FILE MEMO

SUBJECT: Restrictions on Block Length
for Communication Tapes.

BY: W. Buchholz

1. When writing communication tapes from the Exchange, as defined, it is necessary to restrict block length to be an integral number of full words. When a byte converter is in use on 6-bit tapes, this means that each word is converted into 10 2/3 characters. If the last character of the last word is incomplete, it will be filled with zeros. If the byte converter can be switched out, a word can be considered to consist of 8 6-bit characters so that records must be a multiple of 8 characters long.

   On reading tapes, the Exchange can accept any record length so that there is no problem on reading.

2. The 704 and 709 appear to use the same principle, except that records written are a multiple of 6 characters long. On reading, they also accept records of any length.

3. This technique causes little difficulty in communicating with 705, 709 off-line auxiliary equipment, etc.

4. The 705-3 and 750, as proposed, will write and read records any number of characters long.

5. The only real communication problem which has come up occurs in connection with 650 and 660 tapes. It appears that these machines have been restricted to reading records of certain fixed lengths. The formats which can be written on the Exchange and read by the 650 or 660, without stops on these machines, are few in number.

6. There are three solutions which appear worthy of consideration:

   a. Inhibit the error stop on the 650 and 660, thus making them capable of accepting records of any length.

   b. Provide communication tape controls with the ability to recognize a specified character and signal the Exchange when this character is reached. The character must be completely specified by the programmer so as not to restrict the system to a single alphabet. In addition, we must, of course, have a mode without this control character to permit handling of binary information.

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c. Send record length to the tape unit as control information. The unit
counts characters and returns an end-of-block signal to the Exchange.
This system may be applied to binary information and is compatible with
the field length notation. However, it will be unique to a binary system
and appears to be more expensive.

WB/pkb

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