PERMANENT MEMORANDUM NO. 1108

SUBJECT: BBN-46; Punchoff; Binary [1]   DATE: June 19, 1961

TO: PDP Distribution List   FROM: Bolt, Beranek and
                                            Newman

AREA: HI 7541-7777
       MID 4000-4136; 7700-7777
       LO 1-137; 7700-7777

START: 7777

PURPOSE:

    This routine punches a tape which, when reloaded, will
reproduce the memory at time of punchoff.

USE:

    The routine is used to produce quickly and safely a complete
copy of the contents of memory without the necessity of prescribing
the exact areas to punchout. Since it will punch all non-zero
words, it will help if memory were cleared before the programs
being punched off were originally loaded.

1. When loading the output tape, SS #1 up prevents the
    loader from performing the jump at the end of the
    binary tape.

2. When loading the output tape, SS #2 up causes the
    clear memory routine to be skipped and the loader
    to compare with memory rather than load.

3. The version of punchoff (HI-MID-LO) which occupies
    memory area not used by the program being punched
    off should be selected. (All versions use 7700-
    7777.)

4. $TW_{12} - 17$ set to desired jump location. If none is
    desired, set $TW_{12} - 17$ to zero and be sure to have SS#1
    up when loading the output tape to prevent the jump.

5. SS1 and SS2 off.

6. Load the punchoff routine in reader, turn punch #0 on
    and depress READ-IN switch on console.

7. A copy of memory will be punched out.

8. This may be checked for accuracy of punchout by selecting SS#2 up, loading the output tape in reader and depressing READ-IN. If it is not desired to have the jump at the end of the tape occur, place SS#1 up also.

NOTES:

Execution time varies, according to number of non-zero registers in memory, from 15 seconds to 3 minutes 45 seconds.

The routine punches out in binary format all blocks of memory except those of five or more consecutive zeroes. The tape produced has an RIM loader (7700-7777) that clears memory before beginning load. SS1 and SS2 have functions similar to those of standard loader. The value in TW_{12-17} will be used as the jump location at the end of the binary tape punched out.

The tape produced includes a copy of the punchoff routine. When this tape is loaded back into memory, subsequent punchoffs may be initiated by starting at 7777 as long as the memory area used by the punchoff routine has been undisturbed.

Program Halts

PC Reads

7753 Check sum error while loading. A = computed sum; I = sum on tape.

7722 Comparison error while loading with SS2 up. A = memory word; I = word on tape. The offending memory word = AE (7716). The offending tape word is last three lines read.

7574 Normal halt after punchoff with "HI punchoff."

4033 Normal halt after punchoff with "MID punchoff."

0034 Normal halt after punchoff with "LO punchoff."