INTERRUPT DIAGNOSTIC

HP Product No. 20415

HEWLETT hp PACKARD

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Manual of Diagnostics
Diagnostic Program Procedure
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INTERRUPT DIAGNOSTIC

The Interrupt Diagnostic tests the programmable features of the computer interrupt system and input/output slots. The diagnostic includes two separate test procedures: the interrupt priority check and the input/output check.

HARDWARE CONFIGURATION

This diagnostic test program applies to Hewlett-Packard 2114, 2115, or 2116, computers. The following additional items are required:

Binary Tape HP 20415,

Source Listing HP 20415,

*Priority Jumper Card HP 02116-6110

*General Purpose Duplex Register Interface Kit HP 12554

Microcircuit Interface Card

Interface Kit HP 12566

*The number of these cards is optional; it is determined by the user.

Microcircuit interface cards can be used in place of general purpose duplex register cards and vice versa.

A teleprinter or a photoreader can be used with this diagnostic.

OPERATING PROCEDURE

To select the I/O slots for testing, provide appropriate I/O slot addressing information to the computer from a teleprinter or a photoreader. If errors in the operation of the I/O system are detected, they are transmitted from the computer to the teleprinter and are typed out as error information for

the user. These error indications, if any, indicate which portion of the interrupt and I/O wiring failed the diagnostic test.

When performing the I/O Data Check, a general purpose duplex register card with its 24-pin jumper connector attached or a microcircuit interface card with its 24-pin jumper connector attached must be inserted in each I/O slot before that slot is tested. To perform the Interrupt Priority Check, I/O slots to be tested must each contain a card that has control and flag logic capable of generating interrupt signals. This enables the diagnostic routine to generate multiple interrupts, to test for proper interrupt priority continuity.

Table CI-1

Available Test Control Settings

Switch Register Bit	Setting	Function
1	0	Normal Interrupt Check
	1	Loop Interrupt Priority Check
2	0	Normal I/O Data Check
	1	Loop I/O Data Check only
14	0	Execute I/O Data Check after Priority check
	1	Return for new slot parameters after Interrupt Priority check
15	0	Teleprinter Input
	1	Photoreader Input

NOTE: If the teleprinter or photoreader is used, the appropriate SIO driver must be loaded before executing the Interrupt Diagnostic.

After loading the program, set up the computer before performing either of the two checks. Set the Switch Register to 002000, press LOAD ADDRESS, then RUN. The computer responds by typing out the following message on the teleprinter (all numbers are octal):

```
I/O SLOTS TO BE TESTED?
```

The format for replying to the teleprinter inquiry is: SXX. (The "S" identifies the reply as a slot parameter; the two digits (XX) give the octal address of the I/O slot to be tested). Groups of I/O locations are specified as follows:

```
S10,S12,S13,S14,S15,...../
...,S67
```

This statement activates I/O locations 10, 12, 13, 14, 15, and 67. The "/" allows continuation of the statement to the next 72-column line and can appear prior to, or in, column 72. The split must always be between parameters; parameter must not be split between lines.

ENTRY ERRORS

If a parameter is split, the teleprinter types out:

```
SLOT PARAMETER INCOMPLETE
```

If an incorrect entry is made while setting up parameters, the Teleprinter types out one of the following responses:

SLOT PARAMETER EXCEEDS 72 CHARACTERS. (A line exceeds 72 columns.)

IMPROPER CHARACTER IN SLOT PARAMETER. (The "S" part of a slot parameter is missing.)

9-CHARACTER IN OCTAL PARAMETER ILLEGAL. (An example is: S09.)

SLOT PARAMETERS MISSING. ("S" parameters have not been fed in after the initial teleprinter inquiry.)

SLOT BUFFER OVERFLOWED. (More than 64 entries in the "slot" buffer have been specified for any series of "S" parameters.)

When entering the "S" parameter addresses, make sure they are listed in ascending octal sequence in accordance with the hardware priority structure. After all routine slot buffer entries have been processed, Interrupt Priority and Input/Output Data checks are performed.

INTERRUPT PRIORITY CHECK

This routine tests operation of the interrupt priority structure of the computer input/output section and checks interrupt generation capability of any I/O slots. To perform this check, all I/O slots to be tested must contain an interface card, or any card with control and flag logic capable of generating interrupt signals.

NOTE: Empty I/O slots between the highest and the lowest priority interrupt-capable interface cards must be filled with Priority Jumper cards.

The Interrupt Priority check first places self-addressed halts in each I/O location (000002 through 000100), along with the interrupt system disable instruction "Clear Control" (CLC 0). The routine then fetches the highest priority address from the routine slot buffer and places a "jump subroutine" (JSB) to the interrupt service routine in the high-priority interrupt address. Then the routine executes a "Set Control" instruction (STC XX) and a "Set Flag" instruction (STF XX) at the high-priority location and to each subsequent location specified by the routine slot buffer. After all slot locations are set to generate an interrupt, the interrupt system is enabled by a "Set Flag" instruction (STF 0).

The routine then executes one of three possible responses:

1. An interrupt by the current high priority I/O slot causes control of the diagnostic to be transferred to the interrupt service routine. This routine disables the interrupt system, places a self-addressed halt in the current high-priority location, and inserts a jump subroutine to the interrupt service routine in the next-highest priority location in the priority string. This procedure is repeated for each I/O location until all locations in the routine slot buffer have been exhausted.

2. An interrupt not from the current high-priority address halts the computer. The lower six bits of the halt instruction (displayed in the T-register) indicate the octal address of the I/O slot that generated the interrupt. When this happens, the malfunction (improper priority chain) should be corrected and control of the diagnostic returned to the beginning of the routine.

NOTE: Under no circumstances should resumption of the routine be attempted at the location of halt.

3. An interrupt does not occur and the teleprinter types out the error message: NO INTERRUPT ON SLOT #10 DURING PRIORITY CHECK. To resume at the same "S" parameter, set Switch Register bit 1 to "1" and press RUN. If Switch Register bit 1 is "0" and RUN is pressed, a new set of "S" parameters are requested by the teleprinter.

When the Interrupt Priority check has been completed, the routine checks the setting of the Switch Register to determine which of four functions it performs next. The following lists the Switch Register settings and their respective operations (see also Table CI-1):

1. All Switch Register bits = 0; the routine exits to the I/O data check and the teleprinter types out the message PRIORITY CHECK OK. The routine then begins operation of the I/O data check.

2. Switch Register bit 0 = "1"; the routine does not cause the teleprinter to type out a message, but begins operation of the I/O data check directly.

