIMITERS.  *
                              2964+*                                                                 *
                              2965+*ATTRIBUTES                                                       *
                              2966+*    RELOCATABLE AND RE-USABLE                                     *
                              2967+*                                                                 *
                              2968+*CHARACTER CODE DEPENDENCY                                         *
                              2969+*    THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR  *
                              2970+*    INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.        *
                              2971+*                                                                 *
                              2972+*NOTES                                                            *
                              2973+*    ERROR PROCEDURES                                             *
                              2974+*       THE ONLY ERROR CONDITION DETECTED BY SCANIT IS THE CASE WHERE  *
                              2975+*       A CARRIAGE-RETURN CODE FOLLOWS A COMMA.  UPON RETURN TO THE  *
```

```
     SCANIT - DELIMETER SCAN MODULE


ERR LOC   OBJECT CODE     ADDR STMT SOURCE STATEMENT            VER 15, MOD 00  03/02/22  PAGE  23

                          2976+*        CALLING ROUTINE, @PSR WILL BE SET TO A LOW CONDITION, THE        *
                          2977+*        ERROR CODE IS SET IN $CAERR, AND MG WILU BE POINTING TO THE      *
                          2978+*        CARRIAGE-RETURN CHARACTER.                                       *
                          2979+*                                                                         *
                          2980+*   REGISTER USAGE                                                        *
                          2981+*      REGISTER 2 (@XR) IS USED AS A POINTER ACROSS THE AREA BEING        *
                          2982+*      SCANNED FOR DELIMETERS.                                            *
                          2983+*                                                                         *
                          2984+*   SAVED/RESTORED AREAS                                                  *
                          2985+*      UPON ENTRY TO SCANIT, REGISTER 8 (@ARR) IS SAVED AND USED AS       *
                          2986+*      THE RETURN ADDRESS.                                                *
                          2987+*                                                                         *
                          2988+*   MODIFICATION CONSIDERATIONS                                           *
                          2989+*      NONE                                                               *
                          2990+*                                                                         *
                          2991+*   REQUIRED MODULES                                                      *
                          2992+*      * @SYSEQ - COMMON SYSTEM EQUATES                                    *
                          2993+*      * @FXDEQ - FIXED NUCLEUS ADDRESSES EQUATES                          *
                          2994+*                                                                         *
                          2995+*   OTHER                                                                 *
                          2996+*      SCANIT IS INITIALIZED TO BYPASS BLANKS ONLY. IF SCACOM IS          *
                          2997+*      MOVED TO SCAMMA, ONE COMMA WILL BE SCANNED ALONG WITH BLANKS.      *
                          2998+*      THE INSTRUCTION TO DO THIS IS AS FOLLOWS:                          *
                          2999+*           MVI    SCAMMA,SCACOM                                          *
                          3000+*                                                                         *
                          3001+*      TO DROP THE COMMA FROM ITS DELIMITER STATUS, SCACOF SHOULD BE      *
                          3002+*      MOVED TO SCAMMA, USING THE FOLLOWING INSTRUCTION:                  *
                          3003+*           MVI    SCAMMA,SCACOF                                          *
                          3004+*                                                                         *
                          3005+****************************************************************************


                          3007+*
                          3008+*                       EQUATES USED IN THIS SUBROUTINE
                          3009+*
                     0001 3010+SCAINC EQU   1                       TO INCREMENT POINTER
                     0001 3011+SCACOM EQU   @BNE                    SWITCH TO ALLOW SCANNING COMMA
                     0087 3012+SCACOF EQU   @UCB                    SWITCH TO SET OFF THE INDICATON
                          3013+*                                    * FOR SCANNING A COMMA
                     0FBB 3014+SCANIT EQU   *                       ENTRY POINT TO THIS SUBROUTINE
   0FBB 34 08 0FF7       3015+       ST    SCA500+@OP1,@ARR        SAVE RETURN ADDRESS
   0FBF 34 02 0FF9       3016+       ST    SCASVE,@XR              SAVE POINTER VALUE
   0FC3 3C 04 03CD       3017+       MVI   $CAERR,@@E110           SET ERROR CODE
   0FC7 F2 87 03         3018+       J     SCA200                  GO TO PROCESS
   0FCA E2 02 01         3019+SCA100 LA    SCAINC(,@XR),@XR        INCREMENT POINTER TO NEXT CHAR
   0FCD BD 40 00         3020+SCA200 CLI   0(,@XR),@BLANK          IS THIS CHAR BLANK ?
   0FD0 C0 81 0FCA       3021+       BE    SCA100                  YES, FETCH NEXT ONE
   0FD4 BD 6B 00         3022+       CLI   0(,@XR),@COMMA          IS IT A COMMA ?
   0FD7 F2 87 10         3023+SCA250 JC    SCA400,@UCB             UCS TO RETURN -- OR NOP IF
                          3024+*                                    * SCAMMA IS ACTIVE AND CHAR
   0FDA E2 02 01         3025+SCA300 LA    SCAINC(,@XR),@XR        INCREMENT POINTER TO NEXT CHAR
   0FDD BD 40 00         3026+       CLI   0(,@XR),@BLANK          IS THIS CHAR A BLANK ?
   0FE0 C0 81 0FDA       3027+       BE    SCA300                  YES, FETCH NEXT ONE
   0FE4 BD 1F 00         3028+       CLI   0(,@XR),@EOS+1          IS THIS EOS ?
   0FE7 F2 82 0A         3029+       JL    SCA500                  IF NOT, SKIP ERROR ROUTINE
   0FEA 34 02 0FFB       3030+SCA400 ST    SCACNT,@XR              SAVE NEW POINTER VALUE
```

```
     SCANIT - DELIMETER SCAN MODULE

ERR LOC   OBJECT CODE    ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  03/02/22  PAGE  24

   0FEE 0F 01 0FFB 0FF9      3031+      SLC    SCACNT(2),SCASVE            SET PSR TO EQUAL IF POINTER
                             3032+*                                       * NOT ADVANCED
   0FF4 C0 87 0000           3033+SCA500 B     *-*                        YES, RETURN
                        0FD8 3034+SCAMMA EQU   SCA250+@Q                   TO SET SCAN COMMA INDICATOR
                             3035+*
                             3036+*                    SAVE AREA
                             3037+*
                        0FF8 3038+SCASV1 EQU   *                          FIRST BYTE OF SCASVE
   0FF8                 0FF9 3039+SCASVE DS    CL2                        ORIGINAL POINTER VALUE SAVE
   0FFA                 0FFB 3040+SCACNT DS    CL2                         SAVE AREA FOR TOTAL CHAR SCAN
                             3041+***                   END OF SCANIT                              ***
                             3042 *      $CKOU
```

```
                            3044+*******************************************************************************
                            3045+* 5703-XM1      COPYRIGHT IBM CORP. 1970                              *
                            3046+*               REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083   *
                            3047+*                                                                     *
                            3048+*******************************************************************************
                            3049+*STATUS                                                               *
                            3050+*    VERSION 1 MODIFICATION 0                                          *
                            3051+*                                                                     *
                            3052+*FUNCTION                                                              *
                            3053+*    SCKOUT, ENTERED AT SCKOUT, WILL CHECK THE NEXT PARAMETER FOR THE  *
                            3054+*    'CRT' OR 'PRINTER' PARAMETER AND SET THE APPROPRIATE INDICATORS   *
                            3055+*    FOR DLPRNT.  SCKOUT, ENTERED AT SCKDEV, WILL TEST THE NUCLEUS     *
                            3056+*    INDICATORS FOR THE SPECIFIED OUTPUT DEVICE AND, IF NO ERRORS ARE  *
                            3057+*    FOUND, WILL RETURN TO THE USER WITH THE APPROPRIATE OUTPUT DEVICE *
                            3058+*    READY.                                                            *
                            3059+*                                                                     *
                            3060+*ENTRY POINTS                                                          *
                            3061+*    SCKOUT HAS THE FOLLOWING TWO ENTRY POINTS:                        *
                            3062+*        * SCKOUT - ENTRY TO CHECK THE NEXT PARAMETER FOR THE 'CRT' OR *
                            3063+*          'PRINTER' SPECIFICATION                                      *
                            3064+*        * SCKDEV - ENTRY TO CHECK AND MAKE READY THE SPECIFIED OUTPUT *
                            3065+*          DEVICE.                                                      *
                            3066+*                                                                     *
                            3067+*INPUT                                                                 *
                            3068+*    INPUT TO SCKOUT (ENTRY POINT SCKOUT) IS THE INPUT LINE BUFF WITH  *
                            3069+*    @XR POINTING TO THE FIRST CHARACTER TO BE TESTED.  THERE IS NO    *
                            3070+*    INPUT TO SCKOUT AT ENTRY POINT SCKDEV.                            *
                            3071+*                                                                     *
                            3072+*OUTPUT                                                                *
                            3073+*    THERE IS NO OUTPUT FROM SCKOUT.                                   *
                            3074+*                                                                     *
                            3075+*EXTERNAL REFERENCES                                                   *
                            3076+*    * SCANIT - ENTRY TO DELIMITER SCAN ROUTINE                        *
                            3077+*    * SCAMMA - SCANIT INDICATOR SET TO ALLOW A COMMA                  *
                            3078+*    * $CAERR - ERROR CODE SAVE AREA                                   *
                            3079+*    * $CAERK - EXIT TO LOAD #ERRPG, THE ERROR PROGRAM                 *
                            3080+*    * DLPTYP - DLPRNT INDICATOR FOR OUTPUT DEVICE                     *
                            3081+*    * $IOIND - NUCLEUS INDICATOR WHICH TELLS WHETHER OR NOT THE       *
                            3082+*      PRINTER IS DOWN ($MPDWN) AND WHETHER OR NOT THE CRT IS PRESENT  *
                            3083+*      ON THE SYSTEM ($CRTAV), AND CONTAINS THE COMMAND KEYS ONLY IND  *
                            3084+*    * $KEYCD - NUCLEUS INDICATOR TO GIVE INPUT MODE                   *
                            3085+*    * $CRTIN - NUCLEUS INDICATOR CONCERNING CRT                       *
                            3086+*    * $EXFTR - CORE EXPANSION FACTOR                                  *
                            3087+*    * $$PYCD - ENTRY TO CLEAR CRT AND LIGHT COMMAND INDICATORS        *
                            3088+*    * $$PRES - ENTRY TO ENABLE KEYBOARD TO DEPRESS                    *
                            3089+*                                                                     *
                            3090+*EXIT, NORMAL                                                          *
                            3091+*    NORMAL EXIT FROM SCKOUT (AT BOTH ENTRY POINTS) IS TO THE BYTE     *
                            3092+*    FOLLOWING THE BRANCH TO SCKOUT OR SCKDEV.  UPON EXIT FROM SCKOUT, *
                            3093+*    THE PSR WILL BE SET HIGH TO INDICATE A VALID PARAMETER AND ZERO   *
                            3094+*    TO INDICATE THAT NEITHER 'CRT' NOR 'PRINTER' WAS FOUND.  IF       *
                            3095+*    SCKDEV RETURNS TO THE BYTE FOLLOWING THE BRANCH, THIS INDICATES   *
                            3096+*    THAT NO ERRORS ARE ENCOUNTERED.                                   *
                            3097+*                                                                     *
                            3098+*EXIT, ERROR                                                           *
                            3099+*    ERROR EXIT FROM SCKOUT (ENTRY POINT SCKOUT) IS TO THE BYTE        *
```

```
                         3100+*    FOLLOWING THE BRANCH TO SCKOUT, WITH THE ERR CODE SET IN $CAERR,  *
                         3101+*    THE PSR SET LOW, AND @XR POINTING TO THE FIRST INVALID CHARACTER. *
                         3102+*    ERROR EXIT FROM SCKOUT (ENTRY PT SCKDEV) IS TO THE USER-DEFINED   *
                         3103+*    LABEL, $CKERR, WITH THE ERROR CODE SET IN $CAERR AND @XR POINTS   *
                         3104+*    OUTSIDE THE INPUT LINE BUFFER (USER VALUE DESTROYED).            *
                         3105+*                                                                     *
                         3106+*TABLES/WORKAREAS                                                     *
                         3107+*    NONE                                                             *
                         3108+*                                                                     *
                         3109+*ATTRIBUTES                                                           *
                         3110+*    RELOCATABLE AND RE-ENTERABLE                                     *
                         3111+*                                                                     *
                         3112+*CHARACTER CODE DEPENDENCY                                            *
                         3113+*    NONE                                                             *
                         3114+*                                                                     *
                         3115+*NOTES                                                                *
                         3116+*    ERROR PROCEDURES                                                 *
                         3117+*       UPON DETECTING AN ERROR, SCKOUT SETS THE APPROPRIATE ERR CODE *
                         3118+*       IN $CAERR AND RETURNS EITHER TO THE BYTE FOLLOWING THE BRANCH *
                         3119+*       TO SCKOUT OR TO THE USER-DEFINED LABEL, $CKERR.               *
                         3120+*                                                                     *
                         3121+*    REGISTER USAGE                                                   *
                         3122+*       REGISTER 2 (@XR) IS USED TO SCAN ACROSS THE INPUT LINE BUFFER.*
                         3123+*       RESISTER 4 (@PSR) IS SET TO INDICATE THE CONDITION FOUND IN   *
                         3124+*       SCKOUT (ENTRY POINT SCKOUT).                                  *
                         3125+*                                                                     *
                         3126+*    SAVED/RESTORED AREAS                                             *
                         3127+*       NONE                                                          *
                         3128+*                                                                     *
                         3129+*    MODIFICATION CONSIDERATIONS                                      *
                         3130+*       NONE                                                          *
                         3131+*                                                                     *
                         3132+*    REQUIRED MODULES                                                 *
                         3133+*       * @SYSEQ - COMMON SYSTEM EQUATES                              *
                         3134+*       * @FXDEQ - FIXED CORE LOCATIONS INSIDE NUCLEUS                *
                         3135+*       * @ERMEQ - ERROR MESSAGE EQUATES (SELECTED ERROR CODES)       *
                         3136+*       * @CANEQ - FIXED CORE LOCATIONS OUTSIDE NUCLEUS               *
                         3137+*       * $CANIT - DELIMITER SCAN ROUTINE                             *
                         3138+*       * DLPRNT - ROUTINE TO PRINT THE CURRENT LINE                  *
                         3139+*                                                                     *
                         3140+*    OTHER                                                            *
                         3141+*       NONE                                                          *
                         3142+************************************************************************
```

```
     SCKOUT - CHECK THE NEXT PARAMETER
```

```
                          0FFC 3144+SCKOUT EQU   *                        BEGINNING OF SCKOUT SUBROUTINE
     0FFC 34 08 108F            3145+      ST    SCK460+@OP1,@ARR         SAVE RETURN ADDRESS
     1000 34 02 1083            3146+      ST    SCK440+@OP1,@XR          SAVE XR POINTER
     1004 3C 01 0FD8            3147+      MVI   SCAMMA,SCACOM            SET SCANIT INDR TO ALLOW COMMA
                                3148+*
                                3149+*                TEST FOR 'CRT' OR 'PRINTER'
                                3150+*
     1008 8D 02 02 1092         3151+      CLC   SCK001-1(SCK001,@XR),SCKCCR IS 'CRT' SPECIFIFD ?
     100D F2 81 0F              3152+      JE    SCK100                   YES, PROCESS CRT PARAMETER
                                3153+*
     1010 8D 06 06 1099         3154+      CLC   SCK002-1(SCK002,@XR),SCKCMP IS 'PRINTER' SPECIFIED ?
     1015 F2 81 11              3155+      JE    SCK150                   YES, PROCESS 'PRINTER' PARAM
                                3156+*
                                3157+*                NEITHER CRT NOR PRINTER SPECIFIED
                                3158+*
     1018 35 04 109B            3159+      L     SCK003,@PSR             SET PSR TO BRANCH ZERO
     101C F2 87 69              3160+      J     SCK450                   BRANCH TO RETURN
                                3161+*
                                3162+*                CALL SCANIT AND CHECK DELIMITER AFTER PARAM
                                3163+*
     101F 3C 87 103E            3164+SCK100 MVI  SCK300+@Q,@UCB          SET SW TO PROCESS 'CRT'
     1023 E2 02 03              3165+      LA    SCK001(,@XR),@XR        INDR XR PAST 'CRT'
     1026 F2 87 03              3166+      J     SCK200                   JUMP TO CALL SCANIT
                                3167+*
     1029 E2 02 07              3168+SCK150 LA   SCK002(,@XR),@XR        INCR XR PAST 'PRINTER'
                                3169+*
     102C C0 87 0FBB            3170+SCK200 B    SCANIT                  BYPASS BLANKS AND A COMMA
     1030 C0 82 0469            3171+      BL    $CAERK                  CALL ERR PROG IF DANGLING COMMA
     1034 F2 84 06              3172+      JH    SCK300                   IF CHARS SCANNED, SET DLPRNT SW
                                3173+*
     1037 BD 1E 00              3174+      CLI   @ZERO(,@XR),@EOS        ELSE, IS PARAM FOLLOWED BY EOS ?
     103A F2 01 31              3175+      JNE   SCK410                   NO, SET 'INV PARAM' ERROR
                                3176+*
     103D F2 80 15              3177+SCK300 JC   SCK350,@NOP             NOP IF PRINTER -- UCB IF CRT
```

SCKOUT - CHECK THE NEXT PARAMETER

```
                                3179+*
                                3180+*                    PRINTER SPECIFIED
                                3181+*
     1040 3D 1B 148D            3182+      CLI   DLPTYP,DLPCRT           WAS CRT SPECIFIED BEFORE ?
     1044 F2 81 2E              3183+      JE    SCK420                  YES, SET 'CONFLICTING PARAM' ERR
                                3184+*
     1047 3D 85 148D            3185+      CLI   DLPTYP,DLPMPR           WAS PRINTER SPECIFIED BEFORE ?
     104B F2 81 2E              3186+      JE    SCK430                  YES, SET 'DUPLICATING PARAM' ERR
                                3187+*
     104E 3C 85 148D            3188+      MVI   DLPTYP,DLPMPR           SET SW FOR MATRIX PRINTER
     1052 F2 87 12              3189+      J     SCK400                  RETURN TO CALLING PGM
                                3190+*
                                3191+*                    CRT SPECIFIED
                                3192+*
     1055 3D 1B 148D            3193+SCK350 CLI  DLPTYP,DLPCRT           WAS CRT SPECIFIED BEFORE ?
     1059 F2 81 20              3194+      JE    SCK430                  YES SET 'DUPLICATE PARAM' ERR
                                3195+*
     105C 3D 85 148D            3196+      CLI   DLPTYP,DLPMPR           WAS PRINTER SPECIFIED BEFORE ?
     1060 F2 81 12              3197+      JE    SCK420                  YES, SET 'CONFLICTING PARAM' ERR
                                3198+*
     1063 3C 1B 148D            3199+      MVI   DLPTYP,DLPCRT           SET SW FOR CRT
     1067 35 04 109D            3200+SCK400 L    SCK004,@PSR             SET SW FOR BRANCH HIGH
     106B F2 87 1A              3201+      J     SCK450                  RETURN TO CALLING PROGRAM
                                3202+*
                                3203+*                    SET ERROR CODES
                                3204+*
     106E 3C 11 03CD            3205+SCK410 MVI  $CAERR,@@E131           SET 'INV PARAM' ERROR CODE
     1072 F2 87 0B              3206+      J     SCK440                  RETURN
                                3207+*
     1075 3C 15 03CD            3208+SCK420 MVI  $CAERR,@@E136           SET 'CONFLICTING PARAM' ERR CODE
     1079 F2 87 04              3209+      J     SCK440                  RETURN
                                3210+*
     107C 3C 13 03CD            3211+SCK430 MVI  $CAERR,@@E134           SET 'DUPLICATE PARAM' ERR CODE
                                3212+*
     1080 C2 02 0000            3213+SCK440 LA   *-*,@XR                 RESTORE XR VALUE
     1084 35 04 109F            3214+      L     SCK005,@PSR             SET PSR TO BL TO IND ERROR
                                3215+*
                                3216+*                    EXIT
                                3217+*
     1088 3C 80 103E            3218+SCK450 MVI  SCK300+@Q,@NOP          SET CRT OR POINTER INDR OFF
     108C C0 87 0000            3219+SCK460 B    *-*                     RETURN TO CALLING PROGRAM
                                3220+*
                                3221+*                    EQUATES USED IN SCKOUT
                                3222+*
                           0003 3223+SCK001 EQU  3                       LENGTH OF 'CRT' PARAMETER
                           0007 3224+SCK002 EQU  7                       LENGTH OF 'PRINTER' PARAMETER
                                3225+*
                                3226+*                    CONSTANTS USED IN SCOUT
                                3227+*
     1090 C3D9E3           1092 3228+SCKCCR DC   CL(SCK001)'CRT'         CRT PARAMETER IMAGE
     1093 D7D9C9D5E3C5D9   1099 3229+SCKCMP DC   CL(SCK002)'PRINTER'     PRINTER PARAMETER IMAGE
     109A 0081             109B 3230+SCK003 DC   XL2'81'                 PRINTER CODE FOR BRANCN ON ZERO
     109C 0084             109D 3231+SCK004 DC   XL2'84'                 PSR CODE FOR BRANCH HIGH
     109E 0082             109F 3232+SCK005 DC   XL2'82'                 PSR CODE FOR BRANCH LOW
                                3233+*
```

