VIP CLUB
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An IT Legacy Paper

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The Univac 8008 Micro

Was it the First 8-Bit Computer?

Craig Solomonson - Cambridge, Minnesota

The "8-Bit Micro Computer System" shown at the right was constructed in Plant #2 (St. Paul, MN) during 1972. Was it the first functional 8-bit microcomputer built?

INTRODUCTION

In the late 1970's and early 1980's, I was part of a small group trying to start a computer museum in Minnesota. As a computer-programming instructor and a collector by nature, it seemed like the thing to do! So, I collected lots of computer artifacts.

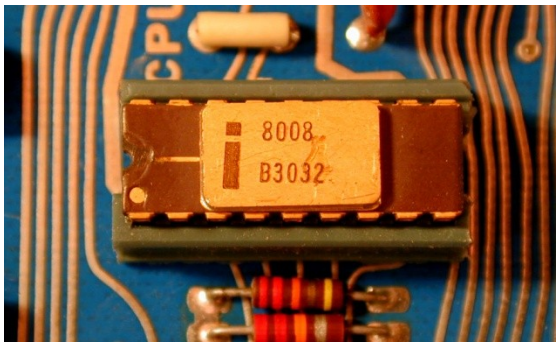
In the summer of 1980, I bought an odd-looking microcomputer at an electronics swap meet at the State Fair Grounds. After many years of research to find out who built it and when, I made contact with the person I bought it from—Dale Hossler. Dale was an engineer in the Memory Semiconductors group in Plant #2 and a member of the Univac Computer Club. When Sperry dismantled the Light Electrical Laboratory about 1977, much of the equipment stored there was being disposed of and he picked up this particular computer to tinker with until he finally sold it at the swap meet in 1980.

Dale started at Univac in 1975 and did not know any of the history of this computer. Therefore, I contacted Lowell Benson through the VIP Club and he connected me with Hal Rogers, who was aware of the computer but did not work on it. Eventually, he put me in touch with Steve Newcomer who worked on the project involving the design and build of this computer. I had a chance to sit down and visit with him and he shared what he could remember of the project with me. Recently he found a copy of the final report on the project and shared with me.

UNIVAC PROJECT(S)

I had always suspected that assembly of this computer was very early on in the development of microcomputers. The chips used and date codes on various electrical components pointed toward a period of very early 1972 and before. Considering that, Intel announced their 8008 microprocessor in April of 1972 and did not ship until late May of 1972, which seemed to indicate that this might be one of the first.

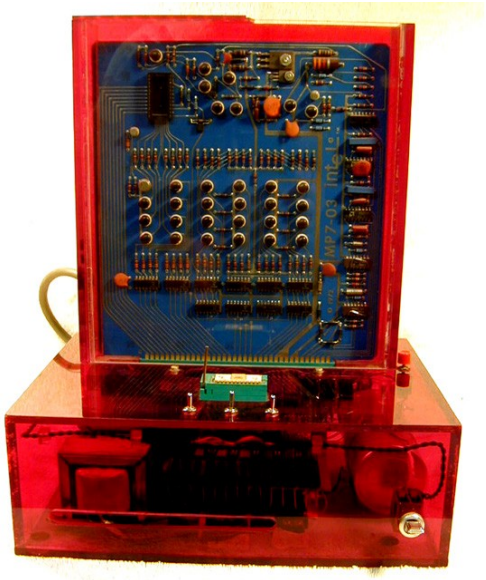
The development of this computer was part of the "Complex Arrays" project during FY 73, a subtask under the Solid State Technologies IR&D Program[1] (#4YF71X). In a report dated March 30, 1973, it summarizes the devices studied. They include building an Intel MCS-4 (4-Bit Micro System), an Intel MCS-8 (8-Bit Micro System), and a Magnetic Tape Cartridge Controller (using an 8008 microprocessor).



Another part of the project was to monitor ongoing developments by various chip manufacturers such as Intel.

Steve recalled programming the MCS-4 computer when he returned to Univac in March of 1972 following his 14 months of active military duty. That computer was built around an Intel SIM4-01 CPU board and the Intel MP7-03 PROM Programming board and packaged in a red translucent plastic case like the ones pictured below.

