

Y-12 enters the 1980s

At the end of the 1970s Y-12 had completed several years of ever increasing production requirements. At the same time, Y-12 had seen tremendous increases in the environmental management regulations. Producing components to maintain the nation's nuclear weapons was understood as vital work, but the environmental concerns were also being seen as an important aspect of Y-12's mission.

New designs were continuing to be created for nuclear weapons and nuclear tests were being conducted underground. Atmospheric testing had been conducted from July 16, 1945 (Trinity test), through July 1962. Underground testing continued until September 23, 1992. Y-12 was being called upon to produce the uranium components and other related items needed for each of these test assemblies. Each year seemed to bring increasing numbers of tests.

As the 1970s turned into the 1980s, Y-12 had made known the extent of wear and tear on existing production equipment and utilities infrastructure of the facility. The Atomic Energy Commission (1947-1975) and succeeding organizations of Energy Research and Development Administration (1975-1977) and Department of Energy (1977-present) were responsive to the need for expenditures to keep Y-12 capable of meeting the ever increasing demand for more and more production.

The ever increasing demands for more production were met with special designs for machine tools leading to Y-12 becoming the nation's, and likely the world's, most precise machine shop. At the same time, the aging infrastructure and even some of the machine tools, foundry equipment, metal preparation process, furnaces, presses and other common-use manufacturing tools were becoming maintenance problems.

To avoid delays and necessary outages having an adverse impact on production scheduling, the practice of redundancy was utilized to a great extent. When a specialized machine tool was designed and purchased, multiple machines of the same type would be procured to ensure maximum uptime. This practice played a huge role in Y-12's ability to force the Cold War production to the point that the Soviet Union could not keep pace.

Even with this redundancy in machine tools where practical, the aging infrastructure and utility systems taxed the Y-12 engineering and maintenance functions to keep enough equipment and facilities operational to meet the increasing production demands. Creative means were required to ensure the highest priority work was always the focus of every stage of the manufacturing process.

Y-12 was a leader in automating the scheduling of production work, clocking time, measuring scheduled actions and monitoring weapons parts manufacturing at the micro level. Each machine shop had to keep close track of each weapons component and piece part flowing through the shop. All enriched uranium material had to be accounted for to the smallest quantities, whether in process or in storage.

Whole organizations were created to monitor quality, production scheduling, machining and all other manufacturing operations. The same held true with the environmental program, and the safety of employees as well as security of the site were always at the forefront of all that was being done.

In 1981, there were two major capital improvement programs under way at Y-12 that had been funded by Congress to address both the aging utility infrastructure and the many times modified and refurbished machinery that was showing significant signs of wear. Both of these programs had been in the planning stages for years. Finally the budgets were in place and actual work was beginning.

The Utilities Systems Restoration project included improvements and/or replacements of the portions of the electrical power distribution equipment and lines, cooling water towers and piping, potable water piping and pumps, process water piping and pumps, and heating and ventilation systems. These systems had elements that had degraded over time through normal wear and tear, corrosion and other naturally occurring failures from constant use and only necessary repairs because of limited funding.

The Production Capability Restoration Project was used to refurbish and/or replace fabrication machine tools, certification machines used for inspection, production support equipment and other production machine tools and specialized instruments or equipment necessary for highly precise manufacturing. Many of these elements of the production and operations systems were in poor condition or inadequate for the weapons production assignments of the 1980s.

It was during the 1980s that the second peak in employment levels was reached when over 8,000 people worked around-the-clock making as many nuclear weapons components as could be made in the specialized metal preparation processes, fabrication machine shops, inspections areas, and other production support areas located primarily in the Manhattan Project era buildings at Y-12. Inside these old structures were located some of the world's most sophisticated manufacturing operations.

Advanced metallurgy unheard of elsewhere was common practice. Chemical processes seldom known or used outside Y-12 were the usual day-to-day activities of Y-12 workers. The pride in workmanship was unsurpassed.

The sense of mission was much like that of the two earlier herculean efforts at Y-12, the separation of the uranium 235 for Little Boy and other atomic weapons during the 1943 – 1946 Manhattan Project and the separation of the Lithium 6 for the thermonuclear weapon during the 1955 – 1963 early part of the Cold War period.

Again, Y-12 was being called upon to accomplish a huge task for the nation. The atmosphere was one of a sense of urgency as the Cold War was seen as being on the verge of becoming World War III at any time. Soon, Y-12 would begin to see the direct results of all the effort when the obvious signs of the end of the Cold War came into sight in the late 1980s. What a welcome relief that was!