3. Switch Register bit 1 = "1"; only the Priority Interrupt check is performed; no message is printed out on the teleprinter.

4. Switch Register bit 14 = "1"; the teleprinter types out the message PRIORITY CHECK OK and the routine returns to its beginning for a new set of "S" parameters. This feature permits a restart capability upon existing from the Interrupt Priority check and before transferring to the I/O data check.

INPUT/OUTPUT DATA CHECK

This routine tests the sixteen data lines, the flag lines, and the control lines associated with each of the I/O locations. The test requires that a general duplex register card with its 24-pin jumper connector attached be inserted in any I/O slot to be tested.

The I/O data check first places self-addressed halts in each I/O location (000002 through 000100). The interrupt system is then enabled and the highest-priority address value is fetched from the routine slot buffer. The routine configures the I/O instructions required to drive the general purpose duplex register card or microcircuit interface card and inserts a "return jump" in the interrupt location currently having the highest priority. The routine then fetches one of four available data words and prepares the output data. The four data word patterns, listed in order of execution, are:

100001
052525
125252
077776

The routine then executes a "Set Flag" instruction (STF XX) on the I/O location being addressed, outputs the data word with the instruction "OTA XX,"

and executes a "Set Control" instruction (STC XX) on the same location. This action should generate an interrupt from the I/O location of the highest priority. If the interrupt is properly generated, control is transferred to the input function. The routine then inserts a "return jump" in the current interrupt location. The control is set again and the routine inputs the data word which was previously output by executing a "load into B-register" (LIB XX) instruction and a "Set Flag" instruction (STF XX), which should generate an interrupt. If the interrupt is properly generated, the input data is compared to the stored array data. If an error (any difference in the data) is detected, the interrupt system is disabled and the following message is typed out:

DATA ERROR ON SLOT #XX

OUTPUT 100001 INPUT 100000

NOTE: If an interrupt is not generated within 5 microseconds after any "Set Flag" instruction (STF XX), the teleprinter types out the following message:

NO INTERRUPT ON SLOT #XX DURING DATA CHECK.

After the Data Error message is typed out, the interrupt system is enabled and the routine continues operation. The routine then inserts a self-addressed halt in the I/O location just tested and a "Clear Control" instruction (CLC XX) is executed to inhibit further interrupts from that location. This procedure is repeated for every I/O location where an error in the transfer of data occurs.

In testing the transfer of data, the I/O data check routine executes one of the four data patterns in each of the I/O addresses that were initially entered in the routine slot buffer. After the execution of a data pattern, the next data pattern is executed in the same I/O locations. This process continues until all four data patterns have been applied as output and input data to all I/O locations listed in the routine slot buffer.

When the check is completed, the interrupt system is disabled and the routine proceeds to one of the three following conditions, according to the Switch Register setting (see Table CI-1):

1. Switch Register bit 2 = "1": only the I/O data check is in a loop and repeats itself continuously until halted by the user.

2. Switch Register bits 0 and 2 both = "1": the interrupt priority check and the I/O data check are both in a loop and both repeat continuously (in the order presented in this section) until halted by the user.

3. Switch Register bits 0 and 2 both = "0": the following message is typed out and the computer halts:

   PRIORITY AND DATA CHECK COMPLETE

The halt at the completion of both checks permits the user to move the general purpose duplex register cards, the microcircuit interface cards, or the priority jumper cards to the next set of I/O locations to be tested. When RUN is pressed, the routine requests a new set of slot parameters and the entire procedure is repeated.

