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FILE MEMO

SUBJECT: 1401 Tape Edit Systems Attached to 7030 Systems

1. The effective increase in performance achieved in 7070 operation through attachment of the 1401 Tape Edit System has lead to a study of the desirability of on-line attachment for other data processing systems.
2. Consideration of the following features of both systems will provide a basis for more complete evaluation.

	<u>7030</u>	<u>1401</u>
Card Reading	1000 cpm	800 cpm
Card Punching	250 cpm	250 cpm
Printing	600 lpm	600 lpm

3. The 7030 system, using the separate unit record devices presently planned for attachment, has the following advantages:

Printing:

- (a) Ability to directly implement expansion of character sets, should this occur.
- (b) Independent operation of the printer by separate programs.
- (c) Print Edit: The 7030 system can perform print editing at least 5 to 10 times the rate achieved by the 1401. This comparison is derived from a 7030 test program prepared by Miss E. McDonough. Generally the program scope and overall complexity of output editing require appreciable percentages of program space. This point indicates that the 1401 editing functions would be generally associated with grouping and ungrouping procedures. The use of control words in 7030 systems, when operating with individual units, will accomplish this same function.
- (d) The operating speed of the printer is determined only by the operating program, not by intermediate data transfer operations.

Card Handling:

- (a) Independent operation of the Reader and Punch by separate programs at full rated speed.
- (b) 25% greater card reading speed. No change in card punching speed.
- (c) Freedom from translation restrictions imposed by constraints of a "preferred" language in the 1401.
- (d) Full checking of the Reader and Punch regardless of the type of data.
- (e) Standard use of binary and Hollerith cards in both Reader and Punch.
- (f) Automatic "cut-off" of motors to insure longer life and reliable performance.
- (g) Potential "operator-free" operation is retained through freedom from manual controls.

4. In general the following points are important operationally.

- (a) Freedom from dual system languages. This is pertinent even when one considers symbolic assembly procedures.
- (b) Independent use of the individual units means freedom from total unit record failure which can result from errors in any one part of the 1401 system.

5. Some 7030 system users may desire the use of peripheral equipment for off-shift usage. Due to the usage conventions associated with present systems they may prefer to continue in this vein. In general, however, the use of operating procedures and standards based on programming efforts of IBM will make the return to on-line operation more feasible.**6. The use of independent units attached to Exchange channels permits the customer to rent the number of units required by his installation for his work. With proper consideration, sufficient equipment could be attached on-line to handle the peak work load for the number of operating shifts expected. Such a course is feasible because of the high operating speeds which can be achieved. Conversely the 1401 approach implies rental of an entire unit record package in order to attach one additional unit. In particular, the cost of additional printing capacity is excessive under these conditions.**

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7. Programming difficulties, to achieve simultaneous operation, appear difficult enough to indicate non-overlapped operation would be the general approach. Certainly with I/O Supervisory programs the tendency would be non-overlapped usage of the unit record devices.
8. In conclusion it appears that attachment of the 1401 for use as an on-line reader, printer and punch control would achieve only a limited rental savings. Attachment of additional units beyond the first, or attachment of two 1401 systems to separate card operations from printing, would result in little or no rental savings.

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