


BIWEEKLY REPORT

COPY NUMBER

2

DATE October 30, 1959

R. A. HUGHES

Blue Line The inverter 3101 and diode 3110 models were tested and released to production. It will be necessary to modify the base R-C components on these units because we weren't conservative enough on our first design.

Components A specification has been written for a silicon diode which we might use to replace the Westinghouse 320 A diodes which we currently use. This specification requests manufacturers to put four diodes in one package. (If possible) Presumably they would ease our tough packaging requirements in units such as flip flops. The specifications also points out that no back voltage rating is required. (We may use someones rejected diodes.) We expect to pay less for this diode than we do for 320 A's.

We have ordered 1000-1N540 diodes from Ohmite Manufacturing Co. These are a replacement for the TIG Diodes and are guaranteed to meet our specifications. Price: \$0.17/1000, \$0.145/100,000. The present price of TIG Diodes is \$.18. Ohmite also will supply us with a replacement for our type 309 diode (price \$0.59) for a price of \$0.43.

New Designs The following production releases have been issued:

1202	Flip Flop	B00665
1403	Clock	B00229
3110	Diode	B00639
3601	Pulse Amplifier	B00642
4105	Inverter	B00675
4110	Diode	B00676
4104	Inverter	B00674
4103	Inverter	B00671

Oversights The modification of the 1209 flip-flop, (Installing 2N588's in the internal flip flop) didn't work out too well. The flip flop was too sensitive and therefore would be noise sensitive. We are considering a special test for 2N588's in this socket to overcome this difficulty. The replacement transistor would still be a 2N393 in this circuit.

COMPANY CONFIDENTIAL

digital equipment corporation

MAYNARD, MASSACHUSETTS

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B. Gurley

The construction of PDP-1 is going very well. The check out will begin next week. This is a few days ahead of schedule. The Flexo is beginning schedule, however. It won't be unpacked until this afternoon. It was supposed to be in about two weeks ago. The machine we have received is far more complicated than we require. I'll talk to Mr. Candavella of Frieder so that future machines will have only the stuff we need. The wiring documentation of PDP has been continually improved so that succeeding machines will be assembled much more quickly.

H. A. Anderson

PDP Programming

Several preliminary utility programs for PDP are essentially complete and are being issued as M notes.

The first of these M notes merely lists the octal equivalent of all of the instructions for PDP.

The fact that we do not have toggle switch storage means that we must have some simple programs and methods available for converting and loading programs into PDP.

The first program will convert one instruction at a time to the "read in tape format." It gets the instruction to be converted from the Test Word switches. This format is used during read-in-mode operation of PDP. The result is a punched paper tape.

The second program does the same thing except that it gets the instruction to be converted from the paper tape reader. It will interpret the flexo codes for the octal digits and assemble them and punch a new paper tape in the read in mode format.

Both of these are being written up as M notes.

PDP Sales

An amazing amount of interest is being shown in PDP from potential customers considering the fact that no mention in news releases, mailings or literature has been made as yet.

Three rather promising leads for action in the next 2 to 3 months are being followed up. A quotation is in effect on one of these at the moment.

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H. E. Anderson (Cont)

3000 Series Literature

The text has been completed and is starting in the type setting phase. Prices and loading numbers still need to be dropped into place. We are aiming at having it ready by NEREM (November 17).

PDP Literature

The only folder to be prepared has really not been started as yet. The text will be simple and quite general. (Instruction code will probably not be included for example.) Photos are available for this, of course, from those taken for Datamation magazine.

M. Sandler

Statuses of Finshed Products

	<u>ON HAND</u>	<u>ON ORDER</u>	<u>AVAILABLE</u>	<u>IN-PROCESS</u>
Test Equipment	562		562	550
System Equipment	830	68	762	530
Blue Line				40

Units to Stock: to October 29 645

Several of our assembly personnel have shown decided aptitude for doing the logic wiring for our systems. Expanded drawings provided by Engineering have helped us.

We have started tabulation of operation labor hours and costs. With a bit more history we will be able to more accurately estimate costs of new products and schedule production time.

L. Prentice

Rework on PDP-1

The Display Console is proceeding satisfactorily.

Two additional Mounting Racks have been ordered for PDP-1. A sub panel for Flexowriter circuits will be made up to-day.

The display chassis is in the design stage and should be completed during the coming week.

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L. Prentice (Cont)

There seems to be a good possibility of obtaining a machinist in the near future. This should be a substantial help.

A new paint drying frame is being fabricated in the shop.