LISTING

```
 PAGE 0001

0001                    A9↑B,A,B,L
**  NO ERRORS*
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```
0001                    ASMB,A,B,L
0002   00107                    ORG 107B
0003   00107 000155     S800   DEF BUFF       INPUT BUFFER ADDRESS-WORKING
0004   00110 000155     S801   DEF BUFF       INPUT BUFFER ADDRESS
0005   00111 177734     S802   OCT 177734     BUFFER WORD COUNT-36
0006   00112 020040     S803   OCT 020040     ASCII BLANKS
0007   00113 000000     SEXT   OCT 0          EXIT FLAG
0008   00114 000000     S804   OCT 0          INPUT CHAR. LENGTH
0009   00115 000000     S807   OCT 0          ACTUAL INPUT CHAR. COUNT
0010   00116 077777     S808   OCT 77777      RETAIN A0-A14
0011   00117 000000     S809   OCT 0          LAST WORD BUFFER ADDRESS
0012   00120 000000     S810   OCT 0          WORKING U/L CHAR. MASK
0013   00121 125252     S811   OCT 125252     UPPER/LOWER CHAR. MASK
0014   00122 000377     S812   OCT 377        A0-A7 MASK
0015   00123 000000     S813   OCT 0          TEMP. CHAR. SAVE
0016   00124 000060     S819   OCT 60         ASCII 0
0017   00125 000070     S820   OCT 70         ASCII 8
0018   00126 177400     S821   OCT 177400     A8-A15 MASK
0019   00127 000130     IAI22  DEF MES22      BUFFER ADDR.
0020   00130 020040     MES22  ASC 20,   CHARACTER IN OCTAL PARAMETER ILLEGAL
       00131 020103
       00132 044101
       00133 051101
       00134 041524
       00135 042522
       00136 020111
       00137 047040
       00140 047503
       00141 052101
       00142 046040
       00143 050101
       00144 051101
       00145 046505
       00146 052105
       00147 051040
       00150 044514
       00151 046105
       00152 043501
       00153 046040
0021   00154 000047     CHA22  OCT 47         CHAR. COUNT
0022   00155 000000     BUFF   BSS 36         INPUT BUFFER
0023   00221 000120     S805   OCT 120        80 CHAR. COUNT
0024   00222 000224     ARRY1  DEF FSLOT      SLOT ARRAY BUFFER ADDR.
0025   00223 000224     ARRYW  DEF FSLOT      SLOT ARRAY BUFFER ADDR.-WORKING
0026   00224 000000     FSLOT  BSS 64         SLOT ARRAY
0027   00324 177677     S862   OCT 177677     -65 WORKING
0028   00325 177677     S863   OCT 177677     -65
0029   00326 000327     IAI1   DEF MES1       BUFFER ADDR.
0030   00327 044457     MES1   ASC 12,1/0 SLOTS TO BE TESTED ?
       00330 047440
       00331 051514
       00332 047524
       00333 051440
       00334 052117
       00335 020102
       00336 042440
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        00337 052105
        00340 051524
        00341 042504
        00342 020077
0031    00343 000030  CHA1  OCT 30          CHAR. COUNT
0032    00344 177667  S816  OCT 177667      -73 CHAR. COUNT
0033    00345 000346  IAI2  DEF MES2        BUFFER ADDR.
0034    00346 051514  MES2  ASC 18,SLOT PARAMETER EXCEEDS 72 CHARACTERS
        00347 047524
        00350 020120
        00351 040522
        00352 040515
        00353 042524
        00354 042522
        00355 020105
        00356 054103
        00357 042505
        00360 042123
        00361 020067
        00362 031040
        00363 041510
        00364 040522
        00365 040503
        00366 052105
        00367 051123
0035    00370 000044  CHA2  OCT 44          CHAR. COUNT
0036    00371 000040  S832  OCT 40          BLANK
0037    00372 000054  S833  OCT 54          COMMA
0038    00373 000057  S834  OCT 57          SLASH
0039    00374 000123  S836  OCT 123         ASCII S
0040    00375 000376  IAI3  DEF MES3        BUFFER ADDR.
0041    00376 044515  MES3  ASC 18,IMPROPER CHARACTER IN SLOT PARAMETER
        00377 050122
        00400 047520
        00401 042522
        00402 020103
        00403 044101
        00404 051101
        00405 041524
        00406 042522
        00407 020111
        00410 047040
        00411 051514
        00412 047524
        00413 020120
        00414 040522
        00415 040515
        00416 042524
        00417 042522
0042    00420 000044  CHA3  OCT 44          CHAR. COUNT
0043    00421 000422  IAI4  DEF MES4        BUFFER ADDR.
0044    00422 051514  MES4  ASC 12,SLOT PARAMETERS MISSING
        00423 047524
        00424 020120
        00425 040522
        00426 040515
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      00427 042524
      00430 042522
      00431 051440
      00432 046511
      00433 051523
      00434 044516
      00435 043440
0045  00436 000027  CHA4  OCT 27          CHAR. COUNT
0046  00437 177776  S842  OCT 177776      -2 COUNTER
0047  00440 177776  S843  OCT 177776      -2 COUNTER-WORKING
0048  00441 000000  S840  OCT 0           TEMP. CHAR. STORAGE
0049  00442 000007  MASK2 OCT 7           A0-A2 MASK
0050  00443 000444  IAI5  DEF MES5        BUFFER ADDR.
0051  00444 051514  MES5  ASC 13,SLOT PARAMETER INCOMPLETE
      00445 047524
      00446 020120
      00447 040522
      00450 040515
      00451 042524
      00452 042522
      00453 020111
      00454 047103
      00455 047515
      00456 050114
      00457 042524
      00460 042440
0052  00461 000031  CHA5  OCT 31          CHAR. COUNT
0053  00462 000000  LSLOT OCT 0           LAST SLOT ADDR.+1
0054  00463 000464  IAI6  DEF MES6        BUFFER ADDR.
0055  00464 051514  MES6  ASC 11,SLOT BUFFER OVERFLOWED
      00465 047524
      00466 020102
      00467 052506
      00470 045105
      00471 051040
      00472 047526
      00473 042522
      00474 043114
      00475 047527
      00476 042504
0056  00477 000026  CHA6  OCT 26          CHAR. COUNT
0057  00500 000002  ADF02 OCT 2           STARTING INT. LOCN.
0058  00501 102000  HLT0  OCT 102000      HALT
0059  00502 000100  AD100 OCT 100         LAST INT. ADDR.+1
0060  00503 000000  FRST  OCT 0           HIGH PRIORITY FLAG
0061  00504 114505  JSB1  JSB INTI,I      H.P. JSB
0062  00505 002230  INTI  DEF INTS        IND.
0063  00506 102700  STC0  STC 0           SET CONTROL 0
0064  00507 102100  STF0  STF 0           SET FLAG 0
0065  00510 000511  IAI7  DEF MES7        BUFFER ADDR.
0066  00511 047117  MES7  ASC 23,NO INTERRUPT ON SLOT#    DURING PRIORIT
      00512 020111
      00513 047124
      00514 042522
      00515 051125
      00516 050124
```

