More production buildings and expanded operations

The oval shaped Alpha calutrons were designated “Alpha 1” design and were installed in Buildings 9201-1, 9201-2, and 9201-3. Each racetrack contained 96 calutrons. Because of the difficulty maintaining the magnetic field in the curved portions of the oval shape, this design was not used for the calutrons built after the initial phase. Recall that the design for this early construction phase was frozen in order to get manufacturing of the components started quickly.

The revised design used a rectangular shape and was designated “Alpha 2” calutrons. They were installed in Buildings 9201-4, and 9201-5. However this was in the later stages of the massive construction effort.

The Beta calutrons were authorized in March 1943. This second stage calutron was designed to be approximately one-half the size of the massive 20 foot tall Alpha calutrons. There were 36 calutrons in a racetrack. The arrangements for all calutrons were referred to as racetracks, even though the Alpha 2 and Beta designs were all rectangular.

General Groves, in *Now It Can Be Told,* said, “Because beta would use feed material from alpha; because its design would be a modification of alpha, dependent on alpha experience, and because originally we were not sure it would be needed emphasis was placed on completing the alphas installation first. Eventually, however, the Y-12 plant comprised five alpha buildings, of nine racetracks, and four beta buildings of eight racetracks with 36 bins each, as well as numerous chemistry and other auxiliary buildings.

Groves continued, “All were large – two of the alpha buildings, for example, were 543 feet by 312 feet – and each contained a fantastic labyrinth of equipment and piping. Much of the equipment was considerably bigger, closer in tolerance and more demanding as to accuracy than any similar equipment ever designed. Much of it was of revolutionary design. Much of it was required in large quantities. Because of material and labor shortages, the always overriding necessity for speed and the badly overloaded manufacturing plants of the suppliers, all of it was built under trying conditions.

In the above quote, the “two of the alpha buildings,” that Groves singles out to cite as being large were undoubtedly Alpha 4 and Alpha 5 (Buildings 9201-4 and 9201-5 respectively). Alpha 5 was the largest building on the Y-12 site at 530,000 square feet. Alpha 5 is even larger than the new Jack Case Center at 420,000 square feet - the largest office complex ever constructed at Y-12.

However, if one considers the additions to Alpha 5 over the years, such as Building 9201-5W (Alpha 5 West) and 9201-5N (Alpha 5 North – attached to Alpha 5 via a tunnel beneath the road!), then the mammoth structure is readily understood as the largest structure at Y-12. During the Cold War years, it was a beehive of activity around the clock, but that is getting ahead of our story.

Another thing that General Groves pointed out in his book was the difficulty getting enough skilled labor. He said, “One of our chief difficulties was s shortage of electrical workers. This became so acute that we had to turn for help to Under Secretary of War Patterson. Out of this appeal came an agreement known as the Patterson-Brown plan (Edward J. Brown was president of the International Brotherhood of Electrical Workers). It provided for the payment to employees of round-trip transportation and subsistence, a guarantee of no loss of seniority rights and a job on return to their former employers after completing at least ninety days’ service at the project. Provision was also made for the official recognition of employers who released men in response to our appeal. This plan was a lifesaver, as was the co-operative of Al Wegener, an official of the Brotherhood.

He continued, “There was an almost complete absence of labor trouble, despite the fact that as many as four crafts were often involved in setting up a single piece of apparatus. The total time lost on the job from work stoppages, including jurisdictional disputes, was less than eight thousand man-hours as compared with the almost 67 million man-hours worked on the electromagnetic plant. To me our excellent labor relations were a great satisfaction. The credit is due to the District organization, to the

contractors, to Colonel C. D. Barker, in charge of labor relations in the office of the Chief of Engineers, to the patriotism and at times the forbearance of the employees, and to the co-operation of the union leaders of the trades involved.

On one visit to Oak Ridge, General Groves spoke to a large number of workers. He states, “I talked for five or ten minutes to some two thousand of these men. I was not introduced by name but merely as the general in charge of the work for the War Department…As simply as possible, I told the group that, as the officer in charge I could state positively, both officially and personally, that their work was of extreme importance to the war effort, and that my views were a true reflection of those of the Chief of Staff, General Marshal, of Secretary of War Stimson and of President Roosevelt. I added that they could see for themselves how important it was from the terrific effort we were making, our obviously enormous expenditures in money and labor, and our evident ability to obtain materials that were in critically short supply. I said nothing about what we were working on or our hope that its success would quite possibly end the war.

Wouldn’t you have liked to have heard that speech! I am sure the workers had to realize that something tremendous was going to be done here at Y-12. They must have thought that they were surely working on something really important. Seeing General Groves at the construction site had to impress the workers with the urgency Groves had to feel thinking that Germany was already ahead of the United States and could well have an atomic bomb just any time. This fear was not accurate, but I am sure it was very real for Groves.

Groves goes on to state that feedback from the Stone and Webster person in charge, F. C. Creedon, estimated that efficiency of the construction operations improved by as much as 15 to 20 percent. Groves and Creedon also invited the presidents of Westinghouse, General Electric and Allis-Chalmers to visit Oak Ridge. He observed that the results of these visits were quite noticeable. Don’t you know these officers of the companies who were manufacturing the equipment components took pride in being a part of such a tremendous war effort!

Next we will look at the timeframe for completing buildings at Y-12 and will mention some of the chemical support and other auxiliary buildings. In eighteen months, nine major buildings and hundreds of support structures were completed. Operations began quickly in each building, even before final construction in some.