

June 9, 1959

FILE MEMO

SUBJECT: High Speed Parallel Disk File Operation

In processing control words, the High Speed Exchange ignores the multiple, chain and skip flag bits. The only form of data transfer control is provided by the word count. In order to distribute blocks of information in different areas, the program must issue new Read (or Write) orders for the information associated with a given control word.

Two important points should be realized with respect to this type of operation. First, this type of control word handling is different from the standard method so carefully described in Chapter 6 of the manual. Second, a 50 microsecond sector gap is provided for reissue of the next Read (or Write) command and the fetch of a new control word. This amount of time is generally not sufficient. Thus, reading two successive blocks (sector contents) into different memory areas may generally take about 41 milliseconds. || 2

This memo suggests that limited chaining be permitted, for the disk. For consistency with standard control word usage the following definitions are suggested:

- (a) Chaining will be permitted when the current word count goes to zero and the multiple and chain bits are set to 1. As defined normally, this causes the remainder of the current block (sector) to be stripped. ?
- (b) When the chain bit is 1 and the multiple bit zero, the High Speed Exchange can give Exchange Program Check.
- (c) When the multiple bit is 1 and the chain bit zero, the data transmission will proceed across the sector boundaries.
- (d) When the multiple bit and chain bit are zero, data transmission will be ended at the sector boundary. ?

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With the above conditions it will be necessary to retain the refill address, multiple and chain bits in the High Speed Exchange Control Word. For completeness it is suggested that the skip bit be retained also. On Copy Control Word all information of the control word will be returned to memory.

For assistance in debugging and Unit Check interrupt analysis the above provide the various possibilities.

- (a) Where separate control words are used with distinct sectors, the sector address can be stored in the refill field. Thus, it is known what disk information the control word is processing. This scheme cannot be used where chaining is used.
- (b) Where chaining is permitted, the last control word of the sequence, can contain the initial sector address.
- (c) Alternatively the words where the sector address could be stored (chain flag = 0) could use the refill field to store the control word location.

This technique is most applicable to the High Speed Disk because of the fixed length and addressable nature of a disk sector.

Comments on this proposal would be appreciated.

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