E. Harwood

The PDP-1 wiring is proceeding on schedule. We have finished all the control wiring and are in the final stages of the pulse wiring.

All available plug-in units have been plugged in, and we expect the 1607 Pulse Amplifiers next week.

We are going to start the check out next week and have wired in temporary indicators and a toggle switch panel to use until the console is ready.

J. Fadiman

Since the last report on October 2, a new Memory Tester, MT-1512, has been constructed for Telemeter Magnetics (Los Angeles, Calif.) All wiring and construction has been completed with the exception of a few minor details such as installing the cooling fans, and some final lacing. All plug-in units are installed, with the exception of the Read-Write Switches 1971 which will be installed on Tuesday. (These were delayed for lack of Amperex 2N284A transistors; selected Philco 2N670 transistors are being used instead.) Final check-out will take place next week, and the machine will be ready for shipping on Monday, November 9th. Total time for construction and check-out: 6 weeks.

We are about to start work on another Memory Tester, MT-1514. Customer unknown. AMP and Burroughs are both interested, as well as the previously interested customers mentioned in the bi-weekly of Sept. 11.

We followed up our bid to ITT Labs for two Memory Exercisers with a series of sketches and text explaining them. We should hear definitely from ITT next week.

COMPANY CONFIDENTIAL

S. C. Olsen (Cont)

The second issue of "Didja Know" has been published, and the reaction to our new house organ continues very favorable. However, it is a job to dig up all the news that should be included. If you think of anything you consider newsworthy-- either as a single item or as a regular feature -- please tell me about it. All contributions gratefully accepted.

W. E. Weeton

During the month of October many potential customers were contacted in an effort to increase our sales. While this had little if any effect on the October sales it should effect November to some extent. Several point of interest are RCA in Camden, Philco Corporation in Philadelphia and American Bosch Arma in Long Island are all interested in Memory Testers and would like to see the Telemetering Magnetics unit. RCA is primarily interested in a 128 x 128 coincident current memory tester. Philco on a Word Address Memory Tester and American Bosch Arma in a Transfluxor Memory Tester. This has implications of both word Address and Coincident Current Tester. Sylvania, RCA, And Western Electric, and L.F.E. are all expected to buy test equipment or building blocks this month. In addition to these there are many other companies which are likely to buy during the months of October and November.

Several points of interest are I was able to visit the Control Data Corporation in Minneapolis, Minnesota for an hour or so and talk to several people there. They have expanded considerably taking over about 2/3 of the building which they started in. They have five computers that are in various stages of completion, one of them being nearly completed having only a small portion of the debugging to finish. Their computer is a 32,000 word system, 48 bits deep. It is broken down into two memories which are 16,000 words each and these in turn are broken down into stacks that are 24 bits deep each. The basic cycle time for the memory is 6.4 microseconds, however, they are able to call on one memory and then call on the other one in their programming and by interlacing these two calls can effectively increase the cycle of the memory to 3.2 microseconds. All of their logic is done with modular cards which are roughly two inches square FF91 cards and have on them small quantities.

W. E. Weeton (Cont)

Inverter circuitry and I believe have no more than two inverters on a given card. The console has an A register and Q register as well as the order codes and so forth. They are using in line indicators of the General Industries type which we developed our binary to decimal decoder light driver for the basic computer plus the console costs approximately \$800,000. A bay of 4 magnetic tape handlers is available at a cost of a \$140,000 extra.

The University of Chicago, Enrico Fermii Institute of Nuclear Studies section is developing a computer. They recently have run their test at a 1.5 microsecond cycle time: This is a word Address Memory being built by RCA, Needham, for them and it uses the scheme which was suggested by Shevlon of New York University, New York City.

Joe McCusker at RCA, Needham, has been fairly successful at developing a deposited film ferrite. I saw a limited amount of data on this but they were not willing to discuss it at the present time. The advant of our new low speed line should get us into the Allen-Bradley Company in Milwaukee, Minnesota, almost immediately.

Jack Brown was so busy selling that he didn't get his report in. Stan Olsen visited Farnworth (ITT) yesterday and feels that we are probably late and that they may buy Epsco units but wants to Deluge them with Data on our low-speed line. Every day for the next two weeks they need systems units.

