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To: S&EC Programming Staff

From: John M. Frankovich

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Subject: Report on the 18 January 1955 Conference at MIT on the WWI-ERA 1103 Input Translation Program

On 18 January 1955 a conference was held at MIT to discuss the proposed WWI-ERA 1103 Input Translation Program and related problems. The meeting was sponsored jointly by the Digital Computer Laboratory and the Servomechanisms Laboratory of MIT. It was attended by representatives of user groups of the ERA 1103 at NSA, NACA, ORO, WADC, Ramo-Wooldridge, Emerson Electric, Franklin Institute, and ERA.

The meeting led to a set of agreements between Ramo-Wooldridge and MIT on the vocabulary of input translation programs for the 1103. These resulted from the fact that, functionally speaking, two nearly identical input programs were being developed at Ramo-Wooldridge and MIT, and that there was no need for the vocabularies of the programs to differ any more than was necessitated by the differences in the input media.

The main points of the agreements were as follows:

1) Instructions will have operation codes specified by standard two-letter mnemonic abbreviations and addresses will have one of three forms:

a) Decimal integer addresses;

b) Literal alphabetical addresses: q, a, or b;

c) Symbolic addresses of either of the forms letter-digit-letter or digit-digit-letter. Symbolic and integer addresses may be combined to give an address relative to a symbolic address by writing the symbolic address plus (+) the integer address.

2) Numbers will have the general form $\pm 12345.6789 \times 2^{3} \times 10^{-11}$, where the exponents and number of digits before and after the radix are limited essentially only by the value of the resulting number. The plus sign is optional, the radix point may be omitted if the characteristic is an integer, the factors of powers of two and ten need not be present if not needed, and the stored value of the converted number, if it is

not a floating point number, is taken to be the rounded off integer part of the given number.

3) Instructions or numbers are tagged by writing the tag before the word, although in the case of the Ramo-Wooldridge one pass system directory cards are necessary to assign values to the tags.

4) Current address assignments will be punched as "Assign cell n" on a card in the case of the R-W system, whereas they will be punched as "n⁄" on tape in the case of the MIT system.

5) The last word in a program will be a "start" word specifying the starting address for the operation of the translated program.

The R-W system makes use of fixed field punched cards on which no punctuating characters need to be punched to separate addresses. Hence decisions about the form and use of such characters were left to the MIT group. No agreement could be reached about the problem of how to specify the base from which numbers were to be converted. Both of the following systems will probably be used:

1) A "b" and "d" designator for individual numbers to specify binary (octal) or decimal base, respectively.

2) A "base k" designator to specify that all following integers, including those in addresses will be converted from the base k, where k is usually 8 or 10. No attempt was made to standardize upon additional facilities in the vocabularies of the programs at this time.

The principal result of the conference was that the two systems being developed by Ramo-Wooldridge and MIT will have essentially compatible basic vocabularies and that programmers would hence have little difficulty in using either or both systems. The two systems were to be described at the San Diego meeting on 23 to 25 February 1955.

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