January 13, 1958

MEMO TO: Dr. W. Buchholz

SUBJECT: Handling Several External Units on One Adapter
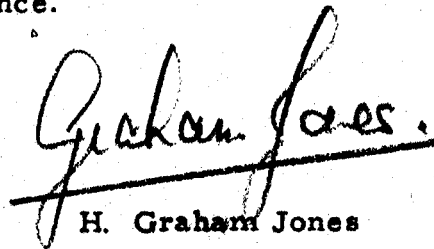
Purposes of Proposal:

1)   To eliminate LOCATE instructions.

2)   To facilitate identification of unit at which a UNIT
        SIGNAL originates.   Note: this identification is
        necessary to find out which of a group of functions
        requested by the program have been completed.
        Simple OR - ing of the UNIT SIGNAL latches is in-
        adequate.

Proposal:

1)   READ, WRITE and CONTROL instructions shall
        specify both adapter and unit in the effective add-
        ress of the first half word.   These instructions will
        combine the function of LOCATE (inasmuch as this
        means choice of unit) with their currently defined
        function.

2)   The function of locating a sector of a disk unit
        shall be relegated to a CONTROL instruction.

3)   When a UNIT SIGNAL is initiated in an external
        unit, a UNIT SIGNAL latch is set in that unit.   It
        remains on until it has an opportunity to set the
        ECW Status bit.   When this happens the latch is
        reset and the external unit is connected to the
        exchange in a manner similar to a LOCATE as
        currently defined.

4)   When the Unit Signal status bit sets the corre-
        sponding bit in the Indicator Register and finally
        causes an interrupt, not only is the adapter ident-
        ification transmitted to the Unit Address Register,
        but also a data byte identifying the external unit is

transmitted from that external unit to eight
additional bit positions in the Unit Address
Register.

5)   Unit Signal stimuli shall have an order of
priority. If, during the execution of a READ
or WRITE, several external units have their
Unit Signal latches set, these are chained in
such a way that the unit having the lowest
address sets up the first interrupt, and the
fix-ups proceed in sequence.

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Priority system for many unit signals
into one adapter.

EXCHANGE

UNIT SIGNAL

UNIT SIGNAL
ACCEPTED

OR   OR   OR

&   &   &

&   &   &

ON OFF   ON OFF   ON OFF

KEY   KEY   KEY