```
                      10A0 3235+SCKDEV EQU    *                       PORTION OF SCKOUT TO READY CRT
    10A0 34 08 1100        3236+       ST     SCK650+@OP1,@ARR        SAVE RETURN ADDRESS
    10A4 3C 01 03D3        3237+       MVI    $CRTIN,$CRTUP           SET CRT IN ROLL-UP MODE
                          3238+*
    10A8 3D 1B 148D        3239+       CLI    DLPTYP,DLPCRT           WAS CRT THE SPECIFIED PARM ?
    10AC F2 81 15          3240+       JE     SCK475                  YES, CHECK FOR ITS EXISTENCE
                          3241+*
    10AF 3D 85 148D        3242+       CLI    DLPTYP,DLPMPR           ELSE, WAS PRINTER SPECIFIED ?
    10B3 F2 01 47          3243+       JNE    SCK650                  NO, RETURN TO USER
                          3244+*
    10B6 38 01 03D2        3245+       TBN    $IOIND,$MPDWN           ELSE, IS PRINTER DOWN ?
    10BA F2 90 40          3246+       JF     SCK650                  NO, RETURN TO USER
                          3247+*
    10BD 3C 96 03CD        3248+       MVI    $CAERR,@@E549           SET ERR CODE FOR PRINTER DOWN
    10C1 F2 87 19          3249+       J      SCK550                  DESTROY YR AND EXIT
                          3250+*
    10C4 38 02 03D2        3251+SCK475 TBN    $IOIND,$CRTAV           IS CRT ON THE SYSTEM ?
    10C8 F2 90 0E          3252+       JF     SCK500                  NO, SET ERROR CODE
                          3253+*
    10CB 38 01 03C3        3254+       TBN    $KEYCD,$CARDI           IS CRT SPECIFIED FROM CARDS ?
    10CF F2 90 13          3255+       JF     SCK600                  IF NOT, SKIP ERROR ROUTINE
                          3256+*
    10D2 3C 3A 03CD        3257+       MVI    $CAERR,@@E248           SET ERROR CODE - 'CRT SPECIFIED
                          3258+*                                     * WHEN I/O IS FROM CARD READER'
    10D6 F2 87 04          3259+       J      SCK550                  SET PSR AND EAT
                          3260+*
    10D9 3C 38 03CD        3261+SCK500 MVI    $CAERR,@@E241           SET ERR CODE-CRT NOT ON SYSTEM
                          3262+*
    10DD C2 02 10A0        3263+SCK550 LA     SCKDEV,@XR              INCR XR TO AVOID SYNTAX ERROR
    10E1 C0 87 0469        3264+       B      SCKERR                  RETURN TO CALLING PROGRAM
                          3265+*
                          3266+*                READY CRT
                          3267+*
    10E5 3A 08 03D2        3268+SCK600 SBN    $IOIND,$CMDKY           SET CMND KEYS ONLY INDR ON
                          3269+*                                     SCKCL LITE
    10E9 0E 00 10F1 043B   3270+SCKCL0 ALC    SCKCL1+@D1(1),$EXFTR    CALCULATE ENTRY ADDRESS
    10EF C0 87 2200        3271+SCKCL1 B      $$PYCD                  CLEAR CRT / LIGHT CMND INDRS
    10F3 0F 00 10F1 043B   3272+       SLC    SCKCL1+@D1(1),$EXFTR    INITIALIZE ENTRY ADDRESS

    10F9 C0 87 0890        3274+       B      $$PRES                  ENABLE KEYBOARD ENTRY TO DEPRES
                          3275+*
    10FD C0 87 0000        3276+SCK650 B      *-*                     RETURN TO CALLING PROGRAM
                      1101 3277+SCKEND EQU    *                       END OF ROUTINE
```

```
      SCKOUT - CHECK THE NEXT PARAMETER
```

```
                          3279+*        PATCH
                          3280+*****************************************************************
                          3281+* PATCH AREA 1
                          3282+*****************************************************************
                          3283+*
                          3284+* CALCULATE AREA LEFT IN THIS SECTOR
                          3285+*
           1101 3286+$$$$L1 EQU    *                      START OF PATCH AREA 1
      1200               3287+      ORG    *,256,0                SET LOC CNTR TO NEXT SECTOR
           1200 3288+$$$$T1 EQU    *                      DEFINE ADDR OF SCTR BNDRY
      1101               3289+      ORG    $$$$L1                 SET LOC CNTR TO START OF
                          3290+*                                 * PATCH AREA
      1101          11FF 3291+$$$$$1 DS    CL($$$$T1-$$$$L1)      PATCH AREA
                          3292+*** END OF EXPANSION ***


                          3294+*        PATCH 256,2
                          3295+*****************************************************************
                          3296+* PATCH AREA 2
                          3297+*****************************************************************
      1200          12FF 3298+$$$$$2 DS    CL256                  PATCH AREA FOR PROGRAM
                          3299+*** END OF EXPANSION ***
                          3300+***                          END OF SCKOUT                      ***
      1300          1359 3301 $$$$$3 DS    CL90                   PATCH AREA
                          3302 *      $DL2P
```

```
3304+****************************************************************************
3305+*  5703-XM1  COPYRIGHT IBM CORP 1970                                      *
3306+*                 REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE. 120-2083     *
3307+*                                                                         *
3308+****************************************************************************
3309+*STATUS -                                                                 *
3310+*    VERSION 1 MODIFICATION 0                                             *
3311+*                                                                         *
3312+*FUNCTION                                                                 *
3313+*    * DL2ICS CONVERTS A RELATIVE DISK ADDRESS TO A PHYSICAL DISK         *
3314+*      ADDRESS AND COMBINES IT WITH A BASE ADDRESS PLACED IN DL2RAD       *
3315+*      BY THE CALLER.                                                     *
3316+*    * THE RELATIVE DISK ADDRESS IS A TWO BYTE CYLINDER SECTOR COUNT      *
3317+*      IN THE CALLERS DISK PARAMETER LIST (DPL).                          *
3318+*    * THE COUNT IS A CYLINDER SECTOR DISPLACEMENT FROM THE BASE          *
3319+*      ADDRESS PLACED IN DL2RAD                                           *
3320+*    * DL2ICS IS USED TO PROCESS DATA ON THE FIXED OR REMOVABLE DISK      *
3321+*      ON EITHER DRIVE AND PROVIDES THE INTERFACE TO $DISKN.              *
3322+*    * THE PHYSICAL DISK ADDRESS IS PLACED IN A COPY OF THE USERS DPL     *
3323+*      IN DL2ICS AND A CALL IS MADE TO $DISKN TO PERFORM THE REQUESTED    *
3324+*      OPERATION.                                                         *
3325+*                                                                         *
3326+*ENTRY POINTS                                                             *
3327+*    * THE ENTRY IS DL2ICS. THE BASE REGISTER IS SAVED AND RESTORED       *
3328+*      ON RETURN. THE INDEX REGISTER IS NOT USED.                         *
3329+*    * THE FORMAT OF THE CALLING SEQUENCE IS AS FOLLOWS:                  *
3330+*          B   DL2ICS                                                     *
3331+*          DC  AL2(PARMLT)                                                *
3332+*      WHERE PARMLT IS THE ADDR OF THE PARAMETER LIST TO BE PROCESSED.    *
3333+*                                                                         *
3334+*INPUT                                                                    *
3335+*    * THE INPUT IS A TWO BYTE BASE DISK ADDRESS PLACED IN                *
3336+*      DL2RAD AND A SIX BYTE DPL. THE SAME FORMAT AS THE DPL FOR          *
3337+*      $DISKN EXCEPT FOR THE DISK ADDRESS WHICH IS A RELATIVE CYLINDER    *
3338+*      AND SECTOR DISPLACEMENT FROM THE BASE ADDRESS IN DL2RAD.           *
3339+*                                                                         *
3340+*OUTPUT                                                                   *
3341+*    NONE.                                                                *
3342+*                                                                         *
3343+*EXTERNAL REFERENCES                                                      *
3344+*    $DISKN - ENTRY TO PHYSICAL DISK ROUTINE IS THE SYSTEM NUCLEUS.       *
3345+*                                                                         *
3346+*EXITS, NORMAL                                                            *
3347+*    NORMAL - EXIT IS TO THE FIRST INSTRUCTION FOLLOWING THE POINTER      *
3348+*      TO THE DPL. THE BASE REGISTER IS RESTORED. THE RETURN ADDRESS      *
3349+*      IS THE ADDRESS RECALL REGISTER (ARR) +2.                           *
3350+*                                                                         *
3351+*EXITS, ERROR                                                             *
3352+*    NONE                                                                 *
3353+*                                                                         *
3354+*TABLES/WORK AREAS                                                        *
3355+*    * THE CONSTANTS AND WORK AREAS RESIDE AT THE END OF THE EXECUTABLE*
3356+*      CODE AND ARE REFERENCED BY A DISPLACEMENT RELATIVE TO THE VALUE    *
3357+*      IN INDEX REGISTER 1 (@BR).                                         *
3358+*    * DL2SEC AND DL2SAD ARE EQUATED TO OPERAND LOCATIONS IN THE          *
3359+*      EXECUTABLE CODE TO ELIMINATE EXCESS WORKING STORAGE.               *
```

```
        DL2ICS - TWO TRACK LOGICAL IOCR


ERR LOC  OBJECT CODE     ADDR STMT SOURCE STATEMENT        VER 15, MOD 00  03/02/22  PAGE  32
                              3360+*                                                          *
                              3361+*ATTRIBUTES                                                *
                              3362+*    * DL2ICS IS REUSABLE                                  *
                              3363+*                                                          *
                              3364+*CHARACTER CODE DEPENDENCY                                 *
                              3365+*     THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR  *
                              3366+*      INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.  *
                              3367+*                                                          *
                              3368+*NOTES                                                     *
                              3369+*    ERROR PROCEDURES                                      *
                              3370+*       NONE                                               *
                              3371+*                                                          *
                              3372+*    REGISTER USAGE                                        *
                              3373+*      INDEX REGISTER 1 (@BR) IS SAVED AND RESTORED. THIS REGISTER IS *
                              3374+*      USED DURING EXECUTION. REGISTER 2 (@BR) IS NOT USED. *
                              3375+*                                                          *
                              3376+*    SAVED/RESTORED AREAS                                  *
                              3377+*       NONE                                               *
                              3378+*                                                          *
                              3379+*    MODIFICATION CONSIDERATIONS                           *
                              3380+*       NONE                                               *
                              3381+*                                                          *
                              3382+*    REQUIRED MODULES                                      *
                              3383+*      @SYSEQ - COMMON SYSTEM EQUATES.                      *
                              3384+*      @FXDEQ - SYSTEM NUCLEUS ADDRESSES AND INDICATORS VALUES EQUATES *
                              3385+*                                                          *
                              3386+*    OTHER                                                 *
                              3387+*      DL2ICS MAY BE USED TO CONVERT THE DISK ADDRESS ONLY AND NOT TO *
                              3388+*      CALL $DISKN IF THE USER MOVES A UCB CODE TO DL2SWH.  *
                              3389+*      THIS OPTION IS NOT STANDARD USAGE.                   *
                              3390+****************************************************************************
                         135E 3391+       USING DL2000,@BR              ESTABLISH ADDRESSABILITY
                              3392+*
                    0001 3393+DL2E01 EQU   X'01'                         FIELD LENGTH OF 1
                    0002 3394+DL2E02 EQU   X'02'                         FIELD LENGTH OF 2
                    0018 3395+DL2E18 EQU   X'18'                         HEX TRACK SECTOR COUNT
                    0060 3396+DL2E60 EQU   X'60'                         PHYSICAL SECTOR COUNT
                    0083 3397+DL2TSD EQU   X'83'                         MASK OFF TRACK SPINDLE DISK
                    007C 3398+DL2E7C EQU   X'7C'                         MASK OUT SECTOR COUNT
                    135A 3399+DL2ICS EQU   *                             ENTRY POINT
    135A 34 01 13DB        3400+       ST    DL2900+@OP1,@BR             SAVE OLD BASE
                    135E 3401+DL2000 EQU   *                             START PROCESSING
    135E C2 01 135E        3402+       LA    DL2000,@BR                  SET BASE ADDRESS
    1362 76 08 8A          3403+       A     DL2C01(,@BR),@ARR           BUMP TO RIGHT BYTE OF ADDR
    1365 74 08 14          3404+       ST    DL2001+@DOP2(,@BR),@ARR     ADDR OF PARAM
    1368 76 08 8A          3405+       A     DL2C01(,@BR),@ARR           BUMP TO RETURN ADDR
    136B 74 08 81          3406+       ST    DL2910+@OP1(,@BR),@ARR      SAVE RETURN ADDR
                              3407+*
    136E 4C 01 1D 0000     3408+DL2001 MVC   DL2002+@DOP2(@DADDR,@BR),*-* SETUP ADDR OF DPL
    1373 5E 01 1D 8C       3409+       ALC   DL2002+@DOP2(@CADDR,@BR),DL2C05(,@BR) DUMP TO RIGHT END
    1377 4C 05 92 0000     3410+DL2002 MVC   DL2DPL(@DPLNG,@BR),*-*     MOVE USER DPL TO WORK AREA
    137C 5F 00 8F 86       3411+DL2005 SLC   DL2LST+@DSAD(DL2E01,@BR),DL2C48(,@BR) ADJUST SCTR/CYL
    1380 F2 82 07          3412+       JM    DL2006                      GO TO RESTORE TO CONTINUE
    1383 5E 00 8E 8A       3413+       ALC   DL2LST+@DCYL(DL2E01,@BR),DL2C01(,@BR) BUMP CYLINDER COUNT
    1387 D0 87 1E          3414+       B     DL2005(,@BR)                BACK FOR NEXT CYLINDER
    138A 5E 00 8F 86       3415+DL2006 ALC   DL2LST+@DSAD(DL2E01,@BR),DL2C48(,@BR) RESTORE POSITIVE
```

```
                                      3416+*
                                      3417+*           GET THE LOGICAL SECTOR FROM THE DPL. THE NUMBER IS LEFT ADJUSTED
                                      3418+*           TO COMAE IT MTN THE POINTER ESTABLISHED PRIOR TO AN ENTRY.
     138E 5C 00 1D 8F                 3419+      MVC   DL2SEC(DL2E01,@BR),DL2LST+@DSAD(,@BR) GET SECTOR NUMBER
     1392 7C 00 8F                    3420+      MVI   DL2LST+@DSAD(,@BR),@ZERO  CLEAR SECTOR BYTE
                                      3421+*
                                      3422+*           MOVE THE RELATIVE START TO THE DFL
                                      3423+*
     1395 5E 01 8F 94                 3424+      ALC   DL2LST+@DSAD(DL2E02,@BR),DL2RAD(,@BR) DL2RAD TO DPL
     1399 7D 18 1D                    3425+      CLI   DL2SEC(,@BR),DL2E18        IS COUNT OVER A TRACK
     139C F2 82 08                    3426+      JL    DL2008                     NO GO CHANGE A PHYSICAL ADOR
     139F 5E 01 8F 85                 3427+      ALC   DL2LST+@DSAD(DL2E02,@BR),DL2K80(,@BR) BUMP TRACK VALUE
     13A3 5F 00 1D 88                 3428+      SLC   DL2SEC(1,@BR),DL2K18(,@BR) DECR BY TRACK VALUE
     13A7 5E 00 1D 1D                 3429+DL2008 ALC  DL2SEC(1,@BR),DL2SEC(,@BR) SHIFT LEFT 1
     13AB 5E 00 1D 1D                 3430+      ALC   DL2SEC(1,@BR),DL2SEC(,@BR) SHIFT LEFT
     13AF 5C 00 14 8F                 3431+      MVC   DL2SAD(DL2E01,@BR),DL2LST+@DSAD(,@BR) GET SECTOR ADDRESS
                                      3432+*
                                      3433+*           ZERO OUT THE SECTOR COUNT AND LEAVE THE DISK. SPINDLE AND
                                      3434+*           TRACK BITS AS IS TO BE RE INSERTED AFTER THE SECTOR HAS BEEN
                                      3435+*           LOCATES.
                                      3436+*
     13B3 7B 7C 8F                    3437+      SBF   DL2LST+@DSAD(,@BR),DL2E7C TURN OFF
     13B6 7B 83 14                    3438+      SBF   DL2SAD(,@BR),DL2TSD       OFF TRACK SPINDLE DISK
     13B9 5E 00 14 1D                 3439+      ALC   DL2SAD(DL2E01,@BR),DL2SEC(,@BR) COMBINE SECTOR COUNTS
     13BD 7D 60 14                    3440+DL2010 CLI  DL2SAD(,@BR),DL2E60       TEST IF TRACK CROSSED
     13C0 F2 82 08                    3441+      JL    DL2100
                                      3442+*
                                      3443+*           INCREMENT TRACK BIT. OVERFLOW INTO THE CYLINDER COUNT.
                                      3444+*
     13C3 5E 01 8F 85                 3445+      ALC   DL2LST+@DSAD(DL2E02,@BR),DL2K80(,@BR)
     13C7 5F 00 14 83                 3446+      SLC   DL2SAD(1,@BR),DL2K60(,@BR) DECR BY TRACK VALUE
                                      3447+*
     13CB 5E 00 8F 14                 3448+DL2100 ALC  DL2LST+@DSAD(1,@BR),DL2SAD(,@BR) INSERT SECTOR COUNT
                                      3449+*
     13CF F2 80 06                    3450+DL2110 JC   DL2900,@NOP               CONVERSION SWITCH
                                 13D0 3451+DL2SWH EQU  DL2110+@Q                 ADDR OF Q CODE FOR SWITCH
     13D2 C0 87 0025                  3452+      B     $DISKN                    GO PROCESS I/O
     13D6 13EB                   13D7 3453+      DC    AL2(DL2LST)               ADDRESS OF DPL
     13D8 C2 01 0000                  3454+DL2900 LA   *-*,@BR                   RESTORE CALLERS BASE
     13DC C0 87 0000                  3455+DL2910 B    *-*
                                      3456+*****************************************************************
                                      3457+*     CONSTANTS
                                      3458+*****************************************************************
     13E0 0060                   13E1 3459+DL2K60 DC   XL2'0060'                 SECTOR COUNT OF 24 LEFT ADJUSTD
     13E2 0080                   13E3 3460+DL2K80 DC   XL2'0080'                 BIT FOR INCREMENTING TRACK
     13E4 30                     13E4 3461+DL2C48 DC   IL1'48'                   CYLINDER VALUE FOR 1 DISK
     13E5 0018                   13E6 3462+DL2K18 DC   XL2'18'                   HEX SECTORS PER TRACK
     13E7 0001                   13E8 3463+DL2C01 DC   IL2'1'                    CONSTANT FOR REGISTER MODE
     13E9 0005                   13EA 3464+DL2C05 DC   IL2'5'                    DISP TO RIGHT END OF DPL
                                      3465+*****************************************************************
                                      3466+*     WORK AREA
                                      3467+*****************************************************************
                                 13EB 3468+DL2LST EQU  *                         LIST HIGH END
     13EB                        13F0 3469+DL2DPL DS   CL(@DPLNG)                WORKING DPL
                                 13ED 3470+DL2PHY EQU  DL2LST+@DSAD              POINTER TO PHYSICAL DADDR
                                 1372 3471+DL2SAD EQU  DL2001+@DOP2              SAVE SECTOR BYTE FROM DPI
```