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        00517 020117
        00520 047040
        00521 051514
        00522 047524
        00523 021440
        00524 020040
        00525 020104
        00526 052522
        00527 044516
        00530 043440
        00531 050122
        00532 044517
        00533 051111
        00534 052131
        00535 020103
        00536 044105
        00537 041513
0067    00540 000056  CHA7   OCT 56          CHAR. COUNT
0068    00541 106700  CLC0   CLC 0           CLEAR CONTROL 0
0069    00542 000543  IAI8   DEF MES8        BUFFER ADDR.
0070    00543 050122  MES8   ASC 10,PRIORITY CHECK - OK
        00544 044517
        00545 051111
        00546 052131
        00547 020103
        00550 044105
        00551 041513
        00552 020055
        00553 020117
        00554 045440
0071    00555 000023  CHA8   OCT 23          CHAR. COUNT
0072    00556 000560  DATA   DEF ADATA       DATA BUFFER ADDR.-WORKING
0073    00557 000560  RDATA  DEF ADATA       BUFFER ADDR.
0074    00560 100001  ADATA  OCT 100001      DATA PATTERNS
0075    00561 052525         OCT 052525
0076    00562 125252         OCT 125252
0077    00563 077776         OCT 077776
0078    00564 000564  LDATA  DEF ADATA+4     LAST BUFFER ADDR.+1
0079    00565 177700  MSK1   OCT 177700      A6-A15 MASK
0080    00566 124567  JMP1   JMP RETN.I      INT. LOCN. RETURN JUMP
0081    00567 002343  RETN   DEF RETN1       IND.
0082    00570 124571  JMP2   JMP COMP1,I     INT. LOCN. RETURN JUMP
0083    00571 002354  COMP1  DEF COMP1       IND.
0084    00572 000573  IAI9   DEF MES9        BUFFER ADDR.
0085    00573 042101  MES9   ASC 11,DATA ERROR ON SLOT#
        00574 052101
        00575 020105
        00576 051122
        00577 047522
        00600 020117
        00601 047040
        00602 051514
        00603 047524
        00604 021440
        00605 020040
0086    00606 000026  CHA9   OCT 26          CHAR. COUNT
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0087  00607 000000  TEMP1 OCT 0          TEMP. HOLD
0088  00610 000611  IAI10 DEF MES10      BUFFER ADDR.
0089  00611 047525  MES10 ASC 15,OUTPUT            INPUT
      00612 052120
      00613 052524
      00614 020040
      00615 020040
      00616 020040
      00617 020040
      00620 020040
      00621 020111
      00622 047120
      00623 052524
      00624 020040
      00625 020040
      00626 020040
      00627 020040
0090  00630 000036  CHA10 OCT 36         CHAR. COUNT
0091  00631 000632  IAI11 DEF MES11      BUFFER ADDR.
0092  00632 050122  MES11 ASC 16,PRIORITY AND DATA CHECK COMPLETE
      00633 044517
      00634 051111
      00635 052131
      00636 020101
      00637 047104
      00640 020104
      00641 040524
      00642 040440
      00643 041510
      00644 042503
      00645 045440
      00646 041517
      00647 046520
      00650 046105
      00651 052105
0093  00652 000040  CHA11 OCT 40         CHAR. COUNT
0094  00653 000555  CHARY DEF CARRY      BUFFER ADDR.
0095  00654 000655  CHARW DEF CARRY      BUFFER ADDR.-WORKING
0096  00655 000000  CARRY BSS 3
0097  00660 030000  MASK4 OCT 30000      ASCII 0
0098  00661 030400  MASK5 OCT 30400      ASCII 1
0099  00662 000060  MASK3 OCT 60         ASCII CONSTANT
0100  00663 000664  IAI12 DEF MES12      BUFFER ADDR.
0101  00664 047117  MES12 ASC 21,NO INTERRUPT ON SLOT#    DURING DATA CH
      00665 020111
      00666 047124
      00667 042522
      00670 051125
      00671 050124
      00672 020117
      00673 047040
      00674 051514
      00675 047524
      00676 021440
      00677 020040
      00700 020104
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      00701 052522
      00702 044516
      00703 043440
      00704 042101
      00705 052101
      00706 020103
      00707 044105
      00710 041513
0102  00711 000052  CHA12 OCT 52          CHAR. COUNT
0103  00712 177700  S804  OCT 177700      -64 WORKING
0104  00713 177700  S805  OCT 177700      -64
0105  00714 000000  TEMP2 OCT 0           TEMP.
0106***** INPUT SUBROUTINE- TTY OR PR *****
0107  00715 000000  S900  NOP             RETURN-ENTERED WITH S804 SETUP
0108  00716 060110        LDA S801        BUFFER ADDR. TO A
0109  00717 070107        STA S800        RESTORE BUFFER ADDR.
0110  00720 064111        LDB S802        B=FULL BUFFER COUNTER
0111  00721 060112        LDA S803        A=2 ASCII BLANKS
0112  00722 170107  S700  STA S800,I      FILL LOCN. WITH BLANKS
0113  00723 034107        ISZ S800        INCR. BUFFER ADDRESS
0114  00724 034001        ISZ 1           INCR. BUFFER COUNT
0115  00725 024722        JMP S700        LOOP
0116  00726 006400        CLB             CLEAR B
0117  00727 074113        STB SEXT        CLEAR EXIT FLAG
0118  00730 102501        LIA 1           SW. REG. TO A
0119  00731 000066        CLE,ELA         DEC. BIT TO E
0120  00732 064110        LDB S801        BUFFER ADDR. TO B
0121  00733 060114        LDA S804        INPUT CHAR. LENGTH TO A
0122  00734 002041        SEZ,RSS         E=1,PR INPUT
0123  00735 024740        JMP *+3         E=0,TTY INPUT
0124  00736 114101        JSB 101B,I      PR INPUT
0125  00737 024741        JMP *+2         COMPLETE
0126  00740 114104        JSB 104B,I      TTY INPUT
0127  00741 070115        STA S807        SAVE INPUT CHAR. COUNT
0128  00742 001300        RAR             LSB TO MSB
0129  00743 002020        SSA             SKIP IF CHAR. COUNT EVEN
0130  00744 002004        INA             IF,NOT-ADD ONE
0131  00745 010116        AND S808        RETAIN A0-A14
0132  00746 040110        ADA S801        ADD 1ST WORD BUFFER ADDRESS
0133  00747 070117        STA S809        LAST WORD BUFFER ADDRESS
0134  00750 060110        LDA S801
0135  00751 070107        STA S800        RESTORE BUFFER ADDRESS
0136  00752 060121        LDA S811        UPPER/LOWER CHAR. MASK TO A
0137  00753 070120        STA S810        WORKING U/L CHAR. MASK