When the Intel announced the MCS-8 in April, it was most likely ordered. Delivery started in late May and there is a good chance that UNIVAC constructed the 8-Bit system during the summer of '72. It consisted of the Intel SIM8-01 CPU board and the Intel MP7-03 PROM Programming board as illustrated below. To burn in Programmable Read Only Memory chips, they were plugged into the burner's green socket shown below.



However, the interface circuitry to put these boards together into a complete system with I/O capabilities was not available from Intel until late November of 1972. Therefore, the Univac crew designed their own interface to control the PROM Programmer and to hook the processor board to a Teletype as the man/machine interface. Hence, we had a complete working microcomputer as shown on top of the next page!

[1] Dave Kirkwood was the Supervising engineer of this research project.

PROM Burner, Microcomputer, and TTY keyboard-printer.

Steve thinks that he was programming this unit in the fall of 1972. Like the rest of us retired folks, you know how our memory works—or doesn't work! He recalls that the programs written were fairly simple. The computer would ask a person their name and they input it through the Teletype and then a response was given using their name. Dave Kirkwood told me that these demonstrations were given to internal Univac groups and also to a few military organizations.

Following the construction of the 8-Bit micro, the construction of the Magnetic Tape Cartridge Controller using the Intel 8008 started. This phase went into early 1973 to research an actual application of microprocessor technology. The final report dated March 30, 1973 summarizes the findings from all these phases.

OTHER PROJECTS

If this UNIVAC Computer was completed in the late summer or early fall of 1972, it is in the running for being one of the very first operational 8-bit microcomputer systems. There are records of only three other systems under development during 1972. The one generally credited with being first is the Sac State 8008 Computer, designed and built by Bill Pentz. His project started in the summer of 1972 and was working in 1972 but not fully completed until sometime in 1973.

Another computer in development during 1972 was the Micral-N being built in France. It used the 8008 and a functional unit was shown in January of 1973 then actual computers were being sold later in 1973. The Micral-N is recognized as the first commercially available 8-bit computer.

The third system was the MCM/70 developed by Micro Computer Machines in Canada. The designer, Mers Kutt, was a personal friend of Robert Noyce and was even considering using the Intel SIM8-01 board as the main board in his computer. He arranged with Noyce to get one of the first SIM8-01 boards available and received it May 23, 1972. That board is now on display at the York University Computer Museum in Toronto. I made arrangements with that museum to compare the circuitry and chip dates with the SIM8-01 board in the Univac 8008. They are nearly identical and neither board is serial numbered like most of the ones sold by Intel. This leads me to believe that Intel also shipped one of the first boards to Univac.

EPILOGUE

I think it is safe to say that the Univac 8008 was "one of the first" 8-bit computer system built and demonstrated. Saying it was absolutely the first one would take a lot more research and documentation from multiple companies. I spent a morning at the Charles Babbage Institute going through boxes of archived engineering logbooks and reports from Univac engineers, but had no luck. If someone reading this article has any recollections as to specific dates in 1972 on the development of this computer or details about it, that would be helpful.

Craig Solomonson Cambridge, MN

Email: craig@solomonson.net

Thanks to Craig for submitting this IT Legacy article as a summary of his research. Mr. Solomonson attended Southwest Minnesota State and did his master's work at University of Minnesota. He is a former teacher (1975 – 1982) and was an educational software designer at MECC (1982 – 1999). Later Craig did consulting for Plato Learning and RE@L (Real Experiences at Life).

Comments by Lowell A. Benson:

This was the first UNIVAC/Sperry/UNISYS/LMCO foray into the application of Commercial off the Shelf (COTS) microprocessor devices. We went on embed COTS microprocessors into the AN/USQ-69 display unit, CP-2044 replacement for the CP-901, and the AN/USQ-70 as the primary processing device. We also used microprocessor chips for an embedded maintenance processor function in the AN/UYK-43, AN/UYK-44, and the Memory Processor computers.

This article was formatted and edited for the web by Lowell A. Benson
Retired Engineering Manager, UNIVAC 1960=>UNISYS 1994
BEE, 1966 - U of MN