```
      DL2ICS - TWO TRACK LOGICAL IOCR

ERR LOC  OBJECT CODE     ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  03/02/22  PAGE  34

                         137B 3472+DL2SEC EQU   DL2002+@DOP2           WORKING SECTOR ADDRESS FIELD
     13F1                13F2 3473+DL2RAD DS    CL(@DADDR)             USER RELATIVE STARTING ADDR.
                         13F3 3474+DL2END EQU   *                      END OF DL2ICS
                              3475+***                          END OF DL2ICS                        ***
```

```
                         3477 ********************************************************************
                         3478 *  5703-XM1 COPYRIGHT IBM CORP, 1970                               *
                         3479 *          REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083     *
                         3480 *                                                                  *
                         3481 ********************************************************************
                         3482 *STATUS                                                           *
                         3483 *    VERSION 1 MODIFICATION 0                                      *
                         3484 *                                                                  *
                         3485 *FUNCTION                                                          *
                         3486 *    THE FUNCTION OF DSVPRI IS TO ALLOW INFORMATION TO BE ACCUMULATED *
                         3487 *    IN A BUFFER WITH A 'PRINT ONLY' CODE IN THE PRINT PARAMETER LIST *
                         3488 *    AND TO BE PRINTED VIA DLPRNT WHEN A 'PRINT AND RETURN' CODE IS  *
                         3489 *    SENT IN THE PPL.                                               *
                         3490 *                                                                  *
                         3491 *ENTRY POINTS                                                      *
                         3492 *    * THE ENTRY POINT IS DSVPRI,                                   *
                         3493 *    * THE CALLING SEQUENCE IS AS FOLLOWS:                          *
                         3494 *         B      DSVPRI                                             *
                         3495 *         DC    AL2(PPLA)                                           *
                         3496 *      WHERE PPLA IS THE ADDRESS OF THE PRINT PARAMETER LIST.       *
                         3497 *                                                                  *
                         3498 *INPUT                                                             *
                         3499 *    INPUT TO DSVPRI IS THE INFORMATION CONTAINED IN THE PRINT      *
                         3500 *    PARAMETER LIST.                                                *
                         3501 *                                                                  *
                         3502 *OUTPUT                                                            *
                         3503 *    OUTPUT FROM DSVPRI IS A LINE PRINTED ON THE OUTPUT DEVICE WHEN A *
                         3504 *    'PRINT AND RETURN' CODE IS SENT IN THE PPL.                    *
                         3505 *                                                                  *
                         3506 *EXTERNAL REFERENCES                                               *
                         3507 *    DLPRNT - ENTRY TO MODULE TO PRINT ONE LINE.                    *
                         3508 *                                                                  *
                         3509 *EXITS, NORMAL                                                     *
                         3510 *    EXIT FROM DSVPRI IS TO THE BYTE FOLLOWING THE DC OF THE PPL     *
                         3511 *    ADDRESS.                                                       *
                         3512 *                                                                  *
                         3513 *EXITS, ERROR                                                      *
                         3514 *    NONE                                                          *
                         3515 *                                                                  *
                         3516 *TABLES/WORKAREAS                                                  *
                         3517 *    * DSVPPL - PPL USED TO CALL DLPRNT, CREATED IN DSVPRI          *
                         3518 *    * DSVIUF - USER-DEFINED BUFFER, USED IN PPL FOR DLPRNT         *
                         3519 *                                                                  *
                         3520 *ATTRIBUTES                                                        *
                         3521 *    RELOCATABLE AND RE-ENTERABLE                                   *
                         3522 *                                                                  *
                         3523 *CHARACTER CODE DEPENDENCY                                          *
                         3524 *    NONE                                                          *
                         3525 *                                                                  *
                         3526 *NOTES                                                             *
                         3527 *    ERROR PROCEDURES                                               *
                         3528 *       DSVPRI DETECTS NO ERRORS,                                   *
                         3529 *                                                                  *
                         3530 *    REGISTER USAGE                                                 *
                         3531 *       * REGISTER 1 (@BR) IS SAVED UPON ENTRY TO DSVPRI AND RESTORED *
                         3532 *         BEFORE EXIT.  IT IS USED IN DSVPRI AS A BASE REGISTER FOR  *
```

```
     DSVPRI - E

ERR LOC   OBJECT CODE      ADDR STMT  SOURCE STATEMENT          VER 15, MOD 00  03/02/22  PAGE  36
                                3533 *        ADDRESSABILITY.                                        *
                                3534 *      * REGISTER 2 (@XR) IS ALSO SAVED AND RESTORED FOR THE USER.   *
                                3535 *        IT IS USED TO POINT TO THE PPL SENT TO DSVPRI.        *
                                3536 *                                                             *
                                3537 *    SAVED/RESTORED AREAS                                      *
                                3538 *      REGISTERS 1 AND 2 ARE SAVED UPON ENTRY TO DSVPRI AND RESTORED   *
                                3539 *      BEFORE EXIT.  REGISTER 8 (@ARR) IS BUMPED BY 2 AND SAVED FOR   *
                                3540 *      THE RETURN ADDRESS.                                     *
                                3541 *                                                             *
                                3542 *    MODIFICATION CONSIDERATIONS                               *
                                3543 *      NONE                                                    *
                                3544 *                                                             *
                                3545 *    REQUIRED MODULES                                          *
                                3546 *      * @SYSEQ - COMMON SYSTEM EQUATES                         *
                                3547 *      * DLPRNT - MODULE TO PRINT A LINE                        *
                                3548 *                                                             *
                                3549 *    OTHER                                                     *
                                3550 *      NONE                                                    *
                                3551 ********************************************************************
```

```
      DSVPRI - E


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  03/02/22  PAGE  37

                           13F3 3553 DSVPRI EQU    *                          DLPRNT INTERFACE ROUTINE
     13F3 34 01 1450            3554        ST     DSV900+@OP1,@BR            SAVE USER'S BASE REG
     13F7 C2 01 13F3            3555        LA     DSVPRI,@BR                 LOAD BASE REGISTER
                           13F3 3556        USING  DSVPRI,@BR                 SET UP BASE REGISTER
     13FB 74 02 61             3557         ST     DSV910+@OP1(,@BR),@XR      SAVE USER'S XR
     13FE 76 08 69             3558         A      DSVONE(,@BR),@ARR          PT AARR TO ADDR OF PPL
     1401 74 08 1A             3559         ST     DSV100+@OP1(,@BR),@ARR     SAVE ADDR OF PPL
     1404 76 08 69             3560         A      DSVONE(,@BR),@ARR          CALCULATE RETURN ADDRESS
     1407 74 08 65             3561         ST     DSV920+@OP1(,@BR),@ARR     SAVE RETURN ADDRESS
                                3562 *
     140A 35 02 0000            3563 DSV100 L      *-*,@XR                    POINT XR TO PPL
     140E BD 40 00              3564        CLI    @PCTRL(,@XR),@PRINT        IS PRINT ONLY SPECIFIED
     1411 F2 81 03              3565        JE     DSV200                     YES, DON'T SEE PRINT SW
     1414 7C 80 47              3566        MVI    DSV800+@Q(,@BR),@NOP       SET SW TO PRINT
     1417 6C 00 6B 01           3567 DSV200 MVC    DSVTMP(1,@BR),@PRCNT(,@XR)   EXPAND PPL COUNT TO TWO BYTES
     141B 6C 01 45 03           3568        MVC    DSV700+@OP2(@CADDR,@BR),@PDATA(,@XR)   SAVE USER'S BFR ADDR
     141F 6E 00 6D 01           3569        ALC    DSVPPL+@PRCNT(1,@BR),@PRCNT(,@XR)       INCR PPL COUNT
     1423 5E 01 43 6B           3570        ALC    DSV700+@OP1(@CADDR,@BR),DSVTMP(,@BR)   SET 'MOVE TO' ADDR
     1427 5F 00 6B 69           3571        SLC    DSVTMP(1,@BR),DSVONE(,@BR)        DECR LENGTH BY ONE
     142B 5C 00 41 6B           3572        MVC    DSV700+@Q(,@BR),DSVTMP(1,@BR)   SET LENGTH OF MOVE
     142F 5E 01 45 6B           3573        ALC    DSV700+@OP2(@CADDR,@BR),DSVTMP(,@BR)   SET 'MOVE FROM' ADDR
     1433 0C 00 0FE1 0000       3574 DSV700 MVC    DSVBUF-1+*-*(@VQ),*-*       MOVE CHARS TO BUFFER
     1439 F2 87 11              3575 DSV800 JC     DSV900,@UCB+*-*            UCB UNLESS PRETR SPECIFIED
                                3576 *
     143C C0 87 1463            3577        B      DLPRNT                     PRINT OUT LINE
     1440 145F            1441  3578        DC     AL(@CADDR)(DSVPPL)         PPL
     1442 3C 87 143A            3579        MVI    DSV800+@Q,@UCB             SET PRINT SW OFF
                                3580 *             RESTORE THE 'MOVE TO' ADDRESS
     1446 5C 01 43 67           3581        MVC    DSV700+@OP1(,@BR),DSVABF(@CADDR,@BR)
     144A 7C 00 6D              3582        MVI    DSVPPL+@PRCNT(,@BR),@ZERO RESET PPL COUNT TO ZERO
                                3583 *
     144D C2 01 0000            3584 DSV900 LA     *-*,@BR                    RESTORE BASE REGISTER
     1451 C2 02 0000            3585 DSV910 LA     *-*,@XR                    RESTORE INDEX REGISTER
     1455 C0 87 0000            3586 DSV920 B      *-*                        RETURN TO USER
     1459 0FE1            145A  3587 DSVABF DC     AL(@CADDR)(DSVBUF-1)
                                3588 *
                                3589 *             DSVPRI CONSTANTS AND SAVE AREAS
                                3590 *
     145B 0001            145C  3591 DSVONE DC     XL2'01'                    CONSTANT OF ONE
                           145D 3592 DSVTM1 EQU    *                          START OF SAVE AREA
     145D                  145E 3593 DSVTMP DS     XL(@CADDR)                 * USED TO CALCULATE
     145D                       3594        ORG    DSVTM1                     * THE NUMBER OF BYTES TO
     145D 0000             145E 3595        DC     XL(@CADDR)'0'              * SAVE OR PRINT
                                3596 *DSVPPL PPL    FUNC=@PRETR,CADDR=DSVBUF
                           145F 3597 DSVPPL EQU    *                          PPL ADDRESS
     145F C0               145F 3598        DC     AL1(@PRETR)                FUNCTION REQUESTED
     1460 00               1460 3599        DC     AL1(*-*)                   PRINT COUNT
     1461 0FE2             1462 3600        DC     AL2(DSVBUF)                DATA ADDRESS
                                3601 *** END OF EXPANSION **
                                3602 *      $DLPR
```

```
3604+********************************************************************************
3605+* 5703-XM1      COPYRIGHT IBM CORP. 1970                                       *
3606+*                      REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083     *
3607+*                                                                              *
3608+********************************************************************************
3609+*STATUS                                                                        *
3610+*    VERSION 1 MODIFICATION 0                                                  *
3611+*                                                                              *
3612+*FUNCTION                                                                      *
3613+*    * DLPRNT PROVIDES FOR DEVICE INDEPENDENCE FOR OUTPUT FROM                 *
3614+*      LIST ORIENTED PROGRAMS.                                                 *
3615+*    * FOR CRT OUTPUT, ROLL SPEED AND POP FEATURES ARE SUPPORTED.              *
3616+*      IN ADDITION DLPRNT WILL FLASH COMMAND LIGHT 13 WHEN IN                  *
3617+*      STOP MODE.                                                              *
3618+*    * IF A 50LMP MATRIX PRINTER IS TO BE USED, ALL PRINTED LINES              *
3619+*      ARE ANALYZED FOR LENGTH TO PROVIDE MAXIMUM LINE THROUGHPUT.             *
3620+*      THIS IS DONE BY PRINTING RIGHT ONLY AS FAR AS REQUIRED TO               *
3621+*      PRINT THE NEXT LINE FROM RIGHT TO LEFT.  THE 50LMP I/O                  *
3622+*      INTERFACE IS SUPPLIED BY DLPRNT.                                        *
3623+*    * OUTPUT MAY BE DIRECTED TO THE CRT, THE MATRIX PRINTER, OR               *
3624+*      THE CURRENT SYSTEM OUTPUT DEVICE(S).                                    *
3625+*                                                                              *
3626+*ENTRY POINTS                                                                  *
3627+*    DLPRNT HAS ONE ENTRY POINT.  THIS ENTRY POINT IS USED WHEN A              *
3628+*    LINE IS TO BE PRINTED FOLLOWED BY A NORMAL CARRIER RETURN.                *
3629+*    THE CALLING SEQUENCE IS:                                                  *
3630+*                                                                              *
3631+*         B    DLPRNT                                                          *
3632+*         DC   AL2(PPLA)                                                       *
3633+*    WHERE PPLA IS A TWO BYTE ADDRESS OF THE LEFT BYTE OF A PRINT              *
3634+*    PARAMETER LIST.                                                           *
3635+*                                                                              *
3636+*INPUT                                                                         *
3637+*    * BEFORE USING DLPRNT THE ONE BYTE INDICATOR, DLPTYP, MUST                *
3638+*      BE SET TO INDICATE WHICH DEVICE IS TO BE USED FOR OUTPUT.               *
3639+*      THE CORRESPONDING VALUES AND THEIR FUNCTION FOLLOWS:                    *
3640+*         DLPMPR - MATRIX PRINTER IS TO BE USED FOR OUTPUT.                    *
3641+*         DLPCRT - THE DISPLAY STATION IS TO BE USED FOR OUTPUT.               *
3642+*                  ROLL SPEED AND POP FUNCTIONS WILL BE CONTROLED.             *
3643+*         DLPSPT - THE SYSTEM PRINTER(S) IS TO OE USED FOR OUTPUT.             *
3644+*                  THIS IS THE DEFAULT VALUE.                                  *
3645+*    * A 244 BYTE BUFFER MUST BE ALLOCATED FOR DLPRNTS USE STARTING            *
3646+*      AT LOCATION DLIBUF.                                                     *
3647+*    * A FOUR BYTE PRINT PARAMETER LIST (PPL) MUST BE PASSED VIA               *
3648+*      A TWO BYTE COME ADDRESS FOLLOWING THE CALL.  THIS PPL IS OF             *
3649+*      THE SAME FORMAT AS THE PPL SENT TO DPRINT WITH THE FOLLOWING            *
3650+*      RESTRICTIONS:                                                           *
3651+*         * ONLY 'PRINT AND RETURN' CONTROL CODES ARE ALLOWED FOR             *
3652+*           PRINTING.                                                          *
3653+*         * WAIT FUNCTIONS SHOULD NOT BE USED EXCEPT AFTER THE LAST           *
3654+*           LINE HAS BEEN PRINTED.  IT IS THEN REQUIRED TO TERMINATE          *
3655+*           DLPRNT'S FUNCTION.                                                 *
3656+*OUTPUT                                                                        *
3657+*    UPON COMPLETION THE GENERAL REGISTERS AND PPL WILL BE THE SAME            *
3658+*    AS AT ENTRY, THE LINE TO BE PRINTED WILL BE PRINTED (OR BUFFERED          *
3659+*    IN THE CASE OF THE LINE PRINTER).  THE CALLING PROGRAM MAY                *
```

```
                              3660+*   MODIFY THE LINE UPON RETURN.                              *
                              3661+*                                                            *
                              3662+*EXTERNAL REFERENCES                                         *
                              3663+*        $PRDEV - SYSTEM PRINTER INDICATOR.                  *
                              3664+*        DLIBUF - LOCATION OF BUFFER.                        *
                              3665+*        $$PLYN - ENTRY TO DSPLYN.                           *
                              3666+*        $$PRNT - ENTRY TO DPRINT.                           *
                              3667+*        $CRTIN - ROLL INDICATORS.                           *
                              3668+*        $IOIND - LINE PRINTER INDICATOR.                    *
                              3669+*        $UNMSK - ENTRY TO UNMASK INQUIRY REQUEST.           *
                              3670+*        $$PSIO - LOCATION OF CONTROL BYTE IN DPRINT SIG.    *
                              3671+*        $$PCNT - LOCATION OF COUNT BYTE IN DPRINT I/O LIST. *
                              3672+*                                                            *
                              3673+*EXITS, NORMAL                                               *
                              3674+*   EXIT IS TO THE CALLING PROGRAM FOLLOWING THE PPL ADDRESS.*
                              3675+*                                                            *
                              3676+*EXITS, ERROR                                                *
                              3677+*   N/A                                                      *
                              3678+*                                                            *
                              3679+*TABLES/WORK AREAS                                           *
                              3680+*   N/A                                                      *
                              3681+*                                                            *
                              3682+*ATTRIBUTES                                                  *
                              3683+*   RELOCATABLE                                              *
                              3684+*   REUSABLE                                                 *
                              3685+*                                                            *
                              3686+*CHARACTER CODE DEPENDENCY                                   *
                              3687+*   N/A                                                      *
                              3688+*                                                            *
                              3689+*NOTES                                                       *
                              3690+*   ERROR PROCEDURES                                         *
                              3691+*     N/A                                                    *
                              3692+*                                                            *
                              3693+*   REGISTER USAGE                                           *
                              3694+*     REGISTERS 1 AND 2 ARE USED FOR BASE ADDRESSING.        *
                              3695+*                                                            *
                              3696+*   SAVED/RESTORED AREAS                                     *
                              3697+*     N/A                                                    *
                              3698+*                                                            *
                              3699+*   MODIFICATION CONSIDERATIONS                              *
                              3700+*     DLPRNT DIRECTLY MODIFIES DPRINT WHEN USING THE LINE PRINTER *
                              3701+*     FUNCTION.  CARE MUST BE TAKEN WHEN MODIFING EITHER DLPRNT OR *
                              3702+*     DPRINT.                                                *
                              3703+*                                                            *
                              3704+*   REQUIRED MODULES                                         *
                              3705+*       @SYSEQ - GENERAL SYSTEM EQUATES                      *
                              3706+*       @FXDEQ - NUCLEUS LOCATION EQUATES                    *
                              3707+*       @HDWEQ - HARDWARE VALUE EQUATES                      *
                              3708+*       @CANEQ - TRANSCIENT LOCATION EQUATES                 *
                              3709+*                                                            *
                              3710+*   OTHER                                                    *
                              3711+*     N/A                                                    *
                              3712+************************************************************************
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      DLPRNT -- LIST OUTPUT INTERFACE


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT            VER 15, MOD 00  03/02/22  PAGE  40

