Both construction and operations continue to increase

As mentioned earlier, Building 9731 was the first building completed at Y-12, having been completed in just a few weeks in March 1943. It was quickly constructed so operational checkout could begin on the calutrons being designed at Berkeley by Lawrence. Training had been done at Berkeley as well with several folks from Y-12 actually going to California to learn how to operate the calutrons. When Building 9731 was completed and the calutrons installed, it became the primary focus of the operational changes and improvements.

Construction activity intensified daily as buildings all along the south side of Bear Creek Valley started taking shape. Many smaller buildings were constructed as support buildings. These smaller buildings were mostly wooden buildings and were such things as pump houses, change houses, other utilities buildings and of course, the first administration building – Building 9704-1, completed in June 1943.

There were nine large calutron buildings that were ultimately completed. Five of them were Alpha buildings (9201-1, 9201-2, 9201-3, 9201-4 and 9201-5) and four were Beta buildings (9204-1, 9204-2, 9204-3 and 9204-4).

One reference I have found indicates that the buildings were not all completed in sequence. For example, that reference indicates that Alpha 5 was completed ahead of Alpha 4 and Beta 2 was completed well ahead of Beta 1 (Ken Bernander indicates Beta 1 started up in March 1944). The reference states that Beta 3 (again Ken recalls an earlier date of November 1944) and Beta 4 were not completed until into 1945 and were just becoming operational near the end of the war.

Ken Bernander was among the engineers who were assigned to lead the start up and whom I have quoted above regarding the dates for Beta 1 and Beta 3. He recalls that time clearly. It was a very important task he was given and he knew it. He led the start up of three of the four Beta buildings. In his oral history interview, Ken described what it was like to move from one building to another as start up occurred. Don't you know those were exciting times!

By noticing the completion dates we can see how the plant was coming together. While Alpha 1 was the first building started and it was a huge building with a high bay, it was evidently taking a long time to construct. There must have been a huge push to get Y-12 going. It seems obvious that 9731 was rushed to completion to accommodate the need to set up and operate calutrons at Y-12. Having the experimental work done at Berkeley and doing the training there as well must have been difficult. So, 9731 served to house the pilot calutrons allowing the experiments and much of the training to be moved to Y-12.

It is important to note that only scientists and engineers had operated the calutrons at Berkeley and also the ones installed in 9731. However, Tennessee Eastman had begun hiring young girls right out of high school and putting them in the training. They were having a hard time hiring enough people and were seeking ways to meet the demand for people.

One observation about the young girls comes from Robert S. Livingston, one of the individuals who came from Berkeley to Y-12 to work for Tennessee Eastman. The question about who would be the actual cubicle operators was one that was debated. No one had ever operated the units at Berkeley other than someone with either a Ph.D. in physics or an M.S. degree in engineering.

Livingston said, "It was more or less an act of faith that we would find people who could run the cubicles." At first when the calutrons were just coming on line, several people who had run the units in Berkeley took the lead. However, there were soon more calutrons than experienced operators.

The young girls were sent to training classes. One of these young girls was Gladys Owens who is prominently featured in the famous Ed Westcott photograph of the "Calutron Girls." She is the person in the right foreground. Gladys still recalled vividly the comment made at the closing of her training class.

She said a man who was obviously someone in authority came to the class and told the young girls, “I can’t tell you what you are going to be doing, I can only tell you how to do it and all I can say about it is that if our enemy gets it first, God help us!” Gladys remembered that word for word 60 years after the day she graduated from that training class.

After training the young girls were brought to Y-12. Livingston said, “After the initial shock of walking into the building – and I had seen those young girls break into tears, just walking into the building and seeing all those giant pumps and cranes and noise and everything. It was so new and they had never seen anything like that. But once they got adjusted to that and once they got over the shock, they could sit in front of that cubicle and be the most patient person in the world. With really rather a small amount of supervision, they really did the electromagnetic process.”

Chris Keim was another early Y-12 calutron pioneer and a few years later the individual who led the drive to produce stable isotopes using calutrons. Keim had this to say about a photograph of the young girls, “…a few months earlier and there would have been one operator at every cubicle. But here we see a lot of vacant chairs, because it progressed to where one operator could operate more than one cubicle – two, three or even four.”

George Banic, also someone who worked on calutrons at Y-12 for a number of years, told about the changes that were made as the uranium feed material got more and more enriched. They would put shunts on the meters so the young girls would always be maintaining the same reading regardless of the purity of the feed material. He said, “…they always adjusted the knobs they were told to adjust until the meters read so and so. They didn’t know what the actual purity of the feed material was. Didn’t care, didn’t need to know.”

Connie Bolling is another of the Calutron Supervisors who was also in the famous Ed Westcott photo of the Calutron Girls. Connie called me when we were opening Beta 3 for the 2005 Secret City Festival tours and asked if he could sign up for the tour. I said yes of course. He said, “I used to work in that building. In fact, I am in that picture with the Calutron Girls, I’m the man standing in the back, I’m their supervisor!”

Connie and Gladys served as our hosts for the 2005 public tours of the calutrons at Y-12. The first time any member of the public had been allowed in that area and the first time that Manhattan Project equipment had been on display at Y-12. It was a lot of fun to listen to them talk about the great times they had working at Y-12 during the last few months of World War II.

Caption: Famous Ed Westcott photo of Calutron Girls featuring Gladys Owens in front and Connie Bolling standing in the rear