

August 4, 1959

MEMORANDUM TO: Mr. N. M. Boothe
Mr. S. H. Jacobs

SUBJECT: 1401 Model and Features Description

The attached report briefly describes the models and optional features of the 1401 which we are working to announce on September 8. It is actually a revision of the report of July 27, corrected in accordance with our discussion of July 30.

It should be noted that, with the exception of the change from three address to two address Multiply-Divide, there are no changes in hardware or functions provided for in this report. That is, there are no changes in features, and there are no possible combinations of models and features which did not exist in the previous report.

J. J. Ingram
J. J. Ingram

JJI:mk

Attachment

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1401 Data Processing System
Model and Features Description

Model A

Model A, the basic 1401, is packaged in two SMS cubes and includes as standard Input/Output equipment a 1402 Reader-Punch and a 100 Print span 1403 Chain Printer. Included within the cubes is an operator's console, a C. E. console, a fixed 1,400 character memory gate which contains 7 rows of card sockets, 11 SMS card gates, 2 fixed power supply panels, and one cable entry panel. All electronic controls for the system are included in this unit.

The basic 1402 Reader-Punch contains an 800 cpm card feed, a 250 cpm card punch, and five radial stackers arranged in a format similar to the CGS Collator with the punch unit replacing the secondary feed. A File Feed unit is standard on the reader hopper. Also included in this unit are a portion of the power supplies for the system.

Several optional features (Class "A" options) can be added to a Model A machine. These options can all be field installed and are available on other Models, except the 1411.

Model B

Model B differs from Model A in that it contains four cubes instead of two, and four power supply gates in the process unit instead of two. The additional space and power permits handling several additional options (Class "B" options), at least one of which must be ordered for the customer to obtain a Model B machine. Dual speed carriage (defined page 4) is standard on this model and also on Models C, D and the 1411.

Model C

This model contains the Magnetic Tape Attachment optional feature (defined page 4). Expanded Print Control and dual speed carriage are also standard on this model. All other options available on Models A and B are available on this model.

Model D

Model D has what was previously called the Without Reader-Punch option. This model is offered since card equipment may not be required where some other form of input is available to the system. This feature includes removal of the 1402 Reader-Punch and also the two SMS gates of electronic circuitry involved with that unit. A new gate with appreciably reduced card count is substituted for one of the removed gates. The circuitry on the two removed gates that cannot be deleted is primarily for Address Register Decode for Print and Punch matrices and Print Scan Complete. Model D is required for this option since the power supplies which are mounted in the 1402 for the other models must now be packaged in the process unit.

Since the card reader is not available as input, Model D is a practical machine system only if some other form of input, eg. magnetic tape, is included. Column Binary, Read-Punch Release, and other 1402 options not described in this report (which lose their meaning and justification when card input-output are not available) and Multiply-Divide are not available in this model, but other options available to Models A, B, and C are available here. As in Model C, tentative plans are for additional Print Control, as well as Dual Speed Carriage to be standard.

1411

This model offers a non-editing tape-to-printer system with functions approximately equivalent to the 7011. It is essentially a special case of Model D. In addition to the Reader-Punch circuits being removed, arithmetic and print editing circuitry and some associated cycle control are also removed. Since writing on tape is not provided, some tape circuits associated with the write operation are also removed. However, the circuit cards for the P & Q op codes are added to the gate of reduced card count that is substituted for one of the reader-punch gates. The optional features of additional Print Control, as well as Dual Speed Carriage, are standard with this machine system. No other optional features are permitted except for 7070 attachment, for which the card count is reduced slightly since information may not be sent to the 7070 with this model.

Optional Feature Descriptions

An asterisk following the feature name indicates the feature is field installable.

Capital letters following the feature indicate the models on which the feature is available. A "s" following the model designation indicates the feature is standard on that model.

Additional Print Control* A, B, C s, D, 1411 s

The basic machine will provide for a print span of 100 print positions. This option involves the circuitry required for the addition of 32 positions to that print span thus providing a span of 132 print positions.

