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Memorandum

STATOTHR

Memo No. 1112

**DECLASSIFICATION REVIEW BY
NIMA / DoD**

TO: E80 File
FROM: [REDACTED]
SUBJECT: Programming the E80 Plotter
DATE: 9 April 1964 STATOTHR

1. General

The E80 Plotter is a large high speed coordinatograph having two axes of motion, x and y, arranged as in a right handed coordinate system. A 5 foot by 5 foot vacuum platen holds the paper fed automatically from a roll supply and a pen is controlled to make points or lines on the paper.

The position of the axes and hence of the pen is under the control of [REDACTED] located in the same room which in turn receives its commands from a [REDACTED] Computer. For test purposes a manually entered axis control panel is provided. For either operation, the basic program format is the same.

2. Format

On this machine the path control is incremental as opposed to absolute. That is, each incremental command tells the pen where to go next and there is no memory of previous positions, and the incremental path is the straight line; the shortest distance from the previous point to the next one. The smallest programmable increment is .005" and successively larger command bits are in the progression as follows:

- .005"
- .010"
- .020"
- .040"
- .080"
- .160"

- .320"
- .640"
- 1.280"
- 2.560"

Any of these individually or in combination may be used to compose the incremental distance command. The actual orders of the bits and the command sign is shown on Drawing No. BJ0002.

In addition to the dimensional data there are 8 special commands for automatically performing other operation. These are also listed on Drawing No. BJ0002. As an example, the following commands might be used for drawing some reference lines from the origin. The display shown below is schematical with the least significant bit on the right. Spaces need not be transmitted.

<u>Command Bit</u>			<u>Explanation</u>
0	10	11 21 22 29	
00000000000	00000000000	00001000	Plus signs but no change in position for either axis. Feed paper 60".
00000000000	00000000000	00001110	No data command. Return pen to table origin.
00000000000	00000000000	00100000	No data command. Lower pen onto paper.
11111111110	00000000000	00000000	Move parallel to Y axis 5.115"
11111111110	00000000000	00000000	Same
11111111110	00000000000	00000000	Same
11101000110	00000000000	01000000	Move parallel to Y axis 4.655" and life pen at the end of the travel.

The pen is now at Y=20". This is the sum of the four Y commands and the last Y command was composed of the following bits: 2.560", 1.280", .640", .160", .010", .005", plus sign

The next motion will be in the X direction.

			<u>Explanation</u>
00000000000	00000000000	00001110	Pen to origin
00000000000	00000000000	00100000	Lower pen
00000000000	00110010000	00000000	1.000" in X
00000010000	00000000000	00000000	plus .040" in Y
00000010001	00000000000	00000000	minus .040" in Y
00000000000	00110010000	00000000	1.000" in X
00000010000	00000000000	00000000	plus .040" in Y
00000010001	00000000000	00000000	minus .040" in Y

With a repetitive series of these commands, you can generate a maring with 1-inch tick marks; with longer commands, grid lines could be laid.

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████████ Cable Connection

Another copy of the enclosed drawing will be forwarded as soon as the pin assignments are confirmed by ██████████. This drawing will then show the pin assignments.

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