                          149C 3714+      USING DLPBSE,@BR              BASE SPECIFICATION
                          1463 3715+DLPRNT EQU  *                       ENTRY
    1463 34 01 156D            3716+      ST    DLP480+@OP1,@BR          SAVE BR
    1467 C2 01 149C            3717+      LA    DLPBSE,@BR               LOAD BASE REG
    146B 74 02 D5             3718+      ST    DLP500+@OP1(,@BR),@XR    SAVE XR
    146E 76 08 ED             3719+      A     DLPONE(,@BR),@ARR        CALCULATE PPL ADDR POINTER
    1471 34 08 147E            3720+      ST    DLP100+@OP1,@ARR         GET PARM ADDR
    1475 76 08 ED             3721+      A     DLPONE(,@BR),@ARR        CALCULATE RETURN ADDR
    1478 74 08 DD             3722+      ST    DLP520+@OP1(,@BR),@ARR   SAVE RETURN ADDR
    147B 35 02 0000           3723+DLP100 L     *-*,@XR                  XR POINTS TO PPL
    147F 6C 03 EA 03          3724+      MVC   DLPWK2+@PDATA(@PPLNG,@BR),@PDATA(,@XR) MOVE IN PPL
    1483 7C 20 0F             3725+      MVI   DLPEXT-1(,@BR),X'20'     INITIALIZE DSPLYN ADDR     *****
    1486 4E 00 0F 043B        3726+      ALC   DLPEXT-1(1,@BR),$EXFTR   GET DSPLYN ADDR
    148B F2 87 00             3727+      J     *-*                      GO TO CORRECT INTERFACE
                          148D 3728+DLPTYP EQU  *-1                     I/O DEVICE INDR LOCATION
    148D                      3729+      ORG   DLPTYP                   SET INSTR CNTR
    148D 00                  148D 3730+      DC    AL1(DLPSPT)              SET DEFAULT TO SYSTEM PRINTER
                          148E 3731+DLPBSD EQU  *                       DISPLACEMENT BASE
                              3732+**
                          148E 3733+DLPSPI EQU  *                       SYSTEM PRINTER INTERFACE
    148E 3D 07 044A           3734+      CLI   $PRDEV-1,X'07'           SYSPRINT = MATRIX PRINT    *****
    1492 F2 81 7E             3735+      JE    DLPNPT                   DO LIME PRINTER INTERFACE
    1495 5C 01 00 10          3736+      MVC   DLP120+@OP1(@CADDR,@BR),DLPEXT(,@BR) GET DSPLYN ADDR
    1499 C0 87 0000           3737+DLP120 B     *-*                      GO TO DSPLYN
    149D 1583                149E 3738+      DC    AL2(DLPWK2)              PPL ADDRESS
    149F 3D 00 044B           3739+      CLI   $PRDEV,X'00'             IS PRINTER REQUIRED TOO    *****
    14A3 F2 81 6D             3740+      JE    DLPNPT                   DO LINE PRINTER INTERFACE
    14A6 F2 87 C1             3741+      J     DLP480                   EXIT INTERFACE
                          149C 3742+DLPBSE EQU  DLP120+@OP1              BASE ADDRESS
```

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                        14A9 3744+DLPTIF EQU    *                          ENTRY
     14A9 C0 87 0000          3745+      B      *-*                        GO TO DSPLYN
     14AB                     3746+      ORG    *-2                        INITIALIZE ADDR
     14AB 2004          14AC 3747+DLPEXT DC     AL2($$PLYN)                DSPLYN ENTRY ADDR
     14AD 1583          14AE 3748+      DC     AL2(DLPWK2)                PPL ADDRESS
     14AF 7D FF E7           3749+      CLI    DLPWK2+@PCTRL(,@BR),@PWAIT WAIT FUNCTION ?
     14B2 F2 81 57           3750+      JE     DLP360                     GO TURN OFF CMD LIGHTS
     14B5 71 11 E2           3751+DLP140 LIO   DLPK13(,@BR),@KEYBD+@CMLON TURN ON CMD LITE 13
     14B8 38 08 03D3         3752+      TBN    $CRTIN,$CRTSP              IN STOP MODE?
     14BC F2 90 1D           3753+      JF     DLP240                     NO ? CONTINUE ROLL
     14BF F2 80 09           3754+DLP160 JC    DLP180,@NOP                JUMP IF LIGHT ON
     14C2 71 10 E2           3755+      LIO    DLPK13(,@BR),@KEYBD+@CMOFF TURN POP LITE OFF
     14C5 7C 87 24           3756+      MVI    DLP160+@Q(,@BR),@UCB       SET FOR TURN ON
     14C8 F2 87 03           3757+      J      DLP200                     GO DO TIME OUT
     14CB 7C 80 24           3758+DLP180 MVI   DLP160+@Q(,@BR),@NOP       SET TO TURN OFF
     14CE 5C 01 E0 E1        3759+DLP200 MVC   DLPLPC(2,@BR),DLPLIN(,@BR) SET UP TIME COUNT
     14D2 5F 01 E0 ED        3760+DLP220 SLC   DLPLPC(2,@BR),DLPONE(,@BR) DECREMENT TIME COUNT
     14D6 D0 84 36           3761+      BH     DLP220(,@BR)               LOOP UNTIL TIME OUT
     14D9 D0 87 19           3762+      B      DLP140(,@BR)               GO TEST STOP MODE
     14DC 38 04 03D3         3763+DLP240 TBN   $CRTIN,$CRTPU              POP UP INDR ON ?
     14E0 F2 90 07           3764+      JF     DLP260                     SKIP LINE CNT INITIALIZATION
     14E3 3B 04 03D3         3765+      SBF    $CRTIN,$CRTPU              SET POP INDR OFF
     14E7 7C 00 DE           3766+      MVI    DLPCNT(,@BR),@ZERO         ZERO LINES DISPLAYED CNT
     14EA 7D 0D DE           3767+DLP260 CLI   DLPCNT(,@BR),DLPMAX        HAVE MAX NO. OF LINES BEEN ?
                        3768+*                                 * DISPLAYED ?
     14ED F2 01 04           3769+      JNE    DLP280                     JUMP IF NOT
     14F0 3A 08 03D3         3770+      SBN    $CRTIN,$CRTSP              SET ROLL STOP INDR
     14F4 F2 04 0E           3771+DLP280 JNH   DLP320                     JUMP IF MAX LINES NOT DISPLAYED
     14F7 5C 01 E0 E1        3772+      MVC    DLPLPC(2,@BR),DLPLIN(,@BR) SET UP TIMING LOOP
     14FB 5F 01 E0 ED        3773+DLP300 SLC   DLPLPC(2,@BR),DLPONE(,@BR) DECREMENT COUNT
     14FF D0 84 5F           3774+      BH     DLP300(,@BR)               BRANCH IF TIME NOT UP
     1502 F2 87 04           3775+      J      DLP340                     GO EXIT
     1505 5E 00 DE ED        3776+DLP320 ALC   DLPCNT(1,@BR),DLPONE(,@BR) BUMP LINE COUNT
     1509 F2 87 5E           3777+DLP340 J     DLP480                     GO EXIT
     150C C0 87 0B44         3778+DLP360 B     $$COFF                     TURN OFF CMD LIGHTS
     1510 F2 87 57           3779+      J      DLP480                     GO EXIT
```

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      DLPRNT -- LIST OUTPUT INTERFACE


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  03/02/22  PAGE  42

                           1513 3781+DLPNPT EQU   *                             ENTRY
     1513 38 80 03D2             3782+       TBN   $IOIND,$LNPTR               LINE PRINTER AVAILABLE
     1517 F2 10 0F               3783+       JT    DLP400                      JUMP IF YES
     151A C0 87 0707             3784+DLP380 B     $$PRNT                      DO NORMAL PRINT IF NOT
     151E 1583            151F 3785+         DC    AL2(DLPWK2)                 PPL ADDR
     1520 C0 87 0707             3786+       B     $$PRNT                      WAIT FOR OP COMPLETION
     1524 057F            1525 3787+         DC    AL2($WAITF)                 WAIT PPL ADDRESS
     1526 F2 87 41               3788+       J     DLP480                      GO EXIT
     1529 7D FF E7               3789+DLP400 CLI   DLPWK2+@PCTRL(,@BR),@PWAIT  IS THIS A WAIT FUNCTION ?
     152C F2 01 03               3790+       JNE   DLP420                      JUMP IF NO
     152F 7C 00 E8               3791+       MVI   DLPWK2+@PRCNT(,@BR),@ZERO ZERO NEXT LINE CNT
     1532 7D FF E3               3792+DLP420 CLI   DLPWK1(,@BR),@PWAIT           IS THERE A LINE TO PRINT ?
     1535 F2 01 59               3793+       JNE   DLPPRT                      JUMP IF YES
     1538 C0 87 0707             3794+       B     $$PRNT                      INSURE PRINT HEAD IS AT LEFT
     153C 158F            153D 3795+         DC    AL2(DLPRTN)                 * MARGIN
     153E 5C 01 E4 E8            3796+DLP440 MVC   DLPWK1+@PRCNT(2,@BR),DLPWK2+@PRCNT(,@BR) SET NEXT PPL
     1542 5C 01 E8 F4            3797+       MVC   DLPWK2+@PRCNT(2,@BR),DLPRTN+@PRCNT(,@BR) SET CARRIER RTN
     1546 7D FF E3               3798+       CLI   DLPWK1(,@BR),@PWAIT           WAS THIS A WAIT FUNCTION ?
     1549 D0 81 7E               3799+       BE    DLP380(,@BR)                DO CARRIER RETURN IF YES
     154C C2 02 1A9D             3800+       LA    DLIBUF,@XR                  POINT XR TO BUFFER
     1550 BC 40 F3               3801+       MVI   DLPBLN-1(,@XR),@BLANK       SET BLANK FOR CLEAR BUF
     1553 AC F2 F2 F3            3802+       MVC   DLPBLN-2(DLPBLN-1,@XR),DLPBLN-1(,@XR) CLEAR BUF TO BLNKS
     1557 5C 00 CD E4            3803+       MVC   DLP460+@DD2(1,@BR),DLPWK1+@PRCNT(,@BR) SET DATA CNT
     155B 5F 00 CD ED            3804+       SLC   DLP460+@DD2(1,@BR),DLPONE(,@BR) GET TRUE DISPLACMENT
     155F 5C 01 CC CD            3805+       MVC   DLP460+@D1(2,@BR),DLP460+@DD2(,@BR) SET 0 AND DI VALUES
     1563 75 01 EA               3806+       L     DLPWK2+@PDATA(,@BR),@BR     BR POINTS TO DATA
     1566 9C 00 00 00            3807+DLP460 MVC   *-*(@VQ,@XR),*-*(,@BR)      MOVE DATA TO BUFFER
                                 3808+*
     156A C2 01 0000             3809+DLP480 LA    *-*,@BR                     RESTORE BR
     156E C2 02 0000             3810+DLP500 LA    *-*,@XR                     RESTORE XR
     1572 C0 87 048D             3811+       B     $UNMSK                      GO CHECK FOR INQUIRY REQUEST
     1576 C0 87 0000             3812+DLP520 B     *-*                         RETURN
```

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     DLPRNT -- LIST OUTPUT INTERFACE


ERR LOC  OBJECT CODE        ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  03/02/22  PAGE  43

                            3814+*****************************************************************************
                            3815+* CONSTANTS, WORK AREAS AND EQUATES
                            3816+*****************************************************************************
                            3817+*
                       0085 3818+DLPMPR EQU   DLPNPT-DLPBSD               MATRIX PRINTER INDR VALUE
                       0000 3819+DLPSPT EQU   DLPSPI-DLPBSD               SYSTEM PRINTER INDR VALUE
                       001B 3820+DLPCRT EQU   DLPTIF-DLPBSD               CRT INOR VALUE
     157A               157A 3821+DCRCNT DS    CL1                        DISPLAYED LINE CNTR
                       157A 3822+DLPCNT EQU   DCRCNT                     COMMUNICATIONS LABEL
     157A                    3823+       ORG   DLPCNT                     SET INST CNTR
     157A 01            157A 3824+       DC    XL1'01'                    INITIAL VALUE
     157B               157C 3825+DLPLPC DS    CL2                        TIMING LOOP CNTR
     157D 3B            157D 3826+DLPLIN DC    XL1'3B'                    INITIAL LOOP CNT
     157E 0D            157E 3827+DLPK13 DC    AL1(@CKY13)                CMD LIGHT 13 CONTROL
                       000D 3828+DLPMAX EQU   13                         MAX LINES TO BE DISPLAYED
                       157F 3829+DLPWK1 EQU   *                          CURRENT PPL
     157F FFFF          1580 3830+       DC    2XL1'FF'                   CTRL AND DATA CNT
     1581 1A9D          1582 3831+       DC    AL2(DLIBUF)                BUFFER ADDR
                       1583 3832+DLPWK2 EQU   *                          NEXT PPL
     1583               1586 3833+       DS    CL(@PPLNG)
     1587 01            1587 3834+DLPNDX DC    AL1(@INDEX)                INDEX PPL
     1588 0001          1589 3835+DLPONE DC    XL2'0001'                  CONSTANT OF ONE
     158A               158A 3836+DLPRES DS    CL1                        RESIDUAL CNT
     158B 0000          158C 3837+DLPWTH DC    XL2'00'                    WIDTH OF PRINT LINE
     158D               158D 3838+DLPNXT DS    CL1                        NEXT LINE CNT
     158E               158E 3839+DLPREM DS    CL1                        ADDITIONAL CNT FOR NEXT LINE
                       158F 3840+DLPRTN EQU   *                          ADDR OF RETURN PPL
     158F 8080          1590 3841+       DC    2AL1(@RETRN)               RETURN CARRIER PPL
                       0001 3842+DLPPNT EQU   X'01'                      LINE PRINTER CONTROL BYTE
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        DLPRNT -- LIST OUTPUT INTERFACE
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                            3844+*********************************************************************
                            3845+* THIS ROUTINE PRINTS THE CURRENT LINE IN THE CORRECT DIRECTION AND
                            3846+* SETS UP THE NEXT LINE CNT.
                            3847+*********************************************************************
                     157F   3848+      USING DLPBS2,@BR                  NEW BASE VALUE
                     1591   3849+DLPPRT EQU   *                          ENTRY TO PRINT
  1591 C2 01 157F            3850+      LA    DLPBS2,@BR                 LOAD BASE REGISTER
  1595 C0 87 0707            3851+      B     $$PRNT                     WAIT FOR PRINTER READY
  1599 057F           159A   3852+      DC    AL2($WAITF)                WAIT PPL
  159B 3C 80 0476            3853+      MVI   $CIMSK,@NOP                MASK IR FOR THIS FUNCTION
  159F 4C 00 0D 03C0         3854+      MVC   DLPWTH(1,@BR),$RMRGN       SET RIGHT MARGIN VALUE
  15A4 4F 00 0D 03C1         3855+      SLC   DLPWTH(1,@BR),$LMRGN       CALCULATE WIDTH
  15A9 5C 00 0E 05           3856+      MVC   DLPNXT(1,@BR),DLPWK2+@PRCNT(,@BR) SET NEXT LINE CNT
  15AD 7C 00 0B              3857+      MVI   DLPRES(,@BR),@ZERO         ZERO RESIDUAL CNT
  15B0 5D 00 01 0D           3858+      CLC   DLPWK1+@PRCNT(1,@BR),DLPWTH(,@BR) CNT > WIDTH ?
  15B4 F2 04 10              3859+      JNH   DLP540                     JUMP IF NO
  15B7 5C 00 0B 01           3860+      MVC   DLPRES(1,@BR),DLPWK1+@PRCNT(,@BR) SAVE CNT
  15BB 5F 00 0B 0D           3861+      SLC   DLPRES(1,@BR),DLPWTH(,@BR) CALCULATE RESIDUAL CNT
  15BF 5C 00 01 0B           3862+      MVC   DLPWK1+@PRCNT(1,@BR),DLPRES(,@BR) SET CNT TO WIDTH
  15C3 5C 00 0E 0B           3863+      MVC   DLPNXT(1,@BR),DLPRES(,@BR) SET NEXT LINE CNT = RESIDUAL
  15C7 0D 00 03C1 03C2       3864+DLP540 CLC  $LMRGN(1),$PRPOS           ARE WE AT LEFT MARGIN ?
  15CD F2 01 19              3865+      JNE   DLPPRL                     JUMP TO PRINT LEFT IF NOT
                            3866+*
                            3867+* SET UP FOR PRINT RIGHT OPERATION
                            3868+*
  15D0 5D 00 01 0E           3869+      CLC   DLPWK1+@PRCNT(1,@BR),DLPNXT(,@BR) CNT > NEXT CNT ?
  15D4 F2 02 24              3870+      JNL   DLP560                     JUMP IF CURRENT CNT > NEXT CNT
                            3871+*                                        * NEXT LINE
  15D7 5C 00 01 0D           3872+      MVC   DLPWK1+@PRCNT(1,@BR),DLPWTH(,@BR) SET CURRENT CNT TO MAX
  15DB 5D 00 0E 0D           3873+      CLC   DLPNXT(1,@BR),DLPWTH(,@BR) NEXT LINE LESS THAN WIDTH ?
  15DF F2 02 19              3874+      JNL   DLP560                     JUMP IF NOT
  15E2 5C 00 01 0E           3875+      MVC   DLPWK1+@PRCNT(1,@BR),DLPNXT(,@BR) SET CURRENT CNT TO
                            3876+*                                        * NEXT LINE CNT
  15E6 F2 87 12              3877+      J     DLP560                     GO DO PRINTING
                            3878+*
                            3879+* SET UP FOR PRINT LEFT OPERATION
                            3880+*
                     15E9   3881+DLPPRL EQU   *                          ENTRY TO PRINT LEFT
  15E9 3C 01 07CE            3882+      MVI   $$PSIO,DLPPNT              SET DPRINT FOR LINE MODE
  15ED 4C 00 01 03C2         3883+      MVC   DLPWK1+@PRCNT(1,@BR),$PRPOS SET CURRENT PRINT POSITION
  15F2 4F 00 01 03C1         3884+      SLC   DLPWK1+@PRCNT(1,@BR),$LMRGN GET RETURN PRINT CNT
  15F7 5F 00 01 0A           3885+      SLC   DLPWK1+@PRCNT(1,@BR),DLPONE(,@BR) SET UP FOR HARDWARE
                            3886+*
                            3887+* DO THE PRINT OPERATION
                            3888+*
  15FB 7C 40 00              3889+DLP560 MVI  DLPWK1+@PCTRL(,@BR),@PRINT SET NO CARRIER RETURN
                            3890+*                                        * PRINT LENGTH = WIDTH
  15FE C0 87 0707            3891+      B     $$PRNT                     GO PRINT THE LINE
  1602 157F           1603   3892+      DC    AL2(DLPWK1)                PPL ADDR
  1604 3C 00 07CE            3893+      MVI   $$PSIO,@ZERO               RESET SIO CTRL FOR NORMAL OPS
  1608 3C 00 07E9            3894+      MVI   $$PCNT,@ZERO               SET DPRINT PPL CNT ZERO
  160C C0 87 0707            3895+      B     $$PRNT                     INDEX A LINE
  1610 1587           1611   3896+      DC    AL2(DLPNDX)                INDEX PPL ADDRESS
                     149C   3897+      USING DLPBSE,@BR                 USE MAINLINE BASE VALUE
  1612 C2 01 149C            3898+      LA    DLPBSE,@BR                 RESTORE MAINLINE BR
  1616 7D 00 EE              3899+      CLI   DLPRES(,@BR),@ZERO         ANY RESIDUAL DATA ?
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DLPRNT -- LIST OUTPUT INTERFACE

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     1619 D0 81 A2   3900+   BE   DLP440(,@BR)   EXIT TO MAINLINE IF NOT
                            3901+*
                       157F 3902+   USING DLPBS2,@BR   USE PRINT BASE ADDR
     161C C2 01 157F   3903+   LA   DLPBS2,@BR   SET BR
     1620 7C F4 0F   3904+   MVI   DLPREM(,@BR),DLPBLN   SET REMAINDER TO BUF LENGTH
     1623 5F 00 0F 0B   3905+   SLC   DLPREM(1,@BR),DLPRES(,@BR) GET REMAINDER FOR BLANK CNT
     1627 C2 02 1A9D   3906+   LA   DLIBUF,@XR   XR POINTS TO BUFFER
     162B 74 02 B7   3907+   ST   DLP580+@DOP2(,@BR),@XR   SET MOVE INSTR TO BUF ADDR
     162E 5E 01 B7 0D   3908+   ALC   DLP580+@DOP2(@CADDR,@BR),DLPWTH(,@BR) POINT TO RESIDUAL
     1632 8C 00 00 0000   3909+DLP580 MVC   0(1,@XR),*-*   MOVE A BYTE OF RESIDUAL DATA
     1637 E2 02 01   3910+   LA   1(,@XR),@XR   INCREMENT DATA POINTER
     163A 5E 01 B7 0A   3911+   ALC   DLP580+@DOP2(@CADDR,@BR),DLPONE(,@BR) INCREMENT DATA ADDR
     163E 5F 00 0B 0A   3912+   SLC   DLPRES(1,@BR),DLPONE(,@BR) DECREMENT RESIDUAL CNT
     1642 D0 84 B3   3913+   BH   DLP580(,@BR)   DO IT AGAIN TILL DONE
     1645 BC 40 00   3914+DLP600 MVI   0(,@XR),@BLANK   SET REMAINING BLANKS
     1648 E2 02 01   3915+   LA   1(,@XR),@XR   INCREMENT
     164B 5F 00 0F 0A   3916+   SLC   DLPREM(1,@BR),DLPONE(,@BR) REMAINDER ?
     164F D0 84 C6   3917+   BH   DLP600(,@BR)   SET ANOTHER BLANK
     1652 5C 00 01 0E   3918+   MVC   DLPWK1+@PRCNT(1,@BR),DLPNXT(,@BR) SET NEXT CNT
     1656 D0 87 12   3919+   B   DLPPRT(,@BR)   GO FINISH LINE

                       157F 3921+DLPBS2 EQU   DLPWK1   BASE VALUE FOR PRINT OP
                       00F4 3922+DLPBLN EQU   244   LENGTH OF PRINT BUFFER
                            3923+***   END OF DLPRNT   ***
                            3924 * $C2D5