R. L. Best

New Product Committee

We are bringing out a new line of plug-in units that we have been calling the Blue Line. This 3000 Series will be similar to the test equipment series except that the maximum frequency will be 500 kc, the price will be much lower. The paint on the front panels is blue. The following units are being brought out:

3101	Inverter
3110	Diode NOR
3201	Flip Flop
3301	Delay
3401	Clock
3410	Pulse Generator
3601	Pulse Amplifier

R. L. Best (Cont)

The 4000 Series will be a 500 kc equivalent of our 1000 series system plug-in units. The following units are being brought out now; more will come later

- 4103 Inverter (equivalent to the 1103 Inverter)
- 4104 Inverter (equivalent to the 1104 Inverter)
- 4105 Inverter (equivalent to the 1105 Inverter)
- 4110 Diode (equivalent to the 1110 Diode)
- 4111 Diode (equivalent to the 1111 Diode)

4676 Positive and Negative Intensity Amplifier.

This is primarily for display use in Memory Testers and Computer displays. Since it uses low-speed transistors it is being placed in the 4000 Series.

4677 Level Amplifier.

This contains four level amplifiers each in the form of a single ended bridge, the lower voltage to be determined by an external reference supply. It is intended to be a driver for digital-to-analog ladder networks, and specifically for the 1561 described below. It is in the 4000 Series because of the slow transistors used. The number 1677 will be reserved for a fast version of the same circuit.

There was a misprint on the price printed on the 1403 10 mc Crystal Clock; the price should be \$160. The 1403 is identical, circuit wise, with the 403 Crystal Clock.

The 1202 flip flop uses the same pin connections as the 1201, but is a 10 mc unit similar to the 202 flip flop. A change is being made to the 202 that will decrease its delay so that an average unit might run to 18 mc. The 1202 has this change already built in; the price is \$160.

The 1607 pulse Amplifier has been released to production. No publicity will be released on it until we get some experience with them in PDP-1.

The 1907 is a cover for a 19 inch system plug-in-unit mounting panel. The price is \$9.00, and its name will be printed on the back side.

R. L. Best (Cont)

The 1561 is a ladder network of resistors to be used as a digital-to-analog converter. It may be connected as a single converter of any length up to a maximum of 12 digits, or as two converters of 6 digit word to the left one digit by opening a single connection.

The 1311 contains two delay lines of 0.2 usec length with tags every 0.05 usec; each line drives an inverter. This and the 1310 (described Oct. 2) are for the PDP-1, and will not be advertised until experience has been obtained in PDP-1.

J. L. Atwood

The arrival of Lewis Yeager and the loan of several girls from Assambly have helped make October a very productive month. Complete catalogs were made up and mailed to all the people who requested literature at the Instrument Show in Chicago and the Magnetics Conference in Washington.

Complete catalogs were also sent to I.R.E. representatives at 210 colleges and universities. An enclosed cover letter pointed out some of the advantages of our equipment in educational applications. This mailing will be followed up with a mailing on our low-speed line, which looks ideal for this market.

A second special mailing is now being processed by McGraw-Hill. It consists of a package of literature on our two proprietary lines, and it is being sent to some 3200 control engineers on a McGraw-Hill list. This is the first major mailing sent to a list other than our own. Hopefully it will turn up some new names -- and some new prospects!

Our Building Blocks ad, which is pulling some inquiries, appears in the October issues of THE REFLECTOR, THE BULLETIN, and THE GRID (all local I.R.E. publications) and the October 28th issue of ELECTRONIC DESIGN. The ad on our Core Tester Application will appear in the November 13th issue of ELECTRONICS and the December (E.J.C.C.) issue of THE REFLECTOR. THE REFLECTOR will also feature PDP-1, along with several other computers of local origin, on its front cover.

J. L. Atwood (Cont)

DATAMATION is running a full-page feature on PDP-1 in its November-December issue, which is also slanted at the E.J.C.C. A more extensive feature article is being prepared for general release the Sunday before the E.J.C.C. opens in the expectation that one or more of the metropolitan dailies, as well as some of the general business magazines, can be talked into giving us better-than-average coverage.

News releases on Jack Brown, Ben Gurley, the core tester, and the low-speed line have been sent out and are beginning to appear in assorted places. Earlier releases have been run recently in ELECTRONICS, INSTRUMENTS & CONTROL SYSTEMS, ELECTRICAL DESIGN NEWS, INSTRUMENT & APPARATUS NEWS, MILITARY SYSTEMS DESIGN, DATAMATION, and the E.E.M. CLIP FILE. These, together with the September mailing, continue to produce a fair quantity of inquiries.

In the works on the "Blue Line" are four-page catalog, a Digital Developments" newsletter, a product bulletin, and an application note. Brochures are also being prepared on PDP-1 and our manufacturing facilities. Other items in process include a release on the 1512 Memory Tester ("first to the West Coast"), materials for the NEREM Show, additional replacement schematics, and logic stamps.

J. L. Atwood (Cont)

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