0138  00754 060115        LDA S807        ACTUAL INPUT CHAR. COUNT TO A
0139  00755 124715        JMP S900,I      EXIT-ACTUAL INPUT CHAR. COUNT=A
0140***** GET A CHARACTER SUBROUTINE *****
0141  00756 000000  S901  NOP             RETURN
0142  00757 064120        LDB S810        WORKING U/L CHAR. MASK TO B
0143  00760 160107        LDA S800,I      PICKUP BUFFER WORD
0144  00761 006020        SSB             SKIP IF LOWER HALF CHAR.
0145  00762 001727        ALF,ALF         ROTATE A LEFT 8
0146  00763 010122        AND S812        RETAIN A0-A7
0147  00764 006021        SSB,RSS         SKIP IF UPPER CHAR.
0148  00765 034107        ISZ S800        INCR. BUFFER ADDR.
0149  00766 005200        RBL             ROTATE UPPER-LOWER MASK
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0150  00767 074120          STB S810       RESTORE U/L CHAR. MASK
0151  00770 070123          STA S813       SAVE CHAR. IN TEMP. LOCN.
0152  00771 060107          LDA S800       CURRENT BUFFER ADDR.
0153  00772 050117          CPA S809       COMPARE WITH LAST BUFFER ADDR.
0154  00773 024776          JMP S701A      YES,SET EXIT FLAG
0155  00774 060123  S702A LDA S813        RESTORE CHAR. IN A
0156  00775 124756          JMP S901,I     EXIT-CHAR. IN A8-A7
0157  00776 034113  S701A ISZ SEXT       SET EXIT FLAG
0158  00777 024774          JMP S702A      RETURN
0159***** ASCII-OCTAL VERIFICATION ROUTINE *****
0160  01000 000000  S902  NOP            ENTERED WITH CHAR. IN A8-A7
0161  01001 064124          LDB S819       ASCII 8 TO A
0162  01002 050001          CPA 1          COMPARE A TO B
0163  01003 025022          JMP S902A      CHAR. LEGAL-EXIT
0164  01004 006004          INB
0165  01005 054125          CPB S830       B=0000707
0166  01006 002001          RSS            FINISHED-CHAR. ILLEGAL
0167  01007 025002          JMP S902+2     NOT FINISHED
0168  01010 070001          STA 1          A TO B
0169  01011 060126          LDA S831       A8-A15 MASK
0170  01012 010130          AND MES22      RETAIN A8-A15
0171  01013 030001          IOR 1          B0-B7 TO A
0172  01014 070130          STA MES22      RESTORE MESSAGE
0173  01015 060154          LDA CHA22      NO. OF CHAR.=39
0174  01016 064127          LDB IAD22      ST. ADDR. OF PRINT BUFFER
0175  01017 114102          JSB 102B,I     OUTPUT ERROR MESSAGE
0176  01020 102001          HLT 01         TURN SW.15 OFF IF ON
0177  01021 125000          JMP S902,I     ERROR RETURN
0178  01022 035000  S902A ISZ S902       INCR. EXIT ADDRESS
0179  01023 025021          JMP S902A-1    EXIT
0180***** OCTAL TO ASCII CONVERSION - 6 DIGITS *****
0181  01024 000000  CONV1 NOP            OCTAL TO ASCII CONV. SUBR.
0182*ENTERED WITH B=6 DIGIT OCTAL NUMBER
0183  01025 060653          LDA CHARY
0184  01026 070654          STA CHARW      RESET ARRAY ADDRESS
0185  01027 060660          LDA MASK4      ASCII 8 TO A
0186  01030 000020          SSB            MSB=0?
0187  01031 060661          LDA MASK5      ASCII 1 TO A
0188  01032 170654          STA CHARW,I    1ST DIGIT COMPLETE
0189  01033 005700          BLF            ROTATE 4 LEFT
0190  01034 060442          LDA MASK2      77 TO A
0191  01035 010001          AND 1          B0-B2 TO A
0192  01036 030662          IOR MASK3      6X IN A8-A7
0193  01037 130654          IOR CHARW,I    COMPLETE 2ND DIGIT
0194  01040 170654          STA CHARW,I    RESTORE 1ST WORD
0195  01041 034654          ISZ CHARW      INCR. ARRAY ADDR.
0196  01042 005723          BLF,RBR        ROTATE 3 LEFT
0197  01043 060442          LDA MASK2      77 TO A
0198  01044 010001          AND 1          B0-B2 TO A
0199  01045 030662          IOR MASK3      6X IN A8-A7
0200  01046 001727          ALF,ALF        ROTATE A LEFT 8
0201  01047 170654          STA CHARW,I    3RD DIGIT COMPLETE
0202  01050 005723          BLF,RBR        ROTATE 3 LEFT
0203  01051 060442          LDA MASK2      77 TO A
0204  01052 010001          AND 1          B0-B2 TO A
0205  01053 030662          IOR MASK3      6X IN A8-A7
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0206  01054 130654          IOR CHARW,I    COMPLETE 4TH DIGIT
0207  01055 170654          STA CHARW,I    RESTORE 2ND WORD
0208  01056 034654          ISZ CHARW      INCR. ARRAY ADDR.
0209  01057 005723          BLF,RBR        ROTATE 3 LEFT
0210  01060 060442          LDA MASK2      77 TO A
0211  01061 010001          AND 1          B0-B2 TO A
0212  01062 030662          IOR MASK3      6X IN A0-A7
0213  01063 001727          ALF,ALF        ROTATE A LEFT 8
0214  01064 170654          STA CHARW,I    5TH DIGIT COMPLETE
0215  01065 005723          BLF,RBR        ROTATE 3 LEFT
0216  01066 060442          LDA MASK2      77 TO A
0217  01067 010001          AND 1          B0-B2 TO A
0218  01070 030662          IOR MASK3      6X IN A0-A7
0219  01071 130654          IOR CHARW,I    6TH DIGIT COMPLETE
0220  01072 170654          STA CHARW,I    RESTORE 3RD WORD
0221  01073 125024          JMP CONV1,I    RETURN
0222  02000                 ORG 2000B
0223  02000 103100  START   CLF 0          INHIBIT INTERRUPT
0224  02001 060713          LDA S865       -64 TO A
0225  02002 070712          STA S864       -64 TO WORKING
0226  02003 060222          LDA ARRY1      ST. ADDR.-BUFFER
0227  02004 006400          CLB
0228  02005 174000          STB 0,I        CLEAR BUFFER AREA
0229  02006 002004          INA            INCR. BUFFER ADDR.
0230  02007 034712          ISZ S864       64 LOCNS. FINISHED?
0231  02010 026004          JMP START+4    DO ANOTHER LOCN.
0232  02011 060325          LDA S863       -65 TO A
0233  02012 070324          STA S862       -65 TO WORKING
0234  02013 060222          LDA ARRY1
0235  02014 070223          STA ARRYW      RESET SLOT BUFFER ADDR.
0236  02015 102501          LIA 01         SW. REG. TO A
0237  02016 002020          SSA            BIT 15=0?
0238  02017 026023          JMP S701       NO-PR INPUT