```
      C2DEC5 - CONVERT 2 BYTE BIN NR TO 5 BYTE DEC NR


ERR LOC   OBJECT CODE     ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  03/02/22  PAGE  46

                               3926+****************************************************************************
                               3927+*   SERIALLY REUSABLE SUBROUTINE TO CONVERT A 2 BYTE BINARY VALUE TO   *
                               3928+*   A 5 BYTE POSITIVE DECIMAL NUMBER.                                   *
                               3929+*   ON ENTRY @XR POINTS TO THE LEFT BYTE OF THE BINARY VALUE.           *
                               3930+*   ON RETURN C2DVAL IS THE RIGHT BYTE OF THE 5 BYTES DECIMAL VALUE     *
                               3931+*   WITH LEADING ZEROS WHICH MAY BE MODIFIED BY THE USER IN ANY WAY     *
                               3932+*   IN IT'S LOCATION.                                                   *
                               3933+*   THE 2 BYTES BINARY VALUE IS NOT ALTERED.                            *
                               3934+*   @XR IS NOT ALTERED.                                                 *
                               3935+*   @BR IS SAVED AND RESTORED AT EXIT.                                  *
                               3936+****************************************************************************

                          1659 3938+C2DEC5 EQU   *                       MODULE ENTRY POINT
                          1659 3939+       USING C2DEC5,@BR              BASE ADDRESS SPECIFICATION
      1659 34 01 168D          3940+       ST    C2D050+@OP1,@BR         SAVE @BR
      165D C2 01 1659          3941+       LA    C2DEC5,@BR              LOAD BASE REGISTER
      1661 74 08 38            3942+       ST    C2D052+@OP1(,@BR),@ARR  SAVE RETURN ADDRESS
                               3943+*      INITIALIZE DECIMAL INCREMENTER AND DECIMAL SUM TO 1 AND 0 RESP.
      1664 54 90 43 39         3944+       ZAZ   C2D903(C2D903-C2D901,@BR),C2D901(C2D902-C2D901,@BR)
      1668 7C 01 17            3945+       MVI   C2D030+@D1(,@BR),@B1    INITIALIZE DISP TO BYTE 1
      166B 7C 01 16            3946+C2D020 MVI   C2D030+@Q(,@BR),@B1     INIT TEST TO BIT 7
                               3947+*
      166E B8 00 00            3948+C2D030 TBN   *-*(,@XR),*-*           TEST IF THIS BIT IS OFF
      1671 F2 90 04            3949+       JF    C2D040                  * BR AROUND SUM INCREMENT
                               3950+*      INCREMENT DECIMAL SUM BY DECIMAL VALUE OF THIS TESTED BIT
      1674 56 04 3E 43         3951+       AZ    C2DVAL(C2D903-C2DVAL,@BR),C2D903(C2D903-C2DVAL,@BR)
                               3952+*      DOUBLE DECIMAL VALUE OF INCREMENT TO VALUE OF NEXT BIT
      1678 56 04 43 43         3953+C2D040 AZ    C2D903(C2D903-C2DVAL,@BR),C2D903(C2D903-C2DVAL,@BR)
      167C 5E 00 16 16         3954+       ALC   C2D030+@Q(1,@BR),C2D030+@Q(,@BR) SHIFT BIT MASK LEFT ONE
      1680 D0 20 15            3955+       BNOL  C2D030(,@BR)            CONTINUE LOOP UNLESS ALL BITS
                               3956+*                                   * TESTED
      1683 5F 00 17 13         3957+       SLC   C2D030+@D1(1,@BR),C2D020+@Q(,@BR) DECR DISP TO BYTE 0
      1687 D0 81 12            3958+       BZ    C2D020(,@BR)            FALL THROUGH IF UNDERFLOW
      168A C2 01 0000          3959+C2D050 LA    *-*,@BR                 RESTORE @BR
      168E C0 87 0000          3960+C2D052 B     *-*                     RETURN TO CALLING PROGRAM
                               3961+*
                               3962+***    WORK AREA
                               3963+*
      1692 F1             1692 3964+C2D901 DC    DL1'1'                  INIT WORK AREA
                          1693 3965+C2D902 EQU   *                       FIST BYTE OF DECIMAL VALUE
      1693                1697 3966+C2DVAL DS    CL5                     5 BYTES DECIMAL VALUE
      1698                169C 3967+C2D903 DS    CL5                     DECIMAL INCREMENTER
                               3968+***            END OF C4DEC5                                    ***
                          169D 3969 KCTBF1 EQU   *                       FIRST BUFFER INPUT
                          179C 3970 KCT1BF EQU   KCTBF1+255
                          189D 3971 KCTBF2 EQU   KCTBF1+512              SECOND BUFFER - PROCESSING
                          1A9C 3972 KCT2BF EQU   KCTBF2+511
                          1A9D 3973 DLIBUF EQU   KCTBF2+512              DLPRINT BUFFER
                               3974 *      $MALE
```

```
                         3976+****************************************************************************
                         3977+*   5703-XM1 COPYRIGHT IBM CORP. 1970                                    *
                         3978+*             REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083       *
                         3979+*                                                                        *
                         3980+****************************************************************************
                         3981+*STATUS                                                                  *
                         3982+*    VERSION 1 MODIFICATION 0                                            *
                         3983+*                                                                        *
                         3984+*FUNCTION                                                                *
                         3985+*   * TSMLES PROVIDES A COMMON SET OF BUFFERS AND WORK AREAS FOR DATA    *
                         3986+*     MANAGEMENT KEYWORDS AND THERE ASSOCIATED SUBROUTINES. THE WORK     *
                         3987+*     AREAS PROVIDE A COMMON COMMUNICATION BETWEEN SUBROUTINES THAT      *
                         3988+*     PERFORM A VARIETY OF FUNCTIONS WITH THE LIBRARY.                   *
                         3989+*     THIS ELIMINATESA LARGE AMOUNT OF CUMBERSOME PARAMETER PASSING.     *
                         3990+*                                                                        *
                         3991+*ENTRY POINTS                                                            *
                         3992+*    N/A                                                                 *
                         3993+*                                                                        *
                         3994+*INPUT                                                                   *
                         3995+*    N/A                                                                 *
                         3996+*                                                                        *
                         3997+*OUTPUT                                                                  *
                         3998+*    N/A                                                                 *
                         3999+*                                                                        *
                         4000+*EXTERNAL REFERENCES                                                     *
                         4001+*    N/A                                                                 *
                         4002+*                                                                        *
                         4003+*EXITS, NORMAL                                                           *
                         4004+*    N/A                                                                 *
                         4005+*                                                                        *
                         4006+*EXITS, ERROR                                                            *
                         4007+*    N/A                                                                 *
                         4008+*                                                                        *
                         4009+*TABLES/WORKAREAS                                                        *
                         4010+*    N/A                                                                 *
                         4011+*                                                                        *
                         4012+*ATTRIBUTES                                                              *
                         4013+*    N/A                                                                 *
                         4014+*                                                                        *
                         4015+*CHARACTER CODE DEPENDENCY                                               *
                         4016+*    N/A                                                                 *
                         4017+*                                                                        *
                         4018+*NOTES                                                                   *
                         4019+*    ERROR PROCEDURES                                                    *
                         4020+*      N/A                                                               *
                         4021+*    REGISTER USAGE                                                      *
                         4022+*      N/A                                                               *
                         4023+*    SAVED/RESTORED AREAS                                                *
                         4024+*      N/A                                                               *
                         4025+*    MODIFICATION CONSIDERATIONS                                         *
                         4026+*      N/A                                                               *
                         4027+*    REQUIRED MODULES                                                    *
                         4028+*      N/A                                                               *
                         4029+*    OTHER                                                               *
                         4030+*      N/A                                                               *
                         4031+****************************************************************************
```

```
          TSMLES - (SMALES) DATAMANAGEMENT COMMON AREAS


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  03/02/22  PAGE  48

                          4033+*********************************************************************
                          4034+* SMALES- SYSTEM DATA MANAGEMENT COMMON SAVE AREAS AND EQUATES       *
                          4035+*          USED TO PROVIDE COMMUNICATION BETWEEN SUBROUTINES USED     *
                          4036+*          BY THE VARIOUS KEYWORDS INVOLVED WITH FILE MANIPULATION    *
                          4037+*********************************************************************
                          4038+*
                     169D 4039+SMALES EQU    *                       START OF MANAGEMENT AREA
                     169D 4040+SMIND1 EQU    SMALES                  INDICATOR BYTE 1
                     16A3 4041+SMVOID EQU    SMIND1+6                SPECIFIED VOLUME ID SAVE AREA
                     16AB 4042+SMPSWD EQU    SMVOID+8                SPECIFIED PASSWORD SAVE AREA
                     16B3 4043+SMFNAM EQU    SMPSWD+8                SPECIFIED FILENAME SAVE AREA
                     16B5 4044+SMUDEA EQU    SMFNAM+2                FILENAME DIRCTY ENTRY ADDR
                     16B7 4045+SMBFDA EQU    SMUDEA+2                DADDR OF FILE LIBRARY
                     16B9 4046+SMUDBA EQU    SMBFDA+2                CADDR OF ACTIVE BUFFER ADDR
                     16BB 4047+SMNULT EQU    SMUDBA+2                TOTAL OF NULL SECTORS AVAILABLE
                     16BD 4048+SMNDEA EQU    SMNULT+2                NULL DIRCTY ENTRY ERROR
                     16BF 4049+SMNSCT EQU    SMNDEA+2                COUNT OF NULL SECTORS REQUIRED
                     16C1 4050+SMNETD EQU    SMNSCT+2                CADDR NEW ENTRY TO NULL DIRCTY
                     16C3 4051+SMUPEN EQU    SMNETD+2                CADDR NEW USER DIRCTY ENTRY
                     16C5 4052+SMPEAD EQU    SMUPEN+2                CADDR PASSWORD ENTRY
                     16C7 4053+SMFUDA EQU    SMPEAD+2                REL DADDR 1ST USER DIRCTY BLOCK
                     16C9 4054+SMNDBA EQU    SMFUDA+2                NULL DIRCTY BUFFER CORE ADDR
                     16CB 4055+SMDAAD EQU    SMNDBA+2                DADDR OF ACTIVE DIRCTY
                     0080 4056+SM1FNE EQU    X'80'                   SRCHFN INDR NAME NOT FOUND
                     0040 4057+SM1NPD EQU    X'40'                   PACK INDR NULL DIRCTY FULL
                     0020 4058+SM1STN EQU    X'20'                   STORIN PACK INDICATOR BIT
                     0010 4059+SM1PDS EQU    X'10'                   SGETDB SEARCH ONLY FLAG
                     0008 4060+SM1PNF EQU    X'08'                   SGETDB PASSWORD NOT FOUND
                     16CC 4061+SMPDB1 EQU    SMDAAD+1                PASSWORD DIRCTY BUFFER
                     16CC 4062+SMPIBS EQU    SMPDB1                  SVOLID TEMP SAVE INPUT BUFFER
                     16CC 4063+SMUDB1 EQU    SMPDB1                  USER DIRCTY BLOCK 1 BUFFER
                     18CC 4064+SMUDB2 EQU    SMUDB1+512              USER DIRCTY BLOCK 2 BUFFER
                     1ACC 4065+SMAEND EQU    SMUDB2+512              END OF SMALES AREA
                          4066+***                     END OF SMALES                        ***
                     FFFF 4067      END

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =       0
```

```
                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                          VER 15, MOD 00  03/02/22  PAGE  49

$$$$$$  001 0C00 2392
$$$$$1  255 11FF 3291
$$$$$2  256 12FF 3298
$$$$$3  090 1359 3301
$$$$L1  001 1101 3286   3289  3291
$$$$T1  001 1200 3288   3291
$$$CMD  001 0020 0845
$$$DAT  001 0040 0844
$$$EPL  001 0091 0841
$$$ERN  001 0080 0895
$$$FUN  001 0010 0846
$$$NLN  001 00A0 0891
$$$STD  001 0081 0840
$$$001  040 0D2A 2507
$$BNLN  001 0605 0821   0823
$$CDBS  001 08C0 0871
$$CDND  001 0666 0830
$$CDRD  001 0890 0869   0871
$$CKEY  001 0603 0819
$$CKFF  001 0B3D 0851
$$COFF  001 0B44 0850   3778
$$CSNS  001 209C 0880
$$DATB  001 0BBF 0852
$$EOSA  001 0AFE 0849
$$ERSK  001 1C00 0890
$$FITS  001 1D00 0898
$$FLIB  001 06FF 0897
$$ILEN  001 0601 0815   0817  0821
$$ILHD  001 0600 0813   0815
$$INLN  001 0607 0828   0830  0832
$$INND  001 06FA 0832
$$KBDT  001 09E1 0839   0843
$$KBSN  001 09E2 0843   0848
$$KLD1  001 0600 0903
$$KLD2  001 0700 0905
$$KLD3  001 0C00 0907
$$LPOS  001 09EB 0848
$$PCNT  001 07E9 0864   3894*
$$PLYN  001 2004 0878   3747
$$PRES  001 0890 0837   0839  0849  0850  0851  0852  0869  3274
$$PRFL  001 2143 0882
$$PRNT  001 0707 0858   0859  0863  0864  3784  3786  3794  3851  3891  3895
$$PRTN  001 0782 0859
$$PSIO  001 07CE 0863   3882* 3893*
$$PYCD  001 2200 0884   3271
$$PYMP  001 2000 0876   0878  0880  0882  0884
$$SLIB  001 1C00 0893
$$TPCD  001 0606 0823   0828
$$UPAR  001 0602 0817   0819
$$WSPB  001 1E00 0896
$$XIND  001 06FF 0894   0897
$$ZERO  001 0000 0223   0224  0226  0227  0228  0232  0876
$ABORT  001 0010 0336
$BASIC  001 0080 0394
$BIGCD  001 0080 0470
$BLDPL  001 0579 0603   0605
```

```
SYMBOL  LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  03/02/22  PAGE  50

$BLNOE  001  0569 0593
$BLOAD  001  0522 0584   0586  0589  0602  0603
$BLRTN  001  0550 0592   0593
$BRSAV  001  03C5 0281   0282
$BSADR  001  0587 0608   0610
$BUFPT  001  03E3 0489   0490
$CABLD  001  04B4 0562   0563
$CAERK  001  0469 0539   0542  2582  2645  3171
$CAERR  001  03CD 0287   0289  2528* 2556* 2567* 2589* 2643* 3017* 3205* 3208* 3211* 3248* 3257*
                         3261*
$CAIPL  001  049D 0558   0560
$CALLI  001  0008 0479
$CARDI  001  0001 0250   3254
$CARPL  001  04A1 0560   0562  2649
$CIENT  001  0483 0549   0550
$CIEXT  001  0480 0548   0549
$CIMSK  001  0476 0545   0548  3853*
$CISUS  001  0496 0553   0558
$CLBFR  001  0010 0437
$CMDKY  001  0008 0349   3268
$CMODE  001  0002 0399
$CONFG  001  03DD 0462   0472
$CRPOS  001  03E2 0488   0489
$CRTAD  001  044D 0527   0528
$CRTAV  001  0002 0343   3251
$CRTDN  001  0002 0367
$CRTIN  001  03D3 0364   0371  3237* 3752  3763  3765* 3770*
$CRTNO  001  0004 0346
$CRTPU  001  0004 0368   3763  3765
$CRTSP  001  0008 0369   3752  3770
$CRTUP  001  0001 0366   3237
$CRUSH  001  0080 0475
$CSDPL  001  050E 0574   0575
$C0001  001  0464 0531   0537
$DATE   001  043A 0512   0513
$DBGUF  001  03E0 0474   0483
$DBLOK  001  0001 0424
$DFDET  001  03E8 0495   0496
$DISKN  001  0025 0226   2663  3452
$DKERR  001  0008 0405
$DKSIZ  001  03D7 0449   0457  0498
$DK100  001  0001 0451
$DK200  001  0002 0452
$DK400  001  0004 0453
$DK600  001  0008 0454
$DK800  001  0010 0455
$DPLSV  001  0449 0523   0525
$DTNMB  001  0040 0270
$DTRDR  001  0040 0358
$ENDNU  001  0600 0617   0813  0837  0858  0894  0903  0905  0907
$ERDPL  001  046F 0542   0544
$ERFIL  001  0040 0297
$ERHRD  001  0004 0429
$ERKEY  001  0080 0301
$ERLOG  001  0345 0231
$ERMAD  001  0472 0544   0545
```

```
$ERPND  001  0004 0402
$ERRCT  001  03CF 0303
$ERRPG  001  03CE 0291
$ERSFL  001  0035 0296
$ERSTK  001  0030 0294
$ER050  001  0363 0232
$ER1N2  001  0050 0299
$EXADR  001  0517 0577    0579
$EXCMD  001  0001 0331
$EXFTR  001  043B 0513    0518  3270  3272  3726
$FCIND  001  0010 0409
$FDIND  001  0040 0416
$FEARR  001  0004 0224
$FEMAP  001  0588 0610    0611
$FILIB  001  03DA 0460    0461  2588  2592
$FITIN  001  0010 0385
$FUIND  001  0020 0414
$GUFIO  001  0583 0607    0608
$GUFIR  001  0008 0259
$HISTE  001  042E 0510    0511
$HIST1  001  0435 0511    0512
$HRDER  001  0020 0355
$INDR1  001  03D4 0371    0397
$INDR2  001  03D5 0397    0422
$INDR3  001  03D6 0422    0449  2584*
$INLNO  001  03CF 0289    0291  0303  0310
$INRPT  001  0020 0267
$IOIND  001  03D2 0338    0364  3245  3251  3268* 3782
$IOPGS  001  0010 0478
$IOYES  001  0002 0253
$IPLDV  001  05FF 0614    0617
$IRKEY  001  0020 0477
$KCTLO  001  0C07 2395
$KEYBD  001  03E1 0483    0488
$KEYCD  001  03C3 0247    0281  3254
$KEYDT  001  0040 0391
$KE090  001  00DE 0227
$KE130  001  01D5 0228
$KYBSY  001  0010 0264
$LDRTN  001  0571 0602
$LEVEL  001  03DF 0472    0474
$LIST   001  0002 0426    2584
$LMRGN  001  03C1 0242    0244  3855  3864  3884
$LNPTR  001  0080 0361    3782
$LOADB  001  054A 0586
$LOADR  001  051A 0579    0582
$LPRIO  001  03EA 0496
$LPROS  001  03E5 0491    0493
$LPRP3  001  03E4 0490    0491
$MOUNT  001  0020 0440
$MPDWN  001  0001 0340    3245
$NEXTB  001  03E6 0493    0494
$NEXTL  001  03E7 0494    0495
$NOENB  001  0008 0432
$NOLST  001  0004 0256
$NUCBS  001  03C0 0239    0240
```

