

File H.S. Q.

BIWEEKLY REPORT

COPY NUMBER 2

DATE September 16, 1960

D. O'Brien

Under Ben Gurley's direction I have continued to change display amplifier 31 trying to decrease the settling down time. We found that increasing the gain of the pre-amp, amp unit was an effective way to increase the rate of change of the current in the yoke. The actual level at which the current settler is determined is by the feedback loop and the pre-amp controls. In order to increase the gain in the amp., we used zener diode instead of R.C. coupling between the first (grounded grid) and second (cathode follower) stages of the amp. To increase pre-amp gain, we revised the circuit and used higher B transistors. All this gain resulted in oscillations at certain settings of the pre-amp controls. We then changed the filter circuit across the plates of the grounded grid and were able to eliminate the oscillations. Our final result had a settling down time of 25 u sec., half as long as our original model.

The drawings for all these changes are now in process and a model of the amp is partially built. The changes in the pre-amp require a new board so I have spent some time changing three of the old models. Since I am leaving today to go back to school, I am going to organize the work I have done on a transistor version of the amp. and give it to Ben Gurley.

J. Cudmore

I have been checking the carry characteristics in a counter chain using 1201's. The present 1201 has its compliment transformer gated from the buffer amplifiers. By changing the gate to the internal flip-flop, a great improvement can be realized in the transfer characteristic of the compliment "P" pulse circuit. I am now experimenting with different turns ratios on the transformers.

J. Sheahan

A model of the Burst Generator 2303 has been constructed and is now in the process of being de-bugged. It is expected that this unit will be ready for quality control very shortly.

As compared to the 2302, this model offers a number of additional waveforms and should facilitate the testing of building blocks and test equipment.

A. Campbell

All customer orders for crystal clocks have been built, tested and shipped, except for one 5 KC clock which requires a new oscillator

COMPANY CONFIDENTIAL

de BIWEEKLY REPORT

COPY NUMBER

DATE September 16, 1960
Page 2

A. Campbell (cont.)

design. We have been able to operate the 5 KC crystal in a modified circuit, but the output swing is too small to drive the rest of the circuit. Engineering change notices are being completed on all four clocks, with changes in resistor values to limit pulse width and amplitude to the desired regions.

I am returning to school next week and would like to take this opportunity to thank everyone I worked with this summer. Each person I encountered had extreme patience and showed genuine interest in me and my work. I feel I have gained valuable knowledge and experience at D.E.C. Once again, thank you all.

G. Bell

I have been working with Ben Gurley on several aspects of the PDP-1's development, including sales promotion material, programming and the magnetic tape system. The most important item in computer sales, I feel, is being able to interest the right people in the computer initially; then, on their enthusiasm follow-up in selling. We have quite a sophisticated machine, and unless the people we contact are capable of understanding the difference between it and other computers in its price class, we might as well not even try to make the sale. The computer's weakness (other than it doesn't have IBM cards, whatever they are) is our current program repertoire. Shortly, we will have quite a nice compiler-assembler. We presently have a good assembly program. The lack of programs makes it doubly important to be able to sell to someone who can see that since we don't have an ordinary machine, a lot of their programming jobs will not be ordinary. In this light, we would like to compile a list of people who we think might like a machine, and begin by sending them personal letters. This list would probably not be more than 200 names, and would be generated by individual engineers within the company. Thus, the letters would bear their signatures. In arriving at names for this list, the principle qualification (the person should be president of his company and able to afford the machine) is that he be capable of understanding the machine (or have people under him who are) and have some imagination, and in general a person known for quality engineering or scientific research. That is, an author of a particularly well written article (who doesn't work for Remington Rand, and there aren't too many of those) would be a good prospect.

A list of orders is being issued which affect the magnetic tape unit and describe how to program the tape system. In writing the description of how the machine works first, the design of the logic of the system should be more straight forward; thus, only a question of meeting specifications.

