February 19, 1959

FILE MEMORANDUM

At a meeting in the office of Dr. G. A. Blaauw on February 18, 1959, Dr. Blaauw proposed a change in the Noisy Mode Operation. This proposal was made to Mr. F. Bielawa, Mr. G. Paul, Mr. J. Stewart and Mr. O. L. MacSorley.

The following is the proposed method of implementing the change requested by Mr. Blaauw. The operation may be divided into two parts: (1) at the start of the execution and (2) during normalization. The only conditions required to initiate this operation are (1) Floating Point (2) Noisy Mode, and (3) Normalize Bit On.

Operation at the start of the execution takes place under the condition that (1) if the accumulator is involved in the operation, only bit position (12-59) are involved and (2) one of the mantissas involved is transferred directly from Reg A or Reg C into the high order half of the adder. When this is done, the noisy mode causes 48 ones instead of 48 zeros to be entered into the low order half of the adder as though entering from a continuation of Reg A or Reg C.

The above includes all single precision operations except multiply and store square root. It includes both the divisor and dividend in divide.

In double precision operations it includes load cumulative multiplicand and the divisor in Divide Double.

The portion of the operation occurring during normalization affects all floating point mantissa operations. During normalization, the low order bit position of Reg. F not included in the 96 bit positions normally occupied by the mantissa are set to ones instead of zero. The result of this is that a left shift causes ones to be brought into the low order end of a 96 bit mantissa instead of zeros. This would not affect shift mantissa left, since it is treated as a pre-shift rather than a normalization cycle.

The method of implementing noisy mode described above will be installed in the Floating Point Arithmetic Unit of the computer in place of that described on page 5.9, dated 5/15/58 of the Preliminary Manual of Operation upon the approval of Dr. Blaauw that it fulfills his request.

Effects on machine operation will be that which occur naturally as a result of these changes. No additional special circuits will be added to care for special cases. The summary of operations affected is believed correct, but is subject to this limitation.

O. L. MacSorley

G. A. Blaauw

OLMS / jam

cc: Messrs: F. R. Bielawa
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