0239  02020 060343          LDA CHA1       CHAR. COUNT=24
0240  02021 064326          LDB IAD1       ST. ADDR. OF PRINT BUFFER
0241  02022 114102          JSB 102B,I     OUTPUT MESSAGE
0242  02023 060221  S701    LDA S805       CHAR. COUNT=72
0243  02024 070114          STA S804       SETUP INPUT CHAR. LENGTH
0244  02025 014715          JSB S900       CALL INPUT SUBROUTINE
0245  02026 040344          ADA S816       ADD -73 TO CHAR. COUNT
0246  02027 002020          SSA            POS.=ERROR
0247  02030 026036          JMP S702       NO ERROR
0248  02031 060370          LDA CHA2       CHAR. COUNT=36
0249  02032 064345          LDB IAD2       ST. ADDR. OF PRINT BUFFER
0250  02033 114102          JSB 102B,I     OUTPUT MESSAGE
0251  02034 102001          HLT 01         TURN SW.15 OFF IF ON
0252  02035 026000          JMP START      GET NEW SLOT PAREM. FROM TTY
0253  02036 014756  S702    JSB S901       GET A CHAR.
0254  02037 050371          CPA S832       IS CHAR. A BLANK?
0255  02040 026054          JMP S703       YES-CHECK EXIT FLAG
0256  02041 050372          CPA S833       IS CHAR. A COMMA?
0257  02042 026054          JMP S703       YES-CHECK EXIT FLAG
0258  02043 050373          CPA S834       IS CHAR. A SLASH?
0259  02044 026023          JMP S701       PROCESS CONTINUATION
0260  02045 050374          CPA S836       IS CHAR. A S?
0261  02046 026070          JMP S704       YES-PROCESS PARAMETER
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0262  02047 060420         LDA CHA3       CHAR. COUNT=36
0263  02050 064375         LDB IAD3       ST. ADDR. OF PRINT BUFFER
0264  02051 114102         JSB 102B,I     OUTPUT MESSAGE
0265  02052 102001         HLT 01         TURN SW.15 OFF IF ON
0266  02053 026000         JMP START      GET NEW SLOT PAREM. FROM TTY
0267  02054 064113  S703   LDB SEXT       EXIT FLAG TO B
0268  02055 006011         SLB,RSS        EXIT FLAG=1?
0269  02056 026036         JMP S702       NO
0270  02057 060223         LDA ARRYW      YES
0271  02060 050222         CPA ARRY1      ANY SLOT ENTRIES?
0272  02061 026063         JMP *+2        NO-ERROR
0273  02062 026133         JMP S707+3     YES-SET LAST BUFFER ADDR.-EXEC.
0274  02063 060436         LDA CHA4       CHAR. COUNT=23
0275  02064 064421         LDB IAD4       ST. ADDR. OF PRINT BUFFER
0276  02065 114102         JSB 102B,I     OUTPUT MESSAGE
0277  02066 102001         HLT 01         TURN SW.15 OFF IF ON
0278  02067 026000         JMP START      GET SLOT PAREM. FROM TTY
0279  02070 060437  S704   LDA S842       -2 TO A
0280  02071 070440         STA S843       RESET CHAR. COUNTER
0281  02072 002400         CLA
0282  02073 070441         STA S840       CLEAR CHAR. HOLD
0283  02074 014756         JSB S901       GET A CHAR.
0284  02075 050371         CPA S832       IS CHAR. A BLANK?
0285  02076 026112         JMP S705       CHECK EXIT FLAG
0286  02077 015000         JSB S902       CHECK LEGALITY-0-7
0287  02100 026000         JMP START      GET NEW SLOT PARAMETERS FROM TTY
0288  02101 064442         LDB MASK2      7 TO B
0289  02102 010001         AND 1          RETAIN A0-A2
0290  02103 064441         LDB S840       PARTIAL TO B
0291  02104 005723         BLF,RBR        ROTATE LEFT 3
0292  02105 030001         IOR 1          IOR B TO A
0293  02106 070441         STA S840       RESTORE RESULTS
0294  02107 034440         ISZ S843       SLOT ADDR. FINISHED?
0295  02110 026074         JMP S704+4     NO-GET ANOTHER CHARACTER
0296  02111 026122         JMP S706       CONTINUE
0297  02112 064113  S705   LDB SEXT       EXIT FLAG TO B
0298  02113 006011         SLB,RSS        EXIT FLAG=1?
0299  02114 026074         JMP S704+4     NO-GET ANOTHER CHARACTER
0300  02115 060461         LDA CHA5       CHAR. COUNT=25
0301  02116 064443         LDB IAD5       ST. ADDR. OF PRINT BUFFER
0302  02117 114102         JSB 102B,I     OUTPUT MESSAGE
0303  02120 102001         HLT 01         TURN SW. 15 OFF IF ON
0304  02121 026000         JMP START      GET NEW SLOT PAREM. FROM TTY
0305  02122 060441  S706   LDA S840       SLOT ADDR. TO A
0306  02123 170223         STA ARRYW,I    STORE SLOT ADDR. IN ARRAY
0307  02124 034223         ISZ ARRYW      INCR. ARRAY ADDR.
0308  02125 034324         ISZ S862       64 SLOT ADDR. ENTERED?
0309  02126 026130         JMP S707       NO
0310  02127 026136         JMP S708       YES-ERROR
0311  02130 064113  S707   LDB SEXT       EXIT FLAG TO B
0312  02131 006011         SLB,RSS        EXIT FLAG=1?
0313  02132 026036         JMP S702       NO-GET ANOTHER SLOT PARAMETER
0314  02133 060223         LDA ARRYW      CURR. ARRAY ADDR. TO A
0315  02134 070462         STA LSLOT      SET LAST SLOT ADDR.+1
0316  02135 026143         JMP S709       CONTINUE
0317  02136 060477  S708   LDA CHA6       CHAR. COUNT=22
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0318  02137 064463        LDB  IAD6      ST. ADDR. OF PRINT BUFFER
0319  02140 114102        JSB  102B,I    OUTPUT MESSAGE
0320  02141 102001        HLT  01        TURN SW.15 OFF IF ON
0321  02142 026000        JMP  START     GET NEW SLOT PAREMS. FROM TTY
0322  02143 107700  S709  CLC  0,C       CLEAR ALL CONTROLS AND INTERRUPT
0323  02144 064500        LDB  ADR02     2 TO B
0324  02145 060501        LDA  HLT0      102000 TO A
0325  02146 040001        ADA  1         ADD B TO A
0326  02147 170001        STA  1,I       SELF-ADDRESSED HALT
0327  02150 006004        INB            INCR. ADDR.
0328  02151 054502        CPB  AD100     ADDR.=100?
0329  02152 026154        JMP  *+2       FINISHED
0330  02153 026145        JMP  S709+2    NOT FINISHED
0331  02154 060222        LDA  ARRY1
0332  02155 070223        STA  ARRYW     RESET SLOT ARRAY ADDRESS
0333  02156 002400        CLA
0334  02157 070503        STA  FRST      RESET HIGH PRIORITY FLAG
0335  02160 164223  S710  LDB  ARRYW,I   PICKUP SLOT ADDRESS
0336  02161 060503        LDA  FRST      HIGHEST PRIORITY FLAG