COMPANY CONFIDENTIAL


BIWEEKLY REPORT

COPY NUMBER

DATE September 16, 1960
Page 3

G. Bell (Cont.)

A set of arithmetic subroutines have been written for the PDP-1 in floating arithmetic, and include sine, cos, \tan^{-1} square root, ln, and e^x . Other subroutines exist to display numbers on the scope and to print all sorts of things. More routines are needed to have a basic program package.

We are getting together several sets of application notes for the computer, mentioning how it can be used in different areas of research. We would be extremely grateful for application note ideas. Similarly, we would like help with programming, and if the need were shown it might be possible to do something instructional for people who do not already program.

In short, there is no question in our minds but what we really have the VW of the computer world.

Library

New books which are now available for use are the following:

12 copies of the "Complete Secretary's Handbook".

Catalogs on Senior & Junior Colleges in Massachusetts

H. Van Cleef

The period was spent in becoming indoctrinated in standard practices of DEC; and the study of memory and core testers. A book for the Model 1514 Memory Tester was begun, and rough drafts of operating procedures and operating principles were written. A final draft, of a general description for approval by P.E.'s, was submitted. A final draft of the setup procedure is nearing completion and will be submitted to P.E.'s at the beginning of the next period. General philosophies applicable to instruction books for this sort of equipment were formulated; these philosophies cover all memory and core testers.

The next period will be spent in completing final versions for P.E. approval of the setup and the operating procedures for the Model 1514, and in writing a final draft version of the operating principles. Note that this material applies to the Models 1512 and 1515 as well, and books for these systems will be created principally from the material generated in the last period.

dec
BIWEEKLY REPORT

COPY NUMBER

DATE September 16, 1960
Page 4

J. Fadiman

Several wiring diagrams for the Memory Exerciser 2202 for TMI have been completed, and five mounting panels are now being wired in production. All of the logic has been designed except for the timing circuitry, and the block diagrams have been completed. Front panel drawings are complete, and many have been built.

The bus driver, Model 1682, has been completely designed and etched wire layout has been completed. The output swing is from -0.2 volts to +6.5 volts and will provide a maximum current of 110 ma.

The Automatic Core Tester 2102D for TMI has been completely checked out and is being shipped to California today. We are now using a 5 amp Sola Transformer to pre-regulate the ac input to the Model 749 power supplies. With this pre-regulation the current output of our drivers is flat with an ac input varying from 95 to 130 volts.

Sylvania Electric Company in Muncy, Pennsylvania, is now interested in purchasing an automatic plane tester and possible a core tester. I am going down to talk to them on Monday.

The order for the General Ceramics Core Tester has been postponed until January, 1961, due to G.C. budget requirements.

We are about to receive the order from Rese Brown of the Electrodata Division of Burroughs Corp. in California for the Core Evaluator 2104. Price: about \$11,000. Delivery time: 60 days (about November 14.)

E. Harwood

The RCA 4K Memory was installed and checked out. Due to some excessive inhibit noise we had to allow more time before the next read. The machine is now running with a 6.5 usec cycle time. We will cut this back to about 5 usec by doing some minor changes in the way we drive the inhibit lines.

PDP-1B

We are in the final assembly phase of the computer and hope to start checking this week. The plugs we had been waiting for

COMPANY CONFIDENTIAL

de
BIWEEKLY REPORT

COPY NUMBER

DATE September 16, 1960
Page 5

E. Harwood (Cont.)

arrived this morning, so we can connect the three frames together. We are still lacking a few plug-ins but I hope to get most of them this week.

R. Hughes

Circuits

The Delays 302 and 1304 are being modified to make them less noise sensitive.

All crystal clocks which were overdue have been made and shipped except the 5kc one which is going to require a special design and will cost more money (Sales Department note).

Transistors

The T1692 (\$.93) transistor in the low speed line is being discontinued and the T1961 (\$.95) will be used. The T1692 is a TV.I.F. amplifier with a Beta specification of 20 at 1 ma and the T1961 is a low voltage switch with Beta of 20 at 10 ma and 20 at 40 ma.

An investigation is being made of the following high frequency transistors:

2N769 600 Megacycle
2N779 300 Megacycle
2N1209 200 Megacycle

The object of this investigation is the possible application of this transistor in a 20 mc Flip-Flop.

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