

Jack Case – the man who helped bring uranium machining to Y-12

Most of you realize that Y-12 is basically a huge and very precise machine shop. For years it has been the nation's only uranium machining facility. All the secondaries (that part of the nuclear weapon that contains the nuclear material) currently in the nation's nuclear arsenal were manufactured at Y-12.

In this history we have noted that Y-12 began as the uranium electromagnetic separation process plant that provided the uranium for Little Boy, the first atomic bomb dropped in warfare. Much has been said about the herculean effort 22,000 people made to supply the material needed to accomplish that world-changing event.

Yet, when Y-12's uranium separation mission was accomplished and a more economical process took on that task, Y-12 was essentially excess property for the newly formed Atomic Energy Commission (AEC).

A person who played an important role in the next transition, known as Y-12's "Second Era" was Jack Case. Y-12 became the nation's uranium machine shop to support the manufacture of additional atomic bombs. Just how that happened is a most interesting story.

Jack M. Case served from 1967 to 1982 as Y-12's strong and compelling leader, but his involvement in Y-12's history goes much further back. Like other pioneers mentioned earlier in this series, Jack Case was among the earliest arrivals at Y-12 having hired in during April 1944.

Shortly after the war's end in 1945, Y-12's employee population dropped from 22,000 to close to 3,000. Only Building 9204-3 (Beta 3) and Building 9731 (the Pilot Facility and first building completed) continued to function as calutron buildings. The uranium 235 separation mission moved from Y-12 to K-25, because the gaseous diffusion method was more economical than the electromagnetic separation process.

Y-12 was without a mission, and workers began preparations to remove the calutrons and return much of the 14,700 tons of silver borrowed from the U.S. Treasury for electrical conductors because of the copper shortage during the war. As you now know, the silver in the calutrons located in Building 9731 was not returned until 1970.

In July 1947, with unrest regarding Russia already hinting at the Cold War, more atomic bombs were to be manufactured. Some of the research-oriented top officials of Los Alamos were reluctant to get into the post-war business of producing the stockpile of nuclear weapons requested by the government. They did not have the staff or facilities to undertake any major expansion of production work with uranium.

When Russia exploded its first atomic bomb on August 29, 1949, the Cold War began in earnest. However, a full two years earlier, Y-12 was already selected to machine the uranium needed to build additional atomic bombs. While Russia's nuclear explosion was a surprise, their desire to expand their control and influence in Europe was well known and fully understood. An effort to prepare America's nuclear defense was already underway.

The original idea that Y-12 should get into this weapons business came from the Atomic Energy Commission's (AEC) General Manager Walt Williams, who thought the now-excess facilities at Y-12 could be used for machining uranium. Williams asked Y-12 to send a team to Los Alamos Scientific Laboratory to find out what would be needed to produce additional weapons of the Hiroshima and Nagasaki type designs, then come back to Y-12 and install the equipment to manufacture them.

Jack Case (from the Machine Shops), Wimpy Hilton (from Tool Design), and John Strohecker (from Engineering) went to Los Alamos Scientific Laboratory (LASL), where they were admitted to the highly classified weapons areas. The morning of the first day they were shown "everything," but about noon — long before they had a chance to get much of the information they needed — someone "up the line pulled the plug," told the Y-12'ers their clearances were no good and had them ousted from the plant. Case said they "cooled their heels" out there for quite awhile phoning home, hiking and sightseeing while top AEC

officials kept the phones lines hot trying to get things back on course. After an extended period, the team finally got back in.

When they came back to Tennessee, the team designed and built the facilities for machining uranium in hooded milling machines. They also created the first facilities for producing uranium metal from green salt (UF₄) in greater than lab-scale quantities.

LASL and AEC managers insisted Y-12 provide a cost estimate for producing a certain number and type of weapons components. The Y-12 team was at a complete loss as to how to estimate the cost, not knowing in any detail what equipment and labor would be needed. Y-12 had no experience at all with machining uranium metal parts, but the AEC insisted. The team finally came up with an estimate of \$500,000, which turned out to be just what was charged!