```
$NWRKF   001  0080 0445
$NWRKR   001  0040 0442
$PASWD   001  042D 0509    0510
$PAUSD   001  04BA 0563    0565
$PAUSE   001  0002 0333
$PGMDT   001  0020 0388
$PGMST   001  0010 0352
$PKERT   001  0419 0507    0509
$PLST1   001  0454 0528    0529
$PLST2   001  045B 0529    0530
$PLST3   001  0462 0530    0531
$PRDEV   001  044B 0525    0527  3734  3739
$PRESN   001  0002 0376
$PROCI   001  0001 0373    2721
$PRPOS   001  03C2 0244    0247  3864  3883
$PSDBR   001  04FA 0568
$PSDXR   001  04F2 0567    0568
$PSTEP   001  0004 0334
$PSTMT   001  0008 0335
$PTCH1   001  03F5 0498    0502
$READY   001  0080 0418
$REORD   001  0040 0476
$RLOAD   001  051E 0582    0584
$RMRGN   001  03C0 0240    0242  3854
$RSTR    001  04D6 0565    0567  0569  0574
$RUNIT   001  0001 0312
$SFAID   001  050D 0570
$SPRNT   001  0465 0537    0539
$SRTRN   001  04FE 0569    0570
$STEPT   001  0002 0313
$SWPCR   001  0511 0575    0577
$TABLN   001  03CB 0284    0287
$TFLOW   001  0008 0319
$TRACE   001  0004 0314
$TRALL   001  0010 0320
$TROVR   001  054E 0589    0592
$TRUNK   001  0080 0272
$TRVAR   001  0020 0321
$UNMSK   001  048D 0550    0553  3811
$USRDR   001  03DC 0461    0462  2593
$VMDEF   001  0080 0325
$VOLF1   001  03FE 0504    0505
$VOLF2   001  040E 0506
$VOLID   001  03F6 0502    0503  0507  2612
$VOLR1   001  03F6 0503    0504
$VOLR2   001  0406 0505    0506
$WAITF   001  057F 0605    0607  2648  2664  3787  3852
$WFDEF   001  0040 0519
$WFLOK   001  0008 0382
$WFNME   001  0443 0518    0523
$WSIND   001  0004 0379
$XIND1   001  03D0 0310    0329
$XIND2   001  03D1 0329    0338
$XIND3   001  03D8 0457    0460
$XPREC   001  0040 0322
$XRSAV   001  03C7 0282    0284  2513
```

```
                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN  REFERENCES                          VER 15, MOD 00  03/02/22  PAGE  53

$ZTRAD  001  05A2 0611
$12K    001  0004 0466
$16CKY  001  0008 0468
$16K    001  0002 0465
$22IMP  001  0001 0463
#$$#BL  001  0000 1427
#$$#CK  001  0000 1555
#$$#CN  001  0000 1523
#$$#CO  001  0000 1315
#$$#CS  001  0000 1375
#$$#DR  001  0000 1119
#$$#ER  001  0000 1319
#$$#FS  001  0000 1415
#$$#IN  001  0000 1559
#$$#PW  001  0000 1563
#$$#RS  001  0000 1395
#$$#SA  001  0000 1383
#$$#SS  001  0000 1379
#$$#VU  001  0600 1339
#$$#0T  001  0700 1111
#$$#1T  001  0000 1115
#$$BCO  001  0600 1127
#$$BOV  001  0800 1399
#$$DPR  001  0700 1135
#$$DRE  001  0889 1151
#$$DSP  001  2800 1171
#$$ECM  001  0C00 1431
#$$EFK  001  0C00 1451
#$$ERR  001  0C00 1423
#$$EXM  001  0C00 1311
#$$FIL  001  0E00 1391
#$$FIS  001  0E00 1387
#$$FML  001  0200 1519
#$$FMS  001  0200 1359
#$$GRA  001  0889 1283
#$$GUF  001  0C00 1419
#$$INL  001  0600 1499
#$$INS  001  0600 1123
#$$KAL  001  0C00 1287
#$$KCA  001  0C00 1503
#$$KCH  001  0C00 1255
#$$KCN  001  0C00 1371
#$$KCT  001  0C00 1223  2391
#$$KDE  001  0C00 1219
#$$KDI  001  0D00 1299
#$$KDN  001  0C00 1207
#$$KDO  001  0E00 1303
#$$KED  001  0C00 1143
#$$KEN  001  0C00 1147
#$$KEX  001  0C00 1167
#$$KGO  001  0C00 1139
#$$KHE  001  0C00 1323
#$$KKE  001  0C00 1551
#$$KLI  001  0C00 1227
#$$KLL  001  0920 1527
#$$KLO  001  0C00 1231
```

SYMBOL	LEN	VALUE	DEFN	REFERENCES
#$$KME	001	0D00	1211	
#$$KMO	001	0C00	1155	
#$$KNA	001	0C00	1267	
#$$KOV	001	0E00	1187	
#$$KPA	001	0C00	1163	
#$$KPO	001	0C00	1251	
#$$KPR	001	0C00	1275	
#$$KRE	001	0C00	1195	
#$$KRL	001	0700	1291	
#$$KRM	001	0C00	1159	
#$$KRN	001	0700	1179	
#$$KRO	001	0D00	1183	
#$$KRS	001	0C00	1507	
#$$KRU	001	0C00	1203	
#$$KRV	001	0800	1295	
#$$KSA	001	0C00	1239	
#$$KSE	001	0E00	1279	
#$$KSO	001	0C20	1331	
#$$KSS	001	0C00	1263	
#$$KSV	001	0980	1259	
#$$KSY	001	0C00	1271	
#$$KWI	001	0C00	1199	
#$$KWR	001	0C00	1191	
#$$LOA	001	0600	1131	
#$$MIP	001	0C00	1327	
#$$SDS	001	0C00	1439	
#$$SFF	001	0E00	1443	
#$$SFL	001	0F00	1435	
#$$SFO	001	1500	1407	
#$$SFS	001	0C00	1403	
#$$SPA	001	0C00	1243	
#$$SPO	001	0806	1247	
#$$SPS	001	0C00	1235	
#$$STR	001	1600	1411	
#$$TDC	001	1000	1215	
#$$TSY	001	1000	1175	
#$$TVK	001	0FC0	1351	
#$$UAL	001	0C00	1367	
#$$UAT	001	0900	1463	
#$$UCD	001	0900	1471	
#$$UCN	001	0C00	1455	
#$$UCP	001	0700	1459	
#$$UDE	001	0C00	1475	
#$$UDI	001	0C00	1479	
#$$UEX	001	0C00	1363	
#$$UIN	001	0C00	1467	
#$$UPA	001	0C00	1447	
#$$UPO	001	0C00	1515	
#$$UPT	001	0C00	1511	
#$$VCR	001	2000	1307	
#$$VLO	001	0600	1343	
#$$VOD	001	0600	1347	
#$$VVM	001	0000	1355	
#$$VXI	001	0600	1335	
#$$ZDU	001	1100	1487	
#$$ZLB	001	1100	1531	

```
                             CROSS REFERENCE

SYMBOL  LEN VALUE DEFN  REFERENCES                        VER 15, MOD 00  03/02/22  PAGE  55

#$$ZLO  001  1100 1491
#$$ZLV  001  0F00 1547
#$$ZL1  001  0F00 1535
#$$ZL2  001  0F00 1539
#$$ZL3  001  0C00 1543
#$$ZTR  001  1000 1483
#$$ZUT  001  0C00 1495
#$#BLN  001  18D4 1426
#$#CKT  001  2118 1554
#$#CNF  001  2000 1522
#$#COR  001  0800 1314
#$#CSA  001  1000 1374
#$#DRT  001  0000 1118
#$#ERM  001  0928 1318
#$#FSP  001  1880 1414
#$#INV  001  212C 1558
#$#PWR  001  2300 1562
#$#RSP  001  1780 1394
#$#SAV  001  1180 1382
#$#SSA  001  1128 1378
#$#VUF  001  0B08 1338
#$#0TR  001  0000 1110
#$#1TR  001  0080 1114
#$@#BL  001  0001 1428
#$@#CK  001  0004 1556
#$@#CN  001  0001 1524
#$@#CO  001  003A 1316
#$@#CS  001  003A 1376
#$@#DR  001  0008 1120
#$@#ER  001  0032 1320
#$@#FS  001  0030 1416
#$@#IN  001  003A 1560
#$@#PW  001  00C0 1564
#$@#RS  001  0030 1396
#$@#SA  001  0108 1384
#$@#SS  001  0001 1380
#$@#VU  001  0002 1340
#$@#0T  001  0018 1112
#$@#1T  001  0018 1116
#$@BCO  001  0018 1128
#$@BOV  001  0018 1400
#$@DPR  001  0005 1136
#$@DRE  001  0001 1152
#$@DSP  001  0004 1172
#$@ECM  001  0006 1432
#$@EFK  001  0002 1452
#$@ERR  001  0003 1424
#$@EXM  001  0003 1312
#$@FIL  001  0009 1392
#$@FIS  001  0009 1388
#$@FML  001  0052 1520
#$@FMS  001  0052 1360
#$@GRA  001  0003 1284
#$@GUF  001  0010 1420
#$@INL  001  0010 1500
#$@INS  001  0010 1124
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#$@KAL  001  000F 1288
#$@KCA  001  000C 1504
#$@KCH  001  000C 1256
#$@KCN  001  0010 1372
#$@KCT  001  0009 1224
#$@KDE  001  0010 1220
#$@KDI  001  0005 1300
#$@KDN  001  0010 1208
#$@KDO  001  000C 1304
#$@KED  001  000E 1144
#$@KEN  001  0006 1148
#$@KEX  001  0003 1168
#$@KGO  001  0002 1140
#$@KHE  001  000C 1324
#$@KKE  001  0006 1552
#$@KLI  001  0011 1228
#$@KLL  001  0001 1528
#$@KLO  001  0008 1232
#$@KME  001  0003 1212
#$@KMO  001  0004 1156
#$@KNA  001  0008 1268
#$@KOV  001  0009 1188
#$@KPA  001  0005 1164
#$@KPO  001  000D 1252
#$@KPR  001  0009 1276
#$@KRE  001  0002 1196
#$@KRL  001  0004 1292
#$@KRM  001  0003 1160
#$@KRN  001  0003 1180
#$@KRO  001  000A 1184
#$@KRS  001  000A 1508
#$@KRU  001  0003 1204
#$@KRV  001  000D 1296
#$@KSA  001  0011 1240
#$@KSE  001  0004 1280
#$@KSO  001  000D 1332
#$@KSS  001  000B 1264
#$@KSV  001  0002 1260
#$@KSY  001  000F 1272
#$@KWI  001  0002 1200
#$@KWR  001  0002 1192
#$@LOA  001  0013 1132
#$@MIP  001  000D 1328
#$@SDS  001  0004 1440
#$@SFF  001  0008 1444
#$@SFL  001  0005 1436
#$@SFO  001  0003 1408
#$@SFS  001  0011 1404
#$@SPA  001  0004 1244
#$@SPO  001  0003 1248
#$@SPS  001  0001 1236
#$@STR  001  0002 1412
#$@TDC  001  0003 1216
#$@TSY  001  0003 1176
#$@TVK  001  0001 1352
#$@UAL  001  0011 1368
```

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#$@UAT   001  000C 1464
#$@UCD   001  000B 1472
#$@UCN   001  0009 1456
#$@UCP   001  000F 1460
#$@UDE   001  000E 1476
#$@UDI   001  0008 1480
#$@UEX   001  000E 1364
#$@UIN   001  000F 1468
#$@UPA   001  0004 1448
#$@UPO   001  0005 1516
#$@UPT   001  0012 1512
#$@VCR   001  0008 1308
#$@VLO   001  0002 1344
#$@VOD   001  0016 1348
#$@VVM   001  0030 1356
#$@VXI   001  0002 1336
#$@ZDU   001  0008 1488
#$@ZLB   001  0002 1532
#$@ZLO   001  000C 1492
#$@ZLV   001  0006 1548
#$@ZL1   001  0007 1536
#$@ZL2   001  000D 1540
#$@ZL3   001  000A 1544
#$@ZTR   001  0001 1484
#$@ZUT   001  0014 1496
#$BCOM   001  0080 1126
#$BOLV   001  1780 1398
#$DPRI   001  014C 1134
#$DREA   001  0200 1150
#$DSPL   001  0240 1170
#$ECMA   001  1900 1430
#$EFKE   001  1990 1450
#$ERRP   001  18C0 1422
#$EXMS   001  07D4 1310
#$FILN   001  1724 1390
#$FIST   001  1700 1386
#$FMLN   001  1E00 1518
#$FMST   001  0D00 1358
#$GRAP   001  0690 1282
#$GUFU   001  1880 1418
#$INLN   001  1C84 1498
#$INST   001  0020 1122
#$KALL   001  06A4 1286
#$KCAL   001  1CC4 1502
#$KCHA   001  053C 1254
#$KCND   001  0F80 1370
#$KCTL   001  03BC 1222
#$KDEL   001  035C 1218
#$KDIS   001  0744 1298
#$KDNT   001  0300 1206
#$KDOV   001  0780 1302
#$KEDI   001  0188 1142
#$KENA   001  01C4 1146
#$KEXT   001  0234 1166
#$KGOS   001  0180 1138
#$KHEL   001  0A30 1322
```

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#$KKEY  001  2100 1550
#$KLIS  001  0400 1226
#$KLLA  001  2004 1526
#$KLOG  001  0444 1230
#$KMER  001  030C 1210
#$KMOU  001  0204 1154
#$KNAM  001  05C0 1266
#$KOVM  001  0290 1186
#$KPAS  001  0220 1162
#$KPOO  001  0508 1250
#$KPRT  001  063C 1274
#$KREA  001  02BC 1194
#$KRLA  001  0700 1290
#$KRMO  001  0214 1158
#$KRNU  001  0280 1178
#$KROV  001  028C 1182
#$KRSU  001  1D24 1506
#$KRUN  001  02CC 1202
#$KRVL  001  0710 1294
#$KSAV  001  0488 1238
#$KSET  001  0680 1278
#$KSOV  001  0AC8 1330
#$KSSP  001  0594 1262
#$KSVL  001  058C 1258
#$KSYM  001  0600 1270
#$KWID  001  02C4 1198
#$KWRI  001  02B4 1190
#$LOAD  001  0100 1130
#$MIPP  001  0A80 1326
#$SDSY  001  192C 1438
#$SFFI  001  193C 1442
#$SFLO  001  1918 1434
#$SFOV  001  1844 1406
#$SFSY  001  1800 1402
#$SPAC  001  04CC 1242
#$SPOV  001  04DC 1246
#$SPSY  001  0484 1234
#$STRO  001  1850 1410
#$TDCK  001  0350 1214
#$TSYK  001  0250 1174
#$TVKB  001  0BAC 1350
#$UALL  001  0F00 1366
#$UATR  001  1A38 1462
#$UCDI  001  1AD8 1470
#$UCNF  001  19B8 1454
#$UCPL  001  19DC 1458
#$UDEL  001  1B24 1474
#$UDIS  001  1B5C 1478
#$UEXL  001  0EA8 1362
#$UINI  001  1A88 1466
#$UPAC  001  1980 1446
#$UPOV  001  1D24 1514
#$UPTF  001  1D5C 1510
#$VCRT  001  07B4 1306
#$VLOA  001  0B80 1342
#$VODK  001  0B88 1346
```

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#$VVMR   001  0C00  1354
#$VXIT   001  0B00  1334
#$ZDUM   001  1BA4  1486
#$ZLBM   001  2008  1530
#$ZLOA   001  1BC4  1490
#$ZLVR   001  20B0  1546
#$ZL1M   001  2010  1534
#$ZL2M   001  2030  1538
#$ZL3M   001  2088  1542
#$ZTRA   001  1B9C  1482
#$ZUTM   001  1C14  1494
##DNEA   001  0001  1032
##DNEF   001  0003  1033
##DNER   001  0005  1034
##DNE1   001  0004  1031
##DNHC   001  0000  1028
##DNHR   001  0003  1030
##DNHY   001  0001  1029
##DPEA   001  0009  1006
##DPEN   001  0007  1005
##DPER   001  000B  1007
##DPE1   001  0004  1004
##DPHC   001  0000  1002
##DPHR   001  0003  1003
##DUEA   001  0009  1017
##DUED   001  0012  1022    2781   2782   2783   2784   2785   2786
##DUEF   001  000B  1018    2791
##DUEH   001  002B  1023    2704
##DUEI   001  000C  1019
##DUEL   001  000F  1021
##DUEN   001  0007  1016    2703   2703*  2704*
##DUER   001  0031  1024
##DUES   001  000D  1020    2721   2726   2733   2743   2756   2762   2768
##DUE1   001  000C  1015    2695
##DUHA   001  0001  1011
##DUHB   001  0003  1012    2671   2674
##DUHC   001  0004  1013    2683   2694
##DUHR   001  000B  1014
##LAAA   001  0002  1043
##LAHC   001  0001  1042
##LN     001  0001  1071
##LNE    001  0006  1077
##LNEF   001  0002  1075
##LNEZ   001  0002  1076
##LNH    001  0004  1074
##LNHY   001  0001  1072
##LNHZ   001  0002  1073
##LP     001  0004  1047
##LPE    001  000C  1052
##LPEN   001  0008  1049
##LPEZ   001  0002  1050
##LPH    001  0004  1051
##LPHZ   001  0003  1048
##LU     001  0002  1056    2891
##LUE    001  0032  1067    2817
##LUED   001  0003  1064    2808
```

