

## More on the buildings at Y-12

In a recent article we identified several of the more common buildings at Y-12. We first identified the nine major calutron buildings and then some of the support buildings. This week continues the look at various buildings constructed at Y-12.

In addition to the support structures and buildings, pump houses, cooling towers, closely associated with the Alpha and Beta calutron buildings, there were several chemical process buildings that served to purify the uranium either to prepare the feed material for the calutrons or to prepare the Uranium 235 for shipment to Los Alamos.

While the building number system may seem unusual, it actually had some reason to it. For example, all the process related buildings began with the number 92. Ever wonder about that?

The word "uranium" was classified during the Manhattan Project. Although it was a common term used in scientific circles in the late 1930's, it was quickly removed from common discussion during the war. When the war effort began to consider a bomb that would be more powerful than any ever seen before and especially when Einstein's letter to President Roosevelt stated that Germany was likely attempting to use uranium for a bomb, the word uranium became something that just was not mentioned.

Then Y-12 began to be constructed expressly to separate uranium 235 for a bomb. How long do you suppose it took for folks to realize that the people at Y-12 who were numbering their buildings started all the uranium processing buildings with the number "92" – the atomic number for uranium!

The major chemical processing buildings were:

**Building 9202** was completed in November 1943 and was used as one of the first chemical processing buildings. It processed a dilute solution of uranium commonly called "gunk" and purified it.

**Building 9203** was completed in September 1944 and was the first processing building for the Beta product cycle. Solvent extraction was used to purify and recover the uranium instead of using precipitations as in Building 9202.

**Building 9205** was completed in August of 1943 and served as a process development laboratory.

**Building 9206** was completed in May 1944 and was used to process the balance of the Beta cycle. Much of the uranium that was ultimately used in Little Boy was purified in Building 9206. The roof was unusual on this building. It was designed to hold water in an attempt to use that insulation to keep the building cooler.

While it may have worked somewhat, it proved to be more trouble than it was worth. A practice of pumping the water off periodically to extract even the minute particles of uranium that might have inadvertently gotten in the water by passing out the process exhausts all over the building ultimately resulted in a mishap that ended the practice of keeping water on the roof.

One person who was draining the water grew tired of holding the hose to maintain the siphon to drain the roof and decided to dig a small shallow pool in the gravel roof in which place the pipe. Well, he struck the roof too hard with his pick and proceeded to put a hole in the roof. You know what happened then. The water, all of it, immediately gushed down that hole.

**Building 9207** - completed in February 1945 along with **Building 9208** - completed in December 1944, **Building 9210** - completed in February 1945 and **Building 9211** also completed in 1945 in conjunction with **Building 9769** made up the large Chemical Processing area. This area was used during the Manhattan Project and was recognized as a prominent Y-12 feature with its many large black exhaust stacks.

Later this area came to be known as the Oak Ridge National Laboratory's Biology Complex for its major contribution to scientific cancer research with animals and especially well known for research on mice. This subject will be another entire chapter of Y-12's and ORNL's history.

**Building 9212** was completed in August 1945 and was a chemical processing building where efforts were made to recover all uranium possible from materials or items that were being discarded or no longer used. The uranium 235 was so valuable that every possible bit of it was reclaimed.

By now you are beginning to realize that there was actually a scheme associated with the numbering of Y-12 buildings. Here is a summary of the generalized numbering system used for the first buildings constructed at Y-12:

Some examples from the Numbering System for Y-12 Buildings:

9201-x: "Alpha" buildings

9204-x: "Beta" buildings

9202, 9203, 9205, 9206, 9212: chemical processes

9207, 9208, 9210, 9211: chemical processes/after the Biology Complex

9217, 9219, 9224: support facilities

9401-1, 9401-2 and 9401-3 steam plants

9409-x: Cooling towers

9416-x: Water supply system including valve houses

9501-x: Electrical substations for various Alpha and Beta buildings

9949-x: Guard posts

9983-x: Trailers, typically for offices but also used for break rooms, change houses and other functions

I hope this has helped make the early construction of Y-12 buildings a little more understandable and has shown that the nine major Alpha and Beta buildings were the heart of the system but the chemical processing buildings were places where key people prepared the feed materials and purified the Uranium 235 product for shipment. Without the full set of operations, the mission would not have been possible.

To look back on those early months and see the rapid construction schedules makes one realize just how urgent the situation was perceived. The Y-12 mission of getting enough Uranium 235 for the necessary research and to build the world's first atomic bomb used in warfare was of paramount importance to the planners and workers.

Stone and Webster were attempting to hire as many construction workers as they could find. (A personal aside: My oldest son's father-in-law went to school at Oak Ridge in 1943. His dad was the personnel manager for Stone and Webster. His name was Jernigan.)

Many of the people working on the construction did not know a thing about what was going to be done in those buildings. Yet, they knew what they were doing was something that was intended to help end the war. Don't you know they did their work with pride.