2,000 Character Memory* A, B, C, D

This feature provides an additional 600 characters of memory over the 1400 characters of the basic machine. However, the memory gate itself is not changed.

3,000 Character Memory* A, B, C, D

This feature provides for an additional 2,000 alphanumeric characters of core storage, over the 2,000 character memory, for a total of 4,000 characters. Required will be a similar but larger core array and the circuitry to activate this increased capacity. This feature will be incorporated on an SWS gate similar to the 2,000 character memory gate and will be installed as an integral unit in place of the other memory gate.

Expanded Print Edit* A, B, C, D

This feature includes the circuitry to provide for asterisk fill, floating dollar sign, decimal control with zero suppression, and sign control left.

Read-Punch Release* A, B, C s

This feature provides the circuitry to accommodate two additional operation codes. These codes, one for punch and one for feed, will allow additional compute time on a card I/O operation while maintaining I/O speed. Since this involves electronic controls only modifications are limited to the process unit.

Sense Switches* A, B, C s, D s, 1411 s

This feature provides for six additional sense switches and the circuitry to expand a basic operation code to test the status of these switches. This in turn will effect a program branch.

Multiply-Divide B, C

This feature provides for the circuitry to accomplish multiplication and division through the use of a single operation code for each function. It should be noted that these are now two address, rather than three address, instructions.

Print Buffer B, C, D

This feature incorporates a 10-plane, 140 character, core buffer and associated timing and control circuits. Data to be printed is transferred from the print area in main memory to this buffer from which the scanning required for output to the hammer magnets is performed. This feature permits continual 600 lpm listing.

Column Binary B, C

This feature provides the circuitry required to encode and store in memory data from a card punched with binary code or with non-standard multi-punched codes, in addition to Hollerith, and also to decode and punch out similar information. It is conceivable that up to 960 holes could be read from or punched into a single card.

Dual Speed Carriage B s, C s, D s, 1411 s

On the basic 1401, the 1403 paper carriage operates at a single speed for both line spacing and skipping. Inclusion of this feature will permit, on a skip operation, the carriage to advance at high speed as available on the 1403. Since the 1403 carriage includes the circuitry and hardware for dual speed operation, this feature will involve only electronic control circuitry.

High-Low-Equal Compare B, C, D

This feature provides the ability to compare information containing any of the numeric, alphabetic, and special characters for High and Low indication, as well as the Equal-Unequal indication available in the basic machine.

Tape Attachment C, D, 1411 s

This feature provides for the circuitry to attach up to six magnetic tape drives, either 729 II or 729 IV units, to the 1401. Included is a TAU and the control circuitry for communication between the TAU and the 1401 process unit. With 1411, functions provided are reduced, thus requiring less circuit cards than for the other models.

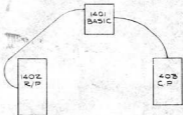
7070 Attachment B, C, D, 1411

This feature will normally be provided with machines containing the Magnetic Tape Attachment. In such cases, the circuitry required sends and receives information to and from the 7070 and controls the information transfer. In those isolated cases where this feature is required but tapes are not, some of the tape attachment circuitry is still required. With the 1411, functions provided are reduced, thus requiring less circuit cards than the other models.

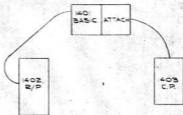
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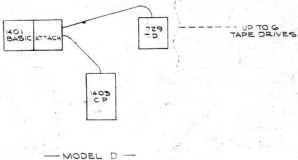
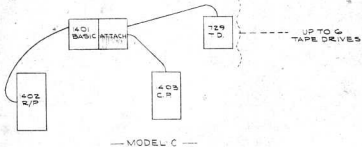
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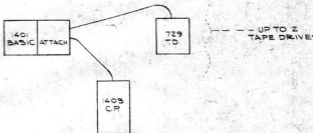


— MODEL A —



— MODEL B —





— 1411 —