1. IDENTIFICATION

1.1 Digital-8-6-U-Sym

1.2 Octal Memory Dump

1.3 March 17, 1965

2. ABSTRACT

This routine will read the console switches twice to obtain the upper and lower limits of an area of memory, then type on the Teletype an absolute address plus the octal contents of the first four words specified and repeat this until the block is exhausted, at which time the user may repeat the operation.

3. REQUIREMENTS

3.1 Storage

This routine requires 77 core locations.

3.3 Equipment

Basic PDP-8 with ASR 33.

4. USAGE

4.1 Loading

This routine is loaded with the Binary Loader. (See Digital-8-2-U-Rim for a complete discussion of the Binary Loader and its use.)

4.2 Calling Sequence

None. It cannot be called as a subroutine.

4.3 Switch Settings

The switch register is used to enter the starting address. It is also used to enter two delimiting addresses which define the area of memory to be typed.

4.4 Start Up/Entry

Assuming the program is in memory, proceed as follows:

4.4.1 Set the starting address in the switch register and press the LOAD ADDRESS key.

4.4.2 Set the low address into the switch register and press the START key.

4.4.3 The computer will halt. Set the high address into the switch register and press the CONTINUE key.

4.4.4 Typeout will occur and the computer will halt when the designated block has been listed.

4.4.5 To type another block, set the low address into the switch register and press the CONTINUE key.

4.4.6 Repeat step 4.4.3 above.

6. DESCRIPTION

6.1 Discussion

Reference to the Flow Charts (Section 11.1) will illustrate the following discussion.

Three inner subroutines are used. These are tagged TYPN, CRLF, and PNUM. Respectively, these subroutines cause a digit to be typed, cause a carriage return followed by a line feed to be typed, and control the typeout of a 4-digit octal number, i.e., either a memory address or data stored in a single word in memory. PNUM is illustrated with a flow chart. The other two subroutines are composed of a few instructions only.

Main routine flow is as follows. After initialization, a carriage return line feed is typed. Next, the starting address followed by several spaces is typed. A loop is next entered to type the contents of four memory locations (if four remain to be typed). If during the latter loop the routine finds it has processed the last memory location, the loop exits, a carriage return line feed is typed, and a JMP to ODUM executed.

If after typing the contents of four successive addresses there remains more data to be typed, a JMP to DUM2 repeats the process.

6.2 Example

The Octal Dump routine was used to dump itself as follows:

Address		Four Data Words		
7400	7200	7404	3256	7402
7404	7404	7040	1256	3257
7410	5213	2260	5226	1265
7414	3260	4247	1256	4661
7420	1265	3247	1264	4241
7424	2247	5222	7200	1656
7430	4661	1264	4241	2256
7434	2257	5211	4247	7402
7440	5200	7433	6046	6041
7444	5243	7200	5641	0000
7450	7200	1263	4241	1262
7454	4241	5647	7456	7741
7460	7774	7466	0212	0215
7464	0240	7774	7431	3311
7470	1265	3310	1311	7004
7474	7004	7006	3311	1311
7500	0313	1314	4712	1311
7504	2310	5274	7200	5666
7510	0000	0000	7441	0007
7514	0260			

8. FORMAT

8.1 External Data

See the example in Section 6.2.

9. EXECUTION TIME

This routine is entirely output limited.

10. PROGRAM

10.4 Program Listing

```
                *7400
7400    7200    ODUM,   CLA
7401    7404            OSR             /GET LOWER LIMIT
7402    3256            DCA LOCK
7403    7402            HLT
7404    7404            OSR             /GET UPPER LIMIT
7405    7040            CMA
7406    1256            TAD LOCK
7407    3257            DCA LIM         /INITIALIZE RANGE COUNTER
7410    5213            JMP .+3
7411    2260    DUM2,   ISZ LPCN        /END OF LINE
7412    5226            JMP DUM3
7413    1265            TAD CONS+3      /-4
7414    3260            DCA LPCN        /RESET ITEM COUNTER
7415    4247            JMS CRLF        /CARR. RET. AND LINE FEED
7416    1256            TAD LOCK
7417    4661            JMS I PRIN      /INTER-COM. TO PNUM
7420    1265            TAD CONS+3      /-4
7421    3247            DCA CRLF
7422    1264            TAD CONS+2      /240 (SPACE)
7423    4241            JMS TYPN
7424    2247            ISZ CRLF
7425    5222            JMP .-3
7426    7200    DUM3,   CLA
7427    1656            TAD I LOCK
7430    4661            JMS I PRIN      /INTER-COM. TO PNUM
7431    1264            TAD CONS+2      /240 (SPACE)
7432    4241            JMS TYPN
7433    2256            ISZ LOCK        /INDEX LOCATION POINTER
```