0337  02162 002002        SZA            IS SLOT HIGHEST PRIORITY
0338  02163 026167        JMP  *+4       NO
0339  02164 034503        ISZ  FRST      H.P. FLAG>0
0340  02165 060504        LDA  JSB1      A=JSB INTI,I
0341  02166 170001        STA  1,I       HIGH PRIORITY=JSB INTI,I
0342  02167 034223        ISZ  ARRYW     INCR. ARRAY ADDRESS
0343  02170 060506        LDA  STC0      A=STC 0
0344  02171 040001        ADA  1         STC+I/O ADDR.
0345  02172 072173        STA  *+1       EXECUTE STC XX
0346  02173 000000        NOP            EXECUTE SET CONTROL ON SLOT
0347  02174 060507        LDA  STF0      A=STF 0
0348  02175 040001        ADA  1         STF+I/O ADDR.
0349  02176 072177        STA  *+1       EXECUTE STF XX
0350  02177 000000        NOP            EXECUTE SET FLAG ON SLOT
0351  02200 060223        LDA  ARRYW     CURRENT ARRAY ADDR. TO A
0352  02201 050462        CPA  LSLOT     LAST ADDR.?
0353  02202 026204        JMP  *+2       YES
0354  02203 026160        JMP  S710      NO-DO NEXT SLOT
0355  02204 060222        LDA  ARRY1
0356  02205 070223        STA  ARRYW     RESET SLOT ARRAY ADDRESS
0357  02206 102100  READY STF  0         TURN-ON INTERRUPT SYSTEM
0358  02207 003400        CCA            177777 TO A
0359  02210 034000        ISZ  0         ONE CYCLE
0360  02211 026210        JMP  *-1       LOOP
0361  02212 103100        CLF  0         TURN-OFF INTERRUPT
0362  02213 164223        LDB  ARRYW,I   PICKUP SLOT ADDRESS
0363  02214 015024        JSB  CONV1     CONV. OCTAL TO ASCII
0364  02215 060657        LDA  CARRY+2   PICKUP SLOT ADDR. IN ASCII
0365  02216 070524        STA  MES7+11   SETUP MESSAGE
0366  02217 060540        LDA  CHA7      CHAR. COUNT=46
0367  02220 064510        LDB  IAD7      ST. ADDR. OF PRINT BUFFER
0368  02221 114102        JSB  102B,I    OUTPUT MESSAGE
0369  02222 102001        HLT  01        ERROR CONDITION
0370  02223 102501        LIA  01        SW. REG. TO A
0371  02224 001300        RAR            BIT 1 TO BIT 0
0372  02225 000010        SLA            SW.1=0?
0373  02226 026143        JMP  S709      TRY AGAIN-SAME SLOT ASSIGNMENTS
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0374  02227 026000          JMP START      START OVER
0375  02230 000000  INTS    NOP            INTERRUPT SERVICE ROUTINE
0376  02231 103100          CLF 0          TURN-OFF INTERRUPT SYSTEM
0377  02232 160223          LDA ARRYW,I    HIGHEST PRIORITY TO A
0378  02233 070001          STA 1          SAVE ADDR. IN B
0379  02234 040501          ADA HLT0
0380  02235 170001          STA 1,I        PUT HALT IN CURRENT INT. LOCN.
0381  02236 060541          LDA CLC0       CLC 0 TO A
0382  02237 040001          ADA 1          ADD B TO A
0383  02240 072241          STA *+1        EXECUTE CLC XX
0384  02241 000000          NOP            EXECUTE CLEAR CONTROL ON SLOT
0385  02242 034223          ISZ ARRYW      INCR. SLOT ARRAY ADDRESS
0386  02243 060223          LDA ARRYW      CURRENT ARRAY ADDR. TO A
0387  02244 050462          CPA LSLOT      ALL SLOTS FINISHED?
0388  02245 026252          JMP S711       YES
0389  02246 164223          LDB ARRYW,I    PUT NEXT H.P. ADDR. VALUE IN B
0390  02247 060504          LDA JSB1       JSB INT1,I TO A
0391  02250 170001          STA 1,I        JSB TO NEXT HIGHEST PRIORITY
0392  02251 026206          JMP READY      PROCESS NEXT INTERRUPT
0393  02252 102501  S711    LIA 01         SW. REG. TO A
0394  02253 000010          SLA            BIT 0=0?
0395  02254 026271          JMP CHK2       NO-LOOP ON BOTH CHECKS
0396  02255 001300          RAR            BIT 1 TO BIT 0
0397  02256 070714          STA TEMP2      SAVE SW. REG.
0398  02257 000010          SLA            BIT 0=0?
0399  02260 026143          JMP S709       NO-LOOP ON PRIORITY CHECK
0400  02261 103100          CLF 0          INHIBIT INTERRUPT
0401  02262 060555          LDA CHA8       CHAR. COUNT=19
0402  02263 064542          LDB IAD8       ST. ADDR. OF PRINT BUFFER
0403  02264 114102          JSB 1028,I     OUTPUT MESSAGE
0404  02265 060714  S712    LDA TEMP2      PICKUP SW. REG.
0405  02266 001222          RAL,RAL        BIT 14 TO BIT 15
0406  02267 002020          SSA
0407  02270 026000          JMP START      GET NEW SLOT PARAMETERS
0408  02271 064500  CHK2    LDB ADR02      2 TO B
0409  02272 060501          LDA HLT0       102000 TO A
0410  02273 040001          ADA 1          ADD B TO A
0411  02274 170001          STA 1,I        SELF-ADDRESSED HALT
0412  02275 006004          INB            INCR. ADDR.
0413  02276 054502          CPB AD100      ADDR.=100?
0414  02277 026301          JMP *+2        FINISHED
0415  02300 026272          JMP CHK2+1     NOT FINISHED
0416  02301 060222          LDA ARRY1
0417  02302 070223          STA ARRYW      RESET SLOT ARRAY BASE ADDRESS
0418  02303 060557          LDA RDATA
0419  02304 070556          STA DATA       RESET DATA ARRAY BASE ADDRESS
0420  02305 102100  LOCP1   STF 0          TURN-ON INTERRUPT SYSTEM
0421  02306 164223          LDB ARRYW,I    CURRENT SLOT ADDR. TO B
0422  02307 060565          LDA MSK1       177700 TO A
0423  02310 012334          AND RETNO      RETAIN A6-A15
0424  02311 030001          IOR 1          IOR SLOT ADDRESS
0425  02312 072334          STA RETNO      RESTORE RETNO
0426  02313 072347          STA RETN1+4    RESTORE RETN1+4
0427  02314 060565          LDA MSK1       177700 TO A
0428  02315 012335          AND RETNO+1    RETAIN A6-A15
0429  02316 030001          IOR 1          IOR SLOT ADDRESS
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0430  02317 072335          STA  RETNO+1    RESTORE RETNO+1
0431  02320 060565          LDA  MSK1       177700 TO A
0432  02321 012336          AND  RETNO+2    RETAIN A6-A15
0433  02322 030001          IOR  1          IOR SLOT ADDRESS
0434  02323 072336          STA  RETNO+2    RESTORE RETNO+2
