

## Y-12's history in brief and the early 1980s

Over Y-12's history there have been a number of periods when the nation has called on this unique operation for special efforts. The earliest was the Manhattan Project when the uranium for Little Boy was separated in the electromagnetic separation process using first of its kind equipment known as calutrons. This effort lasted from February, 1943, through December, 1946.

The second initiative at Y-12 actually turned out to be one that the Oak Ridge National Laboratory would continue until 1998 and continues working on even today at the main campus. That was the separation and sale of stable isotopes. In 1946, Dr. Chris Keim separated copper 63 in the calutrons located in Building 9731. I have just been loaned that exact copper isotope by the family of Leon Love who was presented it when he had worked at Y-12 for ORNL for 25 years.

The sample is approximately ¼ inch in diameter and ½ inch long and is enclosed in plastic. It has a small metal plaque also enclosed in the same block of plastic stating, "Series A, Sample A 1(a), Cu-63, World's First Electromagnetically Separated Stable Isotope, November, 1945, Oak Ridge, Presented to L. O. Love, On His 25<sup>th</sup> Anniversary."

Leon's daughter, Linda, provided the sample on loan to the Y-12 History Center. She lives in Texas now but vividly recalls her father's dedication to his Y-12 work.

A third initiative happened very soon after the Atomic Energy Commission was formed on August 1, 1946. On January 1, 1947, the AEC accepted responsibility for the nation's atomic energy efforts as they were transferred from military to civilian control. The huge Y-12 industrial complex was among the primary assets coming with that decision, but the site consisted of mainly empty buildings and had no long-term mission in 1947.

Among the first decisions the AEC made was to transfer the uranium machining associated with atomic weapons from Los Alamos to Y-12. This resulted in the longstanding manufacturing mission for Y-12 that ultimately led to the designation of Y-12 as the Uranium Center of Excellence for the nation. The uranium mission has enabled Y-12 to attain the status of being the nation's single point for machining highly enriched uranium.

This decision was made because the calutrons had just been shut down in December, 1946, and were being removed from eight of the nine Manhattan Project-era buildings built to support the effort to win the war. These large buildings were seen as a potential resource without a defined mission. Y-12's employment went from 22,482 employees on August 21, 1945, to 2,440 employees in May 1947, and had only 1,700 employees in October 1949.

ORNL's Biology Division also began in 1947 by occupying buildings at Y-12 constructed for the expansion of chemical processing for the calutrons, but were no longer needed when the majority of the calutrons were taken out of operation. The Biology Division occupied these buildings until 2002 when buildings 9207 and 9208 were vacated and 2004 when 9210 (the Mouse House) was vacated moving the laboratory to new quarters on the main campus of ORNL.

The lithium 6 separation mission was thought of by some as the second Manhattan Project effort as it was such a radical change to the Y-12 mission, and the race to produce the hydrogen bomb required a substantial amount of lithium 6. Buildings 9201-2, 9201-4, 9201-5 and 9204-4 were dedicated to lithium separation pilot or production operations.

Ultimately Alpha 4 or Building 9201-4 would carry the bulk of the production efforts using the COLEX (column exchange) process. This process operated from 1955 to 1963. During the years of operation, a large portion of the nation's reserve of mercury was brought to Y-12, as it was at the heart of the lithium separation process.

During the years of COLEX operation there were spills that resulted in significant amounts of mercury being allowed to get in the East Fork Poplar Creek as its headwaters begin very near the middle of the site. The creek flows through Oak Ridge, and in 1983, when a report about the use of mercury at Y-12 was declassified, the concern for mercury releases twenty to thirty years before resulted in no small amount of reaction from multiple sources.

A Mercury Task Force was formed, led by Bill Wilcox, and worked for eight weeks investigating the history of mercury at Y-12. The task force prepared a classified report and a declassified version summarizing the report, *Y/EX-24 Mercury at the Y-12 Plant: A Summary of the 1983 UCC-ND Task Force Study (Y/EX-23)*.

Not only did the task force identify spills they also found that accounting for the amount of mercury brought to Y-12 was difficult and noted that a substantial amount of the mercury could not be accounted for. This resulted in even more confusion and frustration in communicating any concern over mercury in the creek bed that was covered with over twenty years of silt deposits.

This mercury issue, in 1983, came right on the heels of increased efforts to monitor and control other environmental issues at Y-12. While the mercury that escaped the site was a paramount concern, the contamination left on the site would continue to be an issue even to today. It will be of considerable concern during future demolition of the buildings where mercury has been used in process operations.

The 1980s was a period of an enormously heavy workload and around-the-clock activities at Y 12. Some 9,000 people worked feverishly to manufacture as many nuclear weapon secondaries as possible, knowing the pressure was on Y 12 to lead the way toward winning the Cold War. And that was the case when the pace set by Y 12 workers succeeded in breaking the Soviet Union's economic back and ending the Cold War.

In addition, in 1982, there was a major security upgrade that brought such things as tall towers for the security force to use to monitor the site. Several of these towers were just removed over the past few months. Others remain and some are still in use or available for use if needed.

In 1983, the S-3 Ponds used for years as settling ponds, where various liquids were allowed to evaporate and the sludge settle to the bottom, were drained and the sludge removed. The ponds were backfilled and a parking lot placed on the top of them.

In 1984, Martin Marietta was selected as the contractor replacing Union Carbide Nuclear Division. Martin Marietta Energy Systems, Inc., managed Y-12 until November, 2000. The name of the company changed from MMES to Lockheed Martin Energy Systems, Inc., and what had historically been a one-company contract for all of Oak Ridge and other sites, began to be separated into single contracts for each site.

BWXT Y-12, later to become B&W Y-12, has managed Y-12 since November, 2000.