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##LUEF 001  0002 1060   2799
##LUEH 001  0019 1065   2704  2704* 2808
##LUEI 001  0001 1061   2799
##LUEL 001  0002 1063   2800  2808
##LUEN 001  0008 1059   2703
##LUES 001  0001 1062   2799
##LUEZ 001  0006 1066   2808
##LUH  001  000C 1058
##LUHZ 001  0007 1057
##MNHM 001  002A 1100
##MPHM 001  0055 1085
##MUEG 001  0020 1092   2733
##MUEK 001  0040 1091
##MUEO 001  0004 1095   2768
##MUEP 001  0080 1090   2726
##MUER 001  0008 1094   2762
##MUEV 001  0002 1096   2743
##MUEX 001  0010 1093   2756
##MUHM 001  000A 1089
##RN   001  0000 0991   2890
##RP   001  0001 0992
##R1   001  0007 0994   2535
##R2   001  0005 0993   2542
#@#BAD 001  0455 0935
#@#IO1 001  0459 0943
#@#IO2 001  045D 0944
#@#TAT 001  0941 0971
#@#TBA 001  09A1 0975
#@#TFS 001  0941 0969
#@#TSY 001  0941 0973
#@#VFP 001  0700 0961
#@#VLP 001  093D 0964
#@#WDB 001  050C 0956
#@#WFT 001  0500 0954
#@@#BA 001  0001 0936
#@@#IO 001  0001 0948
#@@#SC 001  0002 0945
#@@#TA 001  0010 0972
#@@#TB 001  0010 0976
#@@#TS 001  0005 0974
#@@#TW 001  0020 0970
#@@#VM 001  0100 0965
#@@#WD 001  00BD 0957
#@@#WF 001  0003 0955
#@@#04 001  0004 0947
#@@#08 001  0008 0946
#@@BOV 001  0018 0924
#@@ECM 001  0006 0938
#@@ERR 001  0003 0932
#@@GUF 001  0010 0928
#@@LDS 001  0002 0934
#@@SDS 001  0004 0930
#@@SFF 001  0008 0942
#@@SFL 001  0005 0940
#@@SFO 001  0005 0950
#@@SFS 001  0011 0926
```

SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 03/02/22 PAGE 61
#@@VSF	001	0010	0978		
#@@VSL	001	000F	0979		
#@@VTR	001	0001	0963		
#@BOVL	001	0400	0923		
#@ECMA	001	0481	0937		
#@ERRP	001	0441	0931		
#@GUFU	001	0401	0927		
#@LDSV	001	044D	0933		
#@SDSY	001	04AD	0929		
#@SFFI	001	04BD	0941		
#@SFLO	001	0499	0939		
#@SFOV	001	04C4	0949		
#@SFSY	001	0480	0925		
#@VSFI	001	09A1	0977		
#@VTRL	001	0708	0962		
#@WAF1	001	0401	0922		
#@WAR1	001	0400	0921		
#KCTLO	001	0000	0001		
@@E001	001	0000	2101	2103	
@@E003	001	0001	2103	2105	
@@E004	001	0002	2105	2107	
@@E005	001	0003	2107	2109	
@@E006	001	0004	2109	2111	
@@E007	001	0005	2111	2113	
@@E008	001	0006	2113	2115	
@@E009	001	0007	2115	2117	
@@E010	001	0008	2117	2119	
@@E011	001	0009	2119	2121	
@@E012	001	000A	2121	2123	
@@E013	001	000B	2123	2125	
@@E014	001	000C	2125	2127	
@@E015	001	000D	2127	2129	
@@E016	001	000E	2129	2131	
@@E017	001	000F	2131	2133	
@@E018	001	0010	2133	2135	
@@E019	001	0011	2135	2137	
@@E020	001	0012	2137	2139	
@@E021	001	0013	2139	2141	
@@E023	001	0014	2141	2143	
@@E024	001	0015	2143	2145	
@@E025	001	0016	2145	2147	
@@E026	001	0017	2147	2149	
@@E027	001	0018	2149	2151	
@@E028	001	0019	2151	2153	
@@E029	001	001A	2153	2155	
@@E030	001	001B	2155	2157	
@@E031	001	001C	2157	2159	
@@E032	001	001D	2159	2161	
@@E035	001	001E	2161	2163	
@@E036	001	001F	2163	2165	
@@E037	001	0020	2165	2167	
@@E038	001	0021	2167	2169	
@@E039	001	0022	2169	2171	
@@E040	001	0023	2171	2173	
@@E041	001	0024	2173	2175	
@@E042	001	0025	2175	2177	

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@@E043   001  0026 2177    2179
@@E044   001  0027 2179    2181
@@E045   001  0028 2181    2183
@@E046   001  0029 2183    2185
@@E060   001  002A 2185    2187
@@E080   001  002B 2187
@@E100   001  0000 1573    1575
@@E101   001  0001 1575    1577
@@E102   001  0002 1577    1579
@@E103   001  0003 1579    1581
@@E110   001  0004 1581    1583  3017
@@E112   001  0005 1583    1585
@@E113   001  0006 1585    1587
@@E114   001  0007 1587    1589
@@E115   001  0008 1589    1591
@@E116   001  0009 1591    1593
@@E117   001  000A 1593    1595
@@E120   001  000B 1595    1597
@@E122   001  000C 1597    1599
@@E123   001  000D 1599    1601
@@E124   001  000E 1601    1603
@@E129   001  000F 1603    1605
@@E130   001  0010 1605    1607
@@E131   001  0011 1607    1609  2556  2567  3205
@@E133   001  0012 1609    1611
@@E134   001  0013 1611    1613  3211
@@E135   001  0014 1613    1615
@@E136   001  0015 1615    1617  3208
@@E137   001  0016 1617    1619
@@E138   001  0017 1619    1621
@@E139   001  0018 1621    1623  2528
@@E142   001  0019 1623    1625
@@E143   001  001A 1625    1627
@@E150   001  001B 1627    1629
@@E151   001  001C 1629    1631
@@E160   001  001D 1631    1633
@@E162   001  001E 1633    1635
@@E163   001  001F 1635    1637
@@E164   001  0020 1637    1639
@@E200   001  0021 1639    1641  2589
@@E205   001  0022 1641    1643
@@E210   001  0023 1643    1645
@@E211   001  0024 1645    1647
@@E212   001  0025 1647    1649
@@E213   001  0026 1649    1651
@@E215   001  0027 1651    1653
@@E216   001  0028 1653    1655
@@E217   001  0029 1655    1657
@@E220   001  002A 1657    1659
@@E221   001  002B 1659    1661
@@E222   001  002C 1661    1663
@@E223   001  002D 1663    1665
@@E225   001  002E 1665    1667
@@E226   001  002F 1667    1669
@@E227   001  0030 1669    1671
@@E228   001  0031 1671    1673
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SYMBOL	LEN	VALUE	DEFN	REFERENCES	
@@E229	001	0032	1673	1675	
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@@E237	001	0036	1681	1683	
@@E240	001	0037	1683	1685	
@@E241	001	0038	1685	1687	3261
@@E242	001	0039	1687	1689	
@@E248	001	003A	1689	1691	3257
@@E249	001	003B	1691	1693	
@@E250	001	003C	1693	1695	
@@E251	001	003D	1695	1697	
@@E252	001	003E	1697	1699	
@@E253	001	003F	1699	1701	
@@E254	001	0040	1701	1703	
@@E255	001	0041	1703	1705	
@@E256	001	0042	1705	1707	
@@E300	001	0043	1707	1709	
@@E301	001	0044	1709	1711	
@@E302	001	0045	1711	1713	
@@E303	001	0046	1713	1715	
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@@E305	001	0048	1717	1719	
@@E308	001	0049	1719	1721	
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@@E315	001	004B	1723	1725	
@@E316	001	004C	1725	1727	
@@E320	001	004D	1727	1729	
@@E325	001	004E	1729	1731	
@@E330	001	004F	1731	1733	
@@E335	001	0050	1733	1735	
@@E338	001	0051	1735	1737	
@@E340	001	0052	1737	1739	2643
@@E350	001	0053	1739	1741	
@@E351	001	0054	1741	1743	
@@E352	001	0055	1743	1745	
@@E360	001	0056	1745	1747	
@@E361	001	0057	1747	1749	
@@E362	001	0058	1749	1751	
@@E371	001	0059	1751	1753	
@@E380	001	005A	1753	1755	
@@E390	001	005B	1755	1757	
@@E400	001	005C	1757	1759	
@@E410	001	005D	1759	1761	
@@E415	001	005E	1761	1763	
@@E417	001	005F	1763	1765	
@@E420	001	0060	1765	1767	
@@E430	001	0061	1767	1769	
@@E432	001	0062	1769	1771	
@@E433	001	0063	1771	1773	
@@E450	001	0064	1773	1775	
@@E451	001	0065	1775	1777	
@@E460	001	0066	1777	1779	
@@E461	001	0067	1779	1781	
@@E464	001	0068	1781	1783	
@@E465	001	0069	1783	1785	

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@@E466  001  006A 1785    1787
@@E467  001  006B 1787    1789
@@E469  001  006C 1789    1791
@@E470  001  006D 1791    1793
@@E471  001  006E 1793    1795
@@E473  001  006F 1795    1797
@@E474  001  0070 1797    1799
@@E475  001  0071 1799    1801
@@E476  001  0072 1801    1803
@@E477  001  0073 1803    1805
@@E478  001  0074 1805    1807
@@E479  001  0075 1807    1809
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@@E481  001  0077 1811    1813
@@E482  001  0078 1813    1815
@@E483  001  0079 1815    1817
@@E484  001  007A 1817    1819
@@E485  001  007B 1819    1821
@@E486  001  007C 1821    1823
@@E487  001  007D 1823    1825
@@E488  001  007E 1825    1827
@@E489  001  007F 1827    1829
@@E490  001  0080 1829    1831
@@E491  001  0081 1831    1833
@@E492  001  0082 1833    1835
@@E493  001  0083 1835    1837
@@E494  001  0084 1837    1839
@@E495  001  0085 1839    1841
@@E496  001  0086 1841    1843
@@E497  001  0087 1843    1845
@@E498  001  0088 1845    1847
@@E500  001  0089 1847    1849
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@@E530  001  008B 1851    1853
@@E531  001  008C 1853    1855
@@E535  001  008D 1855    1857
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@@E541  001  008F 1859    1861
@@E542  001  0090 1861    1863
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@@E546  001  0094 1869    1871
@@E547  001  0095 1871    1873
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@@E574	001	00A3	1899	1901				
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@@E580	001	FFFF	2083					
@@E585	001	00A5	1903	1905				
@@E595	001	FFFF	2085					
@@E597	001	FFFF	2087					
@@E598	001	FFFF	2089					
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@@E601	001	00A7	1907	1909				
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@@E754	001	00CB	1979	1981				
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@@E756	001	00CD	1983	1985				
@@E757	001	00CE	1985	1987				
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@@E767	001	00D8	2005	2007
@@E768	001	00D9	2007	2009
@@E769	001	00DA	2009	2011
@@E770	001	00DB	2011	2013
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@@E772	001	00DD	2015	2017
@@E773	001	00DE	2017	2019
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@@E776	001	00E1	2023	2025
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@@E779	001	00E4	2029	2031
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@@E783	001	00E8	2037	2039
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@@E786	001	00EB	2043	2045
@@E790	001	00EC	2045	2047
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@@E792	001	00EE	2049	2051
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@@E794	001	00F0	2053	2055
@@E795	001	00F1	2055	2057
@@E796	001	00F2	2057	2059
@@E797	001	00F3	2059	2061
@@E798	001	00F4	2061	2063
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@@E802	001	FFFF	2095	
@@E803	001	FFFF	2097	
@@E804	001	FFFF	2099	
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@@E901	001	00F6	2065	2067
@@E902	001	00F7	2067	2069
@@E903	001	00F8	2069	2071
@@E905	001	00F9	2071	2073
@@E906	001	00FA	2073	2075
@@E910	001	00FB	2075	
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@@M032	001	0C0F	2411	2719
@@M035	001	0C13	2415	2730
@@M036	001	0C17	2419	2741
@@M037	001	0C1B	2423	2737
@@M038	001	0C1F	2427	2804
@@M039	001	0C23	2431	2795
@@M040	001	0F91	2873	2724
@@M054	001	0C27	2435	2747
@@M055	001	0C2B	2439	2751

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@@M085   001  0C3B 2455   2687
@@M087   001  0C3F 2459   2632
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@@T037   001  0C80 2475   2425
@@T038   001  0C94 2478   2429
@@T039   001  0C9F 2481   2433
@@T040   001  0F95 2878   2876
@@T054   001  0CAF 2484   2437
@@T055   001  0CBD 2487   2441
@@T080   001  0CCC 2490   2445
@@T081   001  0CD3 2493   2449
@@T084   001  0CDD 2496   2453
@@T085   001  0CE3 2499   2457
@@T087   001  0CFB 2502   2461
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@ARR     001  0008 0016   2659   3015   3145   3236   3403*  3404   3405*  3406   3558*  3559   3560*  3561
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@ASIGN   001  007C 0071
@ASTER   001  005C 0069   2532   2538
@BCRDL   001  0050 0088
@BE      001  0081 0043
@BF      001  0090 0052
@BH      001  0084 0041
@BKSPC   001  0010 0754
@BL      001  0082 0042
@BLANK   001  0040 0065   2696   3020   3026   3801   3914
@BM      001  0082 0054
@BNE     001  0001 0046   3011
@BNH     001  0004 0044
@BNL     001  0002 0045
@BNM     001  0002 0057
@BNOL    001  0020 0050
@BNOZ    001  0008 0049
@BNP     001  0004 0056
@BNZ     001  0001 0058
@BOL     001  00A0 0048
@BOZ     001  0088 0047
@BP      001  0084 0053
@BR      001  0001 0013   2510   2511*  2527   2546   2553   2554   2563   2593   2621   2622   2629   2640
                          2640   2671   2674   2694   2696   2697   2697   2703   2704   2781   2782   2783
                          2784   2785   2786   2800   2819   2819   3391   3400   3402*  3403   3404   3405
                          3406   3408   3409   3409   3410   3411   3411   3413   3413   3414   3415   3415
                          3419   3419   3420   3424   3424   3425   3427   3427   3428   3428   3429   3429
                          3430   3430   3431   3431   3437   3438   3439   3439   3440   3445   3445   3446
                          3446   3448   3448   3454*  3554   3555*  3556   3557   3558   3559   3560   3561
                          3566   3567   3568   3569   3570   3570   3571   3571   3572   3572   3573   3573
                          3581   3581   3582   3584*  3714   3716   3717*  3718   3719   3721   3722   3724
                          3725   3726   3736   3736   3749   3751   3755   3756   3758   3759   3759   3760
                          3760   3761   3762   3766   3767   3772   3772   3773   3773   3774   3776   3776
                          3789   3791   3792   3796   3796   3797   3797   3798   3799   3803   3803   3804
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                                3869   3869   3872   3872   3873   3873   3875   3875   3883   3884   3885   3885
                                3889   3897   3898*  3899   3900   3902   3903*  3904   3905   3905   3907   3908
                                3908   3911   3911   3912   3912   3913   3916   3916   3917   3918   3918   3919
                                3939   3940   3941*  3942   3944   3944   3945   3946   3951   3951   3953   3953
                                3954   3954   3955   3957   3957   3958   3959*
@BT      001  0010  0051
@BZ      001  0081  0055
@BZ37B   001  00F2  0767
@B1      001  0001  0063    2536   2541   2546   2546   2549   2588   2612   2616   2622*  2629*  2640   2669
                            2694   2697*  2704*  2781   2782   2782*  2783   2783*  2784   2784*  2785*  2786*
                            2791   2800*  2819   2855   2869   2914   3945   3946
@CADDR   001  0002  0142    2409   2413   2417   2421   2425   2429   2433   2437   2441   2445   2449   2453
                            2457   2461   3409   3568   3570   3573   3578   3581   3587   3593   3595   3736
                            3908   3911
@CARDL   001  0060  0087    0830
@CC37B   001  0000  0763
@CD37B   001  00F0  0781
@CHARA   001  00C1  0072
@CHARF   001  00C6  0073
@CHARR   001  00D9  0074
@CHARZ   001  00E9  0075
@CKY01   001  0001  0715
@CKY02   001  0002  0716
@CKY03   001  0003  0717
@CKY04   001  0004  0718
@CKY05   001  0005  0719
@CKY06   001  0006  0720
@CKY07   001  0007  0721
@CKY08   001  0008  0722
@CKY09   001  0009  0723
@CKY10   001  000A  0724
@CKY11   001  000B  0725
@CKY12   001  000C  0726
@CKY13   001  000D  0727    3827
@CKY14   001  000E  0728
@CKY15   001  000F  0729
@CKY16   001  0010  0730
@CLOFF   001  0010  0094
@CLON    001  0011  0093
@CMLON   001  0001  0733    3751*
@CMOFF   001  0000  0732    3755*
@COMMA   001  006B  0066    3022
@CPLUS   001  004E  0079
@CP37B   001  0004  0794
@CRERR   001  0090  0749
@CRPRY   001  0004  0753
@CRTDS   001  0092  0746
@CRTQ    001  0090  0748
@CURSR   001  0040  0750
@DADDR   001  0002  0140    2592   2593   2612   2614   2620   2620   2671   2674   3408   3473
@DBFR1   001  0004  0129
@DBFR2   001  0005  0130
@DBUSY   001  0002  0651
@DCALK   001  0001  0081
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SYMBOL   LEN VALUE DEFN   REFERENCES                          VER 15, MOD 00  03/02/22  PAGE  69

@DCBCY   001  0009 0115
@DCBT1   001  0050 0117
@DCFLN   001  0004 0635
@DCNT    001  0003 0128
@DCRID   001  0001 0649
@DCST1   001  0040 0116
@DCTRL   001  0000 0125
@DCTRW   001  0000 0648
@DCWID   001  0001 0645
@DCYL    001  0001 0126   3413*
@DCYMV   001  0001 0636
@DD2     001  0003 0030   3803* 3804* 3805
@DEFLG   001  0002 0658
@DERCE   001  0020 0688
@DERD2   001  0008 0680
@DEREQ   001  0010 0679
@DERIN   001  0040 0677
@DERMA   001  0020 0678
@DERNR   001  0004 0681
@DERR    001  0000 0652
@DERSC   001  0001 0683
@DERTC   001  0002 0682
@DFCR    001  0006 0638
@DFDR    001  0004 0639
@DGET    001  0001 0134   2889
@DHARD   001  0000 0666
@DLNCT   001  000F 0752
@DLNLG   001  0040 0751
@DOLAR   001  005B 0068
@DOP2    001  0004 0028   3404* 3408* 3409* 3471  3472  3907* 3908* 3911*
@DPLNG   001  0006 0132   3410  3469
@DPOS    001  0000 0133
@DPUT    001  0002 0135
@DREAD   001  0001 0642
@DSAD    001  0002 0127   2593* 2674* 2895  3411* 3415* 3419  3420* 3424* 3427* 3431  3437* 3445*
                         3448* 3470
@DSBCY   001  0004 0106
@DSBSY   001  0092 0747
@DSCS1   001  0000 0107
@DSEEK   001  0000 0641
@DSIVF   001  0003 0138
@DSPIN   001  0002 0131
@DTRSZ   001  0018 0085
@DUNSF   001  0080 0684
@DVBCY   001  0007 0108
@DVERY   001  0003 0647
@DVRFY   001  0031 0136
@DVST1   001  0002 0653
@DVST2   001  0003 0654
@DWAIT   001  00FF 0137
@DWBCY   001  0005 0103
@DWRIT   001  0002 0643
@DWSIZ   001  00C0 0105
@DWTB1   001  0003 0104
@DZERO   001  00F0 0064
@D1      001  0002 0026   3270* 3272* 3805* 3945* 3957*