0435  02324 072345          STA  RETNI+2    RESTORE RETNI+2
0436  02325 060565          LDA  MSK1       177700 TO A
0437  02326 012346          AND  RETNI+3    RETAIN A6-A15
0438  02327 030001          IOR  1          IOR SLOT ADDRESS
0439  02330 072346          STA  RETNI+3    RESTORE RETNI+3
0440  02331 060566          LDA  JMP1       JMP RETN,I TO A
0441  02332 170001          STA  1,I        STORE INTO CURRENT INT. LOCN.
0442  02333 160556          LDA  DATA,I     DATA PATTERN TO A
0443  02334 102100  RETNO    STF  0          SET FLAG ON SLOT
0444  02335 102600          CTA  0          OUTPUT FROM A
0445  02336 102700          STC  0          GENERATE INTERRUPT
0446  02337 003400          CCA             177777 TO A
0447  02340 034000          ISZ  0          ONE CYCLE
0448  02341 026340          JMP  *-1        LOOP
0449  02342 026454          JMP  PRNT1      ERROR PRINTOUT
0450  02343 060570  RETNI    LDA  JMP2       JMP COMPI,I TO A
0451  02344 170001          STA  1,I        STORE INTO CURRENT INT. LOCN.
0452  02345 102705          STC  0          SET CONTROL ON SLOT
0453  02346 106500          LIB  0          INPUT TO B FROM SLOT
0454  02347 102100          STF  0          GENERATE INTERRUPT
0455  02350 003400          CCA             177777 TO A
0456  02351 034000          ISZ  0          ONE CYCLE
0457  02352 026351          JMP  *-1        LOOP
0458  02353 026454          JMP  PRNT1      ERROR
0459  02354 154556  COMP1    CPB  DATA,I     COMPARE INPUT DATA TO THE ARRAY
0460  02355 026413          JMP  S713       GOOD
0461  02356 103100          CLF  0          INHIBIT INTERRUPT
0462  02357 074607          STB  TEMP1      STORE BAD PATTERN
0463  02360 164223          LDB  ARRYW,I    PICKUP SLOT ADDRESS
0464  02361 015024          JSB  CONV1      CONVERT OCTAL TO ASCII
0465  02362 060657          LDA  CARRY+2    PICKUP SLOT ADDRESS IN ASCII
0466  02363 070605          STA  MES9+10    SETUP MESSAGE
0467  02364 060606          LDA  CHA9       CHAR. COUNT=22
0468  02365 064572          LDB  IAD9       ST. ADDR. OF PRINT BUFFER
0469  02366 114102          JSB  1028,I     OUTPUT MESSAGE
0470  02367 164556          LDB  DATA,I     PICKUP OUTPUT DATA
0471  02370 015024          JSB  CONV1      CONVERT OCTAL TO ASCII
0472  02371 060655          LDA  CARRY
0473  02372 070615          STA  MES10+4
0474  02373 060656          LDA  CARRY+1
0475  02374 070616          STA  MES10+5
0476  02375 060657          LDA  CARRY+2
0477  02376 070617          STA  MES10+6    SETUP PRINT MESSAGE
0478  02377 064607          LDB  TEMP1      PICKUP BAD PATTERN
0479  02400 015024          JSB  CONV1      CONVERT OCTAL TO ASCII
0480  02401 060655          LDA  CARRY
0481  02402 070625          STA  MES10+12
0482  02403 060656          LDA  CARRY+1
0483  02404 070626          STA  MES10+13
0484  02405 060657          LDA  CARRY+2
0485  02406 070627          STA  MES10+14   SETUP PRINT MESSAGE
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0486  02407 060630          LDA CHA10      CHAR. COUNT=30
0487  02410 064610          LDB IAD10      ST. ADDR. OF PRINT BUFFER
0488  02411 114102          JSB 102B,I     OUTPUT MESSAGE
0489  02412 102100          STF 0          TURN-ON INTERRUPT
0490  02413 060501  S713    LDA HLT0       102000 TO A
0491  02414 164223          LDB ARRYW,I    SLOT ADDR. TO B
0492  02415 040001          ADA 1          ADD SLOT ADDR.
0493  02416 170001          STA 1,I        RESTORE
0494  02417 060541          LDA CLC0       CLC 0 TO A
0495  02420 040001          ADA 1          ADD B TO A
0496  02421 072422          STA **+1
0497  02422 000000          NOP            EXECUTE CLC XX
0498  02423 034223          ISZ ARRYW      INCR. SLOT ARRAY ADDRESS
0499  02424 060223          LDA ARRYW      CURRENT ARRAY ADDR. TO A
0500  02425 050462          CPA LSLOT      ALL SLOTS FINISHED?
0501  02426 026430          JMP **+2       YES
0502  02427 026305          JMP LOOP1      DO NEXT SLOT WITH SAME DATA
0503  02430 034556          ISZ DATA       INCR. DATA ARRAY ADDRESS
0504  02431 060556          LDA DATA       CURR. DATA ARRAY ADDR. TO A
0505  02432 050564          CPA LDATA      LAST ADDR.+1?
0506  02433 026437          JMP S714       YES-ALL DATA FINISHED
0507  02434 060222          LDA ARRY1      NO
0508  02435 070223          STA ARRYW      RESET SLOT ARRAY ADDR.
0509  02436 026305          JMP LOOP1      DO NEXT DATA PATTERN ON ALL SLOT
0510  02437 103100  S714    CLF 0          INHIBIT INTERRUPT
0511  02440 102501          LIA 01         SW. REG. TO A
0512  02441 001323          RAR,RAR        BIT 2 TO BIT 0
0513  02442 000010          SLA            BIT 2=0?
0514  02443 026271          JMP CHK2       NO-LOOP ON DATA CHECK
0515  02444 001200          RAL            BIT 14 TO BIT 15
0516  02445 002020          SSA            BIT 0=0?
0517  02446 026143          JMP S709       NO-LOOP ON PRIORITY AND DATA
0518  02447 060652          LDA CHA11      CHAR. COUNT=32
0519  02450 064631          LDB IAD11      ST. ADDR. OF PRINT BUFFER
0520  02451 114102          JSB 102B,I     OUTPUT MESSAGE
0521  02452 102001          HLT 01         RE-START
0522  02453 026000          JMP START      MOVE O.P. CARDS TO THE NEXT
0523*GROUP OF I/O SLOTS
0524  02454 103100  PRNT1   CLF 0          INHIBIT INTERRUPT
0525  02455 164223          LDB ARRYW,I    PICKUP SLOT ADDR.
0526  02456 015024          JSB CONV1      CONVERT OCTAL TO ASCII
0527  02457 060657          LDA CARRY+2    PICKUP SLOT ADDR. IN ASCII
0528  02460 070677          STA MES12+11   SETUP MESSAGE
0529  02461 060711          LDA CHA12      CHAR. COUNT=42
0530  02462 064663          LDB IAD12      ST. ADDR. OF PRINT BUFFER
0531  02463 114102          JSB 102B,I     OUTPUT MESSAGE
0532  02464 102100          STF 0          TURN-ON INTERRUPT
0533  02465 026413          JMP S713       CONTINUE PROCESSING
0534                        END
** NO ERRORS*
```