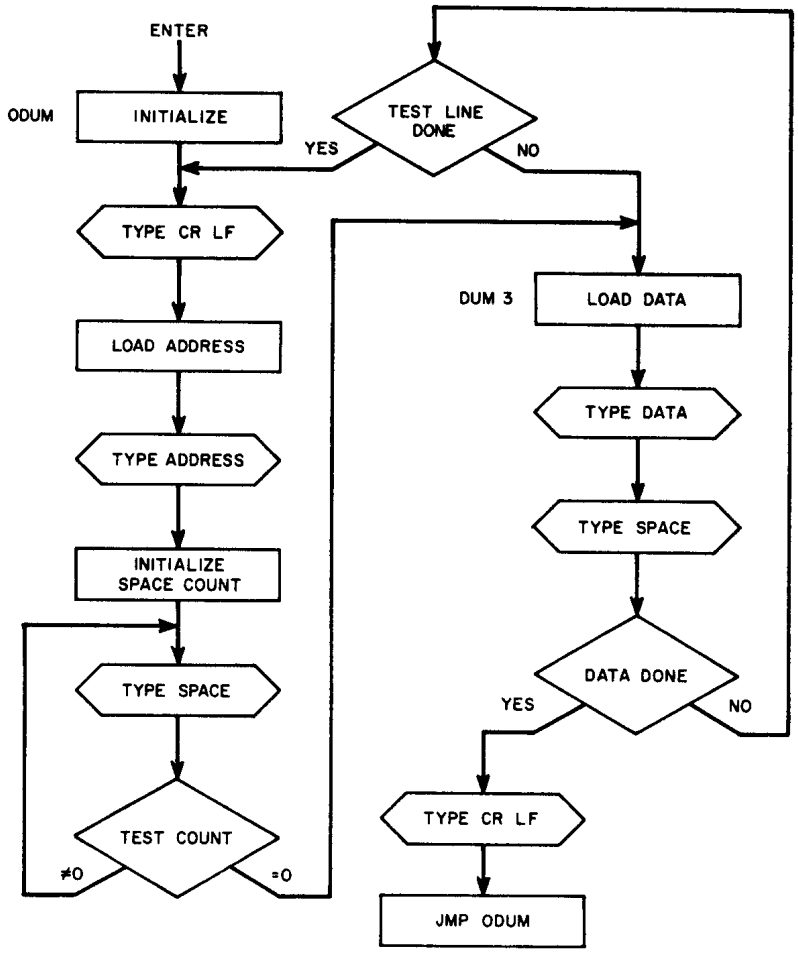
```
7434  2257          ISZ LIM        /END OF RANGE
7435  5211          JMP DUM2
7436  4247          JMS CRLF
7437  7402          HLT
7440  5200          JMP ODUM       /GO AGAIN
7441  0000  TYPN,    0              /TYPE CHARACTER SUBROUTINE
7442  6046          TLS
7443  6041          TSF
7444  5243          JMP .-1
7445  7200          CLA
7446  5641          JMP I TYPN
7447  0000  CRLF,    0              /CR AND LF SUBROUTINE
7450  7200          CLA
7451  1263          TAD CONS+1     /215 (CARR. RET.)
7452  4241          JMS TYPN
7453  1262          TAD CONS       /212 (LINE FEED)
7454  4241          JMS TYPN
7455  5647          JMP I CRLF
7456  0000  LOCK,    0
7457  0000  LIM,     0
7460  0000  LPCN,    0
7461  7466  PRIN,    PNUM           /INTER-COM. TO PNUM
7462  0212  CONS,    212            /CONSTANTS
7463  0215          215
7464  0240          240
7465  7774          7774
7466  0000  PNUM,    0              /PRINT NUMBER SUBROUTINE
7467  3311          DCA PTEM
7470  1265          TAD CONS+3     /-4
7471  3310          DCA DCN        /INITIALIZE DIGIT COUNTER
7472  1311          TAD PTEM
7473  7004          RAL
7474  7004  PNU2,    RAL
7475  7006          RTL
7476  3311          DCA PTEM
7477  1311          TAD PTEM
7500  0313          AND PCON       /7
7501  1314          TAD PCON+1     /260
7502  4712          JMS I TDIT     /TYPN (TYPE A DIGIT)
7503  1311          TAD PTEM
7504  2310          ISZ DCN
7505  5274          JMP PNU2
```

```
7506    7200            CLA
7507    5666            JMP I PNUM
7510    0000    DCN,    0               /DIGIT COUNTER
7511    0000    PTEM,   0
7512    7441    TDIT,   TYPN
7513    0007            7               /CONSTANTS
7514    0260            260
CONS    7462
CRLF    7447
DCN     7510
DUM2    7411
DUM3    7426
LIM     7457
LOCK    7456
LPCN    7460
ODUM    7400
PCON    7513
PNUM    7466
PNU2    7474
PRIN    7461
PTEM    7511
TDIT    7512
TYPN    7441
```

11. DIAGRAMS

11.1 Flow Charts

11.1.1 Main Flow



11.1.2 PNUM Subroutine