

FILE MEMO

September 30, 1957

SUBJECT: Project 7000 - External Unit Status

The SENSE instruction as described below is proposed for the following reasons:

1. To alleviate bit capacity problems in designing the control word. (It is proposed that the COPY CONTROL WORD instruction no longer transmit status bits to memory.)
2. To free a few bits in the control word for future assignment.
3. To provide the supervisory program with complete information about each external unit. (Vital to unattended operation.)
4. To enable "debugging" routines to record the complete status of an external unit when a "bug" is encountered.
5. To give the programmer a way of obtaining increased knowledge of the nature of the errors that do occur.
6. To give diagnostic routines increased ability to observe the effect of instructions and to find the location of errors due to external units.

The external unit adapter will provide triggers to record the immediate status of the unit. The number and assignment of these triggers will be peculiar to the unit but will be less than 59. The SENSE operation will address the external unit and cause the contents of these triggers plus the six status bits for that unit held by the exchange to be sent to the memory address specified, Zeros will be added if necessary to completely fill a word. No control-word need be used by this instruction.

Typical assignment for a card reader may be as follows:

Bit 1	Hopper empty
2	Stacker full
3	Card jam
4	Read error (single column)
5	Read error (multiple column)
6-13	First error column
14	Reserved light on
15	End of file key was depressed
16	Stacker A (vs. Stacker B) is in use

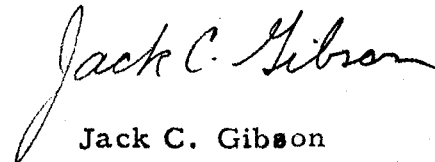
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- 17 Control panel missing
  - 18 Off line switch set to "off"
  - 19 Fuse blown
  - 20 Operator signal button was depressed
  - 21 Stop button was pressed
  - 22 Data error other than card reading
  - 23 Card reader not attached
  - 24 Last instruction READ
  - 25 Last instruction CONTROL
- etc.

Certain of these bits are reset by some manual operation; e. g. pressing the Start button resets bit 21. Others are reset when the exchange recognizes the status, e. g. bit 15. Finally the computer may reset any or all of these bits by a SENSE RESET instruction. This addresses the external unit and specifies in the control word address part a word with 1's in the bit positions corresponding to the triggers to be reset.

The SENSE instruction may be a CONTROL operation if desired. The SENSE RESET may not because it requires a pseudo-control-word. These instructions will be rejected if the unit is engaged with data flow and SELECT REJECT will be indicated.

Speedy consideration of this proposal is suggested in order to expedite design of the control word.



Jack C. Gibson

JCG:scl

cc: Mr. G. A. Blaauw	Mr. W. A. Lyons
Mr. F. P. Brooks	Mr. B. Moncrief
Mr. W. Buchholz	Mr. E. McDonough
Mr. J. D. Calvert	Mr. D. W. Pendery
Mr. E. F. Codd	Mr. C. B. Poland
Mr. S. Coffin	Mr. D. W. Sweeney
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