Still more radical changes at Y-12

In the months after the war ended, change was not limited to Y-12 or just to Oak Ridge, Tennessee. While the folks at Y-12 were experiencing tremendous upheaval through major changes in workforce levels, stopping the major program of uranium separation, starting stable isotope separation and trying to determine what the future held for Y-12, other major transitions were taking place all across the nation.

World War II was over, but hardly had that begun to sink in when the realization and fear that someone else would surely develop an atomic weapon caused expansion of atomic energy research as well as expanded production facilities for nuclear weapons. The Cold War was not known as that just yet, but fear of what the Russians would do was not a new idea.

As the results of investigations into the German and Japanese atomic energy research after the war ended, it was determined that Germany did not have a viable program and neither did Japan. However, evidence was found that indicated that both were actively pursuing atomic weapons.

All the Manhattan Project sites experienced radical changes during this transition from the war production period of unlimited funding and schedule pressure beyond anything that could be understood today. General Groves stayed close to the decisions at each site and worked the issues of transitioning from war time operating contractors to new companies. This was no small task.

At Los Alamos, the primary problem was that of Oppenheimer's leaving. He had been the key leader for the scientists there. Norris E. Bradbury, newly appointed laboratory director, was trying to hold the scientists there.

In October, 1945, Bradbury proposed that Los Alamos should concentrate on the production of implosion weapons (similar to Fat Man as dropped on Nagasaki). He advocated improvements be made to re-engineer some of the more uncertain features of that weapon.

He also pointed to the need for simplicity of design, safety and other factors such as reliability that would need to be researched. Even at this early date, the "super" or hydrogen (thermonuclear) weapon was being discussed. Bradbury advocated fundamental experiments be undertaken at Los Alamos to determine if such a weapon was feasible.

Bradbury believed that Los Alamos needed expanded research on every aspect of nuclear energy while also doing the necessary nuclear weapons design work. The work he outlined for the laboratory was a tremendous array of tasks. No wonder that the separation of functions became of importance to General Groves. Los Alamos was not able to do it all, and the uncertainty of the future there made it even more difficult to retain staff.

The town's temporary nature was also not helpful. During the winter of 1945, a frozen water main caused tank trucks to be used to haul water from the Rio Grande. Housewives used buckets and pans to collect their needed water from these tank trucks. Don't you imagine the scientists were getting pressure from their wives regarding how long must they endure such hardships?

Hanford was also in turmoil. Du Pont had reluctantly agreed to manage the work there, but only until the war emergency ended. They wanted out now. General Groves pressed them to stay until October 31, 1946. Even Secretary of War Patterson could not persuade Walter S. Carpenter, Jr., the president of du Pont to stay longer. General Electric was convinced to take over Hanford on September 1, 1946.

January, 1946, brought major changes at Oak Ridge. The K-27 building at the K-25 gaseous diffusion plant became operational. Y-12 had shut down the alpha calutrons in September, 1945. While they had been placed in standby originally, it was becoming obvious they would no longer be required.

By February 8, 1946, all units in K-25 and K-27 buildings were online and could easily produce feed material for Y-12 that was already enriched in uranium 235 to the highest level that Y-12's Beta calutrons

could handle. At this point, it became obvious that the combination of K-25 and K-27 operations might well even produce uranium 235 at the level that could be achieved by Y-12's Beta calutrons.

Also in January, 1946, General Groves made significant decisions regarding the permanent future of Los Alamos. He arranged for construction of wells, pipelines and pumping stations to bring water to a new one million gallon water storage tank and convinced Secretary Patterson to authorize 300 units of permanent housing. Thus Los Alamos began to take on a sense of permanency with new roads, work areas, walks and utilities.

Back in Oak Ridge, uranium 235 was being successfully processed and new storage facilities were being constructed. The high purity K-25 feed material increased the Y-12 Beta calutron's ability to produce highly enriched uranium and the four Beta building were abuzz with activity, while the five Alpha buildings were in standby.

It was during this time that first Building 9213 was used to store the uranium 235 and then Building 9214, first known as Operation Dog and much later became famous as "Katy's Kitchen" was constructed. Building 9214 was camouflaged to look like a farm barn with a silo that was actually a guard tower.

Not much uranium metal was being produced, but the enriched uranium was building up. Los Alamos was hard pressed to execute the demand for additional weapons. Preparing for the planned next test explosion (Operation Crossroads) put a heavy demand on its fabrication capabilities.

Operation Crossroads was the second atomic test and the fourth and fifth explosions of a nuclear device. The event was an atmospheric nuclear weapon test series conducted in July 1946, one year after the Trinity explosion of July 16, 1945. The series consisted of two detonations, each with a yield of 23 kilotons: ABLE was detonated as an airburst on July 1, 1946 and BAKER was detonated underwater on July 25, 1946.

Several captured ships were positioned near the blast in the lagoon of Bikini atoll. This was the first of 23 nuclear tests at this location between 1946 and 1958, including the first test of a hydrogen weapon in 1952. The Bikini lagoon was already designated as a ship graveyard where captured ships were sunk during World War II.

Next week we will look at the Special Engineer Detachment and explore more about the transition of uranium metal machining from Los Alamos and eventually to Y-12.