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@FDE1    001  000C 0200
@FDFNA   001  000B 0198
@FDHLN   001  0002 0208
@FDLNC   001  0002 0193
@FDNSC   001  0003 0210
@FDSD    001  0000 0206
@FLACE   001  0009 0197
@FLDBC   001  0001 0196
@FLDIN   001  0012 0740
@FLENT   001  0004 0201
@FLFNA   001  0002 0199
@FLHLN   001  0002 0209
@FLLNC   001  0002 0194
@FLNSC   001  0001 0211
@FLSD    001  0001 0207
@HDRLN   001  0007 0092   0858
@HSTAD   001  0009 0664
@HSTEN   001  0007 0663
@HSTPE   001  0006 0662
@HSTQR   001  0001 0660
@HSTSN   001  0005 0661
@HSTVI   001  000F 0665
@IAR     001  0010 0017
@ID37B   001  0040 0804
@INDEX   001  0001 0156   0157   3834
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@INST4   001  0004 0033
@INST5   001  0005 0034
@INST6   001  0006 0035
@IP37B   001  00C0 0803
@I1IAR   001  00C0 0020
@KCMDK   001  0020 0714
@KELOK   001  001B 0713
@KENAB   001  001E 0711
@KEXIT   001  001F 0712
@KEYBD   001  0010 0731   3751*  3755*
@KFUNK   001  0010 0734
@KHARD   001  0011 0739
@KLEAR   001  000D 0735
@LINSZ   001  00F4 0084   0832
@LO37B   001  00F0 0772
@MAPEN   001  0005 0089
@MINCR   001  2000 0083
@MINUS   001  0060 0080
@NOP     001  0080 0040   2550   2551   2586   2601   2619   2682   3177   3218   3450   3566   3754   3758
                          3853
@NORFL   001  0000 0659
@NTRDY   001  00A0 0796
@NUMBR   001  007B 0070
@OPD2    001  0004 0029
@OP1     001  0003 0027   2531*  2565*  2659*  2660*  3015*  3145*  3146*  3236*  3400*  3406*  3554*  3557*
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@OVRUN    001  0004 0689
@PBUSY    001  00E2 0701
@PCAR     001  00E6 0698
@PCNT     001  0003 0633
@PCTRL    001  0000 0149   3564  3749  3789  3889*
@PCYL     001  0001 0631
@PC37B    001  00F2 0788
@PDAR     001  00E4 0697
@PDATA    001  0003 0151   3568  3724  3724* 3806
@PD37B    001  0080 0802
@PERR     001  00E0 0704
@PFLAG    001  0000 0630
@PFORM    001  00E1 0702
@PGCSZ    001  0020 0082   0083
@PLITE    001  00E2 0703
@PLNGH    001  0004 0694
@PMGCK    001  0020 0705
@PN37B    001  00F0 0787
@PPLNG    001  0004 0148   3724  3833
@PRCNT    001  0001 0150   3567  3569  3569* 3582* 3791* 3796  3796* 3797  3797* 3803  3856  3858
                          3860  3862* 3869  3872* 3875* 3883* 3884* 3885* 3918*
@PRETR    001  00C0 0154   2415  2435  2439  2455  2837  2845  2853  2861  2868  2874  3598
@PRINT    001  0040 0152   0154  2407  2411  2419  2423  2427  2431  2443  2447  2451  2459  3564
                          3889
@PRITY    001  0080 0738
@PSAD     001  0002 0632
@PSIOQ    001  00E0 0700
@PSIOR    001  0000 0699
@PSNSQ    001  00E2 0706
@PSR      001  0004 0015   3159* 3200* 3214*
@PWAIT    001  00FF 0158   3749  3789  3792  3798
@P1IAR    001  0020 0018
@P2IAR    001  0040 0019
@Q        001  0001 0024   2535* 2542* 2544* 2550* 2551* 2601* 2619* 2682* 2823* 3034  3164* 3218*
                          3451  3566* 3572* 3579* 3756* 3758* 3946* 3954  3954* 3957
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@REGL     001  0002 0012
@RETRN    001  0080 0153   0154  3841
@RLDWN    001  004F 0159
@RTCNT    001  0003 0696
@RTRNC    001  0080 0161
@RT37B    001  0005 0795
@SBLN     001  0005 0170
@SBLNL    001  0002 0184
@SCTSZ    001  0100 0100
@SDFLN    001  0007 0090
@SDF0     001  0000 0166
@SDF1     001  0001 0167
@SDF2     001  0002 0168
@SDF3     001  0003 0169
@SECCY    001  0030 0086
@SIST     001  0001 0181
@SKCTL    001  0000 0646
@SLASH    001  0061 0067
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@SMIDL   001  0003 0182
@SNSB0   001  0000 0670
@SNSB1   001  0001 0671
@SNSB2   001  0002 0672
@SNSB3   001  0003 0673
@SNULL   001  0080 0173
@SN37B   001  00F2 0776
@SONLY   001  0000 0180
@SPINA   001  00A0 0655
@SPINB   001  00B0 0656
@STEXT   001  0007 0172
@STYPE   001  0006 0171
@SYCNT   001  0002 0695
@TBCNT   001  0000 0160
@TBLEF   001  0010 0155   0157
@TBLIX   001  0011 0157
@TJ37B   001  0040 0793
@TYPAM   001  0002 0737
@TYPO    001  001C 0736
@UCB     001  0087 0039   2544  2645  2699  2708  2822  2823  3012  3023  3164  3575  3579  3756
@UPARW   001  005A 0078
@VADDR   001  0002 0141
@VENTA   001  0056 0113
@VMDDV   001  00FE 0114
@VMFD1   001  0000 0109
@VMFD2   001  0001 0110
@VMRS3   001  0002 0112
@VMTRL   001  0001 0111
@VOLID   001  0006 0091   2614  2629  2629* 2838  2915
@VQ      001  0001 0025   3574  3807
@WA37B   001  00FF 0801
@WSFIT   001  0500 0101
@WSTBL   001  0503 0102
@XR      001  0002 0014   2513* 2524  2531  2532  2536  2536* 2538  2541  2541* 2546  2549  2549*
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                          2733  2743  2756  2762  2768  2781  2782  2783  2784  2785  2786  2791
                          2791* 2799  2799* 2800  2808  2808* 2817  2817* 2824* 3016  3019  3019*
                          3020  3022  3025  3025* 3026  3028  3030  3146  3151  3154  3165  3165*
                          3168  3168* 3174  3213* 3263* 3557  3563* 3564  3567  3568  3569  3585*
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                          3910  3910* 3914  3915  3915* 3948
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                          3766  3791  3857  3893  3894  3899
@4K      001  0010 0755
C2DEC5   001  1659 3938   2792  2801  3939  3941
C2DVAL   005  1697 3966   2863  3951  3951  3951* 3953  3953
C2D020   003  166B 3946   3957  3958
C2D030   003  166E 3948   3945* 3946* 3954  3954* 3955  3957*
C2D040   004  1678 3953   3949
C2D050   004  168A 3959   3940*
C2D052   004  168E 3960   3942*
C2D901   001  1692 3964   3944  3944  3944
C2D902   001  1693 3965   3944
C2D903   005  169C 3967   3944  3944* 3951  3951  3951  3953  3953  3953  3953*
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DCRCNT  001  157A 3821   3822
DLIBUF  001  1A9D 3973   3800   3831   3906
DLPBLN  001  00F4 3922   3801*  3802   3802   3802*  3904
DLPBSD  001  148E 3731   3818   3819   3820
DLPBSE  004  149C 3742   3714   3717   3897   3898
DLPBS2  001  157F 3921   3848   3850   3902   3903
DLPCNT  001  157A 3822   3766*  3767   3776*  3823
DLPCRT  001  001B 3820   3182   3193   3199   3239
DLPEXT  002  14AC 3747   3725*  3726*  3736
DLPK13  001  157E 3827   3751   3755
DLPLIN  001  157D 3826   3759   3772
DLPLPC  002  157C 3825   3759*  3760*  3772*  3773*
DLPMAX  001  000D 3828   3767
DLPMPR  001  0085 3818   3185   3188   3196   3242
DLPNDX  001  1587 3834   3896
DLPNPT  001  1513 3781   3735   3740   3818
DLPNXT  001  158D 3838   3856*  3863*  3869   3873   3875   3918
DLPONE  002  1589 3835   3719   3721   3760   3773   3776   3804   3885   3911   3912   3916
DLPPNT  001  0001 3842   3882
DLPPRL  001  15E9 3881   3865
DLPPRT  001  1591 3849   3793   3919
DLPREM  001  158E 3839   3904*  3905*  3916*
DLPRES  001  158A 3836   3857*  3860*  3861*  3862   3863   3899   3905   3912*
DLPRNT  001  1463 3715   2647   3577
DLPRTN  001  158F 3840   3795   3797
DLPSPI  001  148E 3733   3819
DLPSPT  001  0000 3819   3730
DLPTIF  001  14A9 3744   3820
DLPTYP  001  148D 3728   3182   3185   3188*  3193   3196   3199*  3239   3242   3729
DLPWK1  001  157F 3829   3792   3796*  3798   3803   3858   3860   3862*  3869   3872*  3875*  3883*  3884*
                         3885*  3889*  3892   3918*  3921
DLPWK2  001  1583 3832   3724*  3738   3748   3749   3785   3789   3791*  3796   3797*  3806   3856
DLPWTH  002  158C 3837   3854*  3855   3858   3861   3872   3873   3908
DLP100  004  147B 3723   3720*
DLP120  004  1499 3737   3736*  3742
DLP140  003  14B5 3751   3762
DLP160  003  14BF 3754   3756*  3758*
DLP180  003  14CB 3758   3754
DLP200  004  14CE 3759   3757
DLP220  004  14D2 3760   3761
DLP240  004  14DC 3763   3753
DLP260  003  14EA 3767   3764
DLP280  003  14F4 3771   3769
DLP300  004  14FB 3773   3774
DLP320  004  1505 3776   3771
DLP340  003  1509 3777   3775
DLP360  004  150C 3778   3750
DLP380  004  151A 3784   3799
DLP400  003  1529 3789   3783
DLP420  003  1532 3792   3790
DLP440  004  153E 3796   3900
DLP460  004  1566 3807   3803*  3804*  3805   3805*
DLP480  004  156A 3809   3716*  3741   3777   3779   3788
DLP500  004  156E 3810   3718*
DLP520  004  1576 3812   3722*
DLP540  006  15C7 3864   3859
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DLP560   003  15FB 3889   3870   3874   3877
DLP580   005  1632 3909   3907*  3908*  3911*  3913
DLP600   003  1645 3914   3917
DL2C01   002  13E8 3463   3403   3405   3413
DL2C05   002  13EA 3464   3409
DL2C48   001  13E4 3461   3411   3415
DL2DPL   006  13F0 3469   3410*
DL2END   001  13F3 3474
DL2E01   001  0001 3393   3411   3413   3415   3419   3431   3439
DL2E02   001  0002 3394   3424   3427   3445
DL2E18   001  0018 3395   3425
DL2E60   001  0060 3396   3440
DL2E7C   001  007C 3398   3437
DL2ICS   001  135A 3399   2596   2625   2677
DL2K18   002  13E6 3462   3428
DL2K60   002  13E1 3459   3446
DL2K80   002  13E3 3460   3427   3445
DL2LST   001  13EB 3468   3411*  3413*  3415*  3419   3420*  3424*  3427*  3431   3437*  3445*  3448*  3453
                          3470
DL2PHY   001  13ED 3470
DL2RAD   002  13F2 3473   2592*  2620*  3424
DL2SAD   005  1372 3471   3431*  3438*  3439*  3440   3446*  3448
DL2SEC   005  137B 3472   3419*  3425   3428*  3429   3429*  3430   3430*  3439
DL2SWH   003  13D0 3451
DL2TSD   001  0083 3397   3438
DL2000   001  135E 3401   3391   3402
DL2001   005  136E 3408   3404*  3471
DL2002   005  1377 3410   3408*  3409*  3472
DL2005   004  137C 3411   3414
DL2006   004  138A 3415   3412
DL2008   004  13A7 3429   3426
DL2010   003  13BD 3440
DL2100   004  13CB 3448   3441
DL2110   003  13CF 3450   3451
DL2900   004  13D8 3454   3400*  3450
DL2910   004  13DC 3455   3406*
DSVABF   002  145A 3587   3581
DSVBUF   001  0FE2 2916   3574*  3587   3600
DSVONE   002  145C 3591   3558   3560   3571
DSVPPL   001  145F 3597   3569*  3578   3582*
DSVPRI   001  13F3 3553   2631   2633   2635   2686   2700   2705   2718   2723   2729   2736   2740   2746
                          2750   2753   2759   2765   2770   2788   2794   2796   2803   2805   3555   3556
DSVTMP   002  145E 3593   3567*  3570   3571*  3572   3573
DSVTM1   001  145D 3592   3594
DSV100   004  140A 3563   3559*
DSV200   004  1417 3567   3565
DSV700   006  1433 3574   3568*  3570*  3572*  3573*  3581*
DSV800   003  1439 3575   3566*  3579*
DSV900   004  144D 3584   3554*  3575
DSV910   004  1451 3585   3557*
DSV920   004  1455 3586   3561*
KCTALL   003  0FBA 2912   2546   2913
KCTBF1   001  169D 3969   2892   3970   3971
KCTBF2   001  189D 3971   2667   2669   3972   3973
KCTBLK   003  0FAF 2907   2855   2870
KCTBSE   001  0FA3 2885   2510   2511
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KCTCNT   001  0FBA 2914   2694* 2819*
KCTCTR   001  0FA9 2901   2640* 2902
KCTDAT   001  0FB0 2908   2781* 2782* 2783* 2784* 2785* 2786*
KCTDP1   001  0FA3 2888   2593* 2597  2626  2674* 2678  2895
KCTDS7   001  0007 2359
KCTDTE   001  000B 2850   2854
KCTD12   001  000C 2360
KCTLN3   001  0003 2365
KCTLN4   001  0004 2366
KCTLN5   001  0005 2367
KCTLN6   001  0006 2368
KCTLN8   001  0008 2369
KCTLN9   001  0009 2370
KCTLOG   004  0C07 2398
KCTL13   001  000D 2371
KCTL15   001  000F 2372
KCTL18   001  0012 2373
KCTMS1   001  0FB8 2911   2629* 2839  2915
KCTMS2   001  0FBE 2915   2696* 2697  2697* 2703* 2704* 2847  2916
KCTONE   001  0FAC 2905   2640  2800  2819
KCTPP1   001  0F7D 2836   2634
KCTPP2   001  0F81 2844   2706
KCTPP3   001  0F85 2852   2789
KCTPP4   001  0F89 2860   2797  2806
KCTPP5   001  0F8D 2867   2636  2701
KCTSTR   001  0FA5 2895   2621* 2622*
KCTXFF   001  00FF 2357   2644
KCTX04   001  0004 2858   2862
KCTX24   001  0024 2842   2696* 2697  2697  2697* 2846
KCTZER   002  0FAB 2904   2671
KCT025   004  0D2B 2511   2398
KCT050   003  0D33 2524
KCT1BF   001  179C 3970   2668
KCT100   003  0D39 2527
KCT115   004  0D61 2544   2539
KCT125   004  0D68 2546   2533
KCT126   001  007E 2361
KCT127   001  007F 2362
KCT150   003  0D7A 2553   2545
KCT175   003  0D8A 2563   2525  2547
KCT180   004  0D94 2567
KCT190   003  0D98 2568   2557
KCT195   004  0D9E 2570   2531* 2565*
KCT2BF   001  1A9C 3972   2669*
KCT200   004  0DA5 2581   2569
KCT250   003  0DAD 2586   2544*
KCT255   001  00FF 2363   2668*
KCT256   001  0100 2374   2668  2669
KCT400   004  0DD7 2612   2586
KCT410   003  0DDB 2614   2641
KCT430   003  0DED 2621   2535* 2542*
KCT450   004  0E13 2640   2617
KCT485   003  0E1F 2644   2590  2602
KCT490   004  0E22 2645   2529  2555  2564  2571  2601* 2619*
KCT500   001  0E30 2658   2600  2638
KCT520   004  0E38 2663   2822
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KCT540   004  0E61 2682    2672
KCT550   004  0E74 2694    2680   2684
KCT580   003  0E7B 2696    2820
KCT590   003  0E82 2699    2551*
KCT595   004  0E8B 2703    2699
KCT600   003  0E99 2708    2550*
KCT615   003  0EB1 2726    2722
KCT620   003  0EC0 2733    2727
KCT630   004  0ECF 2740    2734
KCT640   003  0ED5 2743    2738
KCT650   004  0EE4 2750    2744
KCT660   004  0EEA 2753    2725   2731   2748
KCT670   003  0EFC 2762    2757
KCT680   003  0F08 2768    2763
KCT690   004  0F14 2781    2769
KCT700   003  0F32 2791
KCT730   003  0F45 2799
KCT750   003  0F5C 2808
KCT800   003  0F62 2817    2708
KCT830   004  0F65 2819    2809
KCT850   004  0F6D 2822    2682*  2688   2823*
KCT890   004  0F75 2824    2660*
KCT900   004  0F79 2825    2659*
SCACNT   002  0FFB 3040    3030*  3031*
SCACOF   001  0087 3012
SCACOM   001  0001 3011    2553   3147
SCAINC   001  0001 3010    3019   3025
SCAMMA   003  0FD8 3034    2553*  3147*
SCANIT   001  0FBB 3014    2527   2554   3170
SCASVE   002  0FF9 3039    3016*  3031
SCASV1   001  0FF8 3038
SCA100   003  0FCA 3019    3021
SCA200   003  0FCD 3020    3018
SCA250   003  0FD7 3023    3034
SCA300   003  0FDA 3025    3027
SCA400   004  0FEA 3030    3023
SCA500   004  0FF4 3033    3015*  3029
SCKCCR   003  1092 3228    3151
SCKCL0   006  10E9 3270
SCKCL1   004  10EF 3271    3270*  3272*
SCKCMP   007  1099 3229    3154
SCKDEV   001  10A0 3235    2581   3263
SCKEND   001  1101 3277
SCKERR   001  0469 2582    3264
SCKOUT   001  0FFC 3144    2563
SCK001   001  0003 3223    3151   3151   3165   3228
SCK002   001  0007 3224    3154   3154   3168   3229
SCK003   002  109B 3230    3159
SCK004   002  109D 3231    3200
SCK005   002  109F 3232    3214
SCK100   004  101F 3164    3152
SCK150   003  1029 3168    3155
SCK200   004  102C 3170    3166
SCK300   003  103D 3177    3164*  3172   3218*
SCK350   004  1055 3193    3177
SCK400   004  1067 3200    3189
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SCK410   004  106E 3205   3175
SCK420   004  1075 3208   3183  3197
SCK430   004  107C 3211   3186  3194
SCK440   004  1080 3213   3146* 3206  3209
SCK450   004  1088 3218   3160  3201
SCK460   004  108C 3219   3145*
SCK475   004  10C4 3251   3240
SCK500   004  10D9 3261   3252
SCK550   004  10DD 3263   3249  3259
SCK600   004  10E5 3268   3255
SCK650   004  10FD 3276   3236* 3243  3246
SMAEND   001  1ACC 4065
SMALES   001  169D 4039   4040
SMBFDA   001  16B7 4045   4046
SMDAAD   001  16CB 4055   4061
SMFNAM   001  16B3 4043   4044
SMFUDA   001  16C7 4053   4054
SMIND1   001  169D 4040   4041
SMNDBA   001  16C9 4054   4055
SMNDEA   001  16BD 4048   4049
SMNETD   001  16C1 4050   4051
SMNSCT   001  16BF 4049   4050
SMNULT   001  16BB 4047   4048
SMPDB1   001  16CC 4061   4062  4063
SMPEAD   001  16C5 4052   4053
SMPIBS   001  16CC 4062
SMPSWD   001  16AB 4042   4043
SMUDBA   001  16B9 4046   4047
SMUDB1   001  16CC 4063   4064
SMUDB2   001  18CC 4064   4065
SMUDEA   001  16B5 4044   4045
SMUPEN   001  16C3 4051   4052
SMVOID   001  16A3 4041   4042
SM1FNE   001  0080 4056
SM1NPD   001  0040 4057
SM1PDS   001  0010 4059
SM1PNF   001  0008 4060
SM1STN   001  0020 4058
```

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =   0

OL105 I THE CODE LENGTH OF #KCTLO IS 5789 DECIMAL.
OL103 I TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS   12
         NAME-#KCTLO,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-R,CATEGORY-000

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        OVERLAY LINKAGE EDITOR CORE USAGE MAP     03/02/22


 START      CATEGORY   NAME AND        CODE LENGTH
ADDRESS                  ENTRY     HEXADECIMAL DECIMAL

 0C00          0      #KCTLO           169D     5789


OL100 I   THE TOTAL CORE USED BY #KCTLO IS  5789 DECIMAL.
OL101 I   THE START CONTROL ADDRESS OF THIS MODULE IS 0C00.
OL104 I   TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS    23
          NAME-#KCTLO,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O
```