

October 4, 1960

Memorandum for Dr. E. R. Fiore

Subject: Superstretch

The Superstretch report prepared by Dr. E. N. Adams and the comments from Messrs. Marcy, Henle and others in DSD have been reviewed.

Dr. Adams' report contained a careful review of the potential of cryogenics, semiconductors and high speed memories for obtaining a one hundred times Stretch. Omitted from the report was consideration of machine organization and technologies outside of the central processing unit, such as the expanding technologies in large capacity memory. For example, the performance of the present Stretch machine is apparently enhanced significantly by the addition of the parallel disk file. Likewise, future large capacity memory possibilities should be considered in postulating Superstretch performance. Also omitted from Dr. Adams' report is an analysis of the present Stretch system organization and the experience obtained to date which might indicate areas where new technology would have a high pay off in overall system performance.

In view of the above and the fact that significant advanced developments are underway in both DSD and GPD, the following course of action is suggested:

- 1) FSD should be encouraged to seek Federal contracts which require a system performance in excess of the present Stretch. These market opportunities should be carefully defined to the Data Systems Division so that they might be fulfilled by Data System Division with the application of new technologies under development in DSD and GPD. In this manner, DSD might achieve a factor of two or more improvements in Stretch performance by increments.
2. Research should continue study of advanced systems, i. e. Superstretch, on a permanent basis (with partial support from AEC, if possible), by the establishment of a competent group to monitor technological developments and relate them to system

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organization and performance. This group should be concerned with the following:

- a. A careful analysis of the actual customer problems which Superstretch would be required to solve and the relation of these problems to the machine organization and the overall technology including large memories.
- b. A careful analysis of the experiences with the present Stretch equipment as it becomes active on AEC and BuShips problems.
- c. The paper design and simulation of new concepts for advanced data processing systems.
- d. Provide technical perspective to DSD and FSD efforts directed at up-dating present Stretch.

L. D. Stevens

LDS:mhm

cc:

Dr. C. R. DeCarlo

Mr. G. F. Kennard ✓

Mr. R. L. Palmer