

## Y-12 and the Hydrogen Bomb

A major increase in nuclear weapons work came to Y-12 directly after the first Soviet Union nuclear test on August 29, 1949. Y-12 was already the main source of machining and manufacture of the necessary nuclear parts for the weapons being stockpiled and for the tests being conducted. By the time the Soviet Union exploded its first test, the United States had already exploded six.

The Soviet test, learned by US intelligence to have been a replica of Fat Man, hastened the investigation into espionage. The summer of 1950 saw Julius and Ethel Rosenberg, Harry Gold and David Greenglass arrested as spies. Klaus Fuchs, the person who gave the plans for Fat Man to the Soviets, was also arrested early in 1950 in Great Britain and sentenced to 14 years in prison. He served nine years.

Discussion of the need for a thermonuclear weapon began anew in 1949 when Edward Teller returned to Los Alamos at about the same time as the Soviet Union's first test. Teller had earlier argued for the more potentially powerful weapon, but Robert Oppenheimer had refused to depart from the agreed upon atomic bomb designs using uranium for Little Boy and plutonium for Fat Man.

After the Soviet test, Teller immediately began to push for the greater yields of explosive energy possible with the fusion of hydrogen. Oppenheimer was among those who continued to oppose the development of the hydrogen bomb. An increase in the production of uranium and plutonium was approved leading to additional increased workload for Y-12. The stockpile of atomic weapons was growing and more testing was being planned, all based on the original atomic bomb designs.

The debate continued on whether to create an even more powerful nuclear weapon or to continue the path of producing more and more of the atomic bombs that relied on fission. Y-12 was becoming the primary manufacturing facility for the uranium portions of these weapons. When it became known that Klaus Fuchs had given nuclear secrets from the United States design to the Soviets, fear grew that he may have provided them the design work that had been done on the thermonuclear weapon.

Lewis Strauss, a member of the Atomic Energy Commission who would chair the commission from 1953 to 1958, recommended to President Truman that the hydrogen bomb be developed. Strauss was later to be a key figure in the hearings against Robert Oppenheimer. Strauss supported Edward Teller's position that the United States should have the hydrogen bomb because it was inevitable that the Soviets and others would develop the more powerful nuclear weapons. Teller also testified against Oppenheimer later.

The sentiment that it was imperative that the United States have at least an equally powerful nuclear weapon as anyone else drove the inevitable consideration for building the hydrogen bomb. Although many scientists who had originally worked on the atomic bomb were now opposed to further creation of larger and more powerful nuclear weapons, the debate continued.

The decision for the United States to develop the hydrogen bomb was announced by President Truman on January 31, 1950. The workload associated with designing the thermonuclear weapon fell to Los Alamos. Many additional scientists were needed to work out the complicated interactions necessary to accomplish the detailed and exacting requirements of producing the conditions necessary for fusion of hydrogen and the resulting release of enormous amounts of energy.

It is important to note that during this time of expanded efforts to produce a hydrogen bomb, the Korean War broke out in June of 1950 when North Korea, after gaining the Soviet Union's implied support, crossed the 38<sup>th</sup> parallel and invaded South Korea. The Soviets were convinced that the United States would not intervene. However, the United States did act to bring the United Nations Security Council into the situation.

In August of 1950, the United States also acted by sending bombers to Guam loaded with atomic bombs. This deployment outside the United States was intended to be a show of strength through atomic weapons. President Truman indicated that the use of atomic weapons was a strategy that would be considered, if required.

Manufacturing the necessary parts for the hydrogen bomb designed by Los Alamos was the primary mission of Y-12. This collaborative arrangement developed during the first attempts to design a thermonuclear weapon established a working relationship that has continued through the years.

Not only with Los Alamos, but the intricate and highly precise machining required to manufacture nuclear weapons has created a similar collaborative relationship with all the other nuclear weapons design laboratories. Y-12 has historically been the primary manufacturing facility for the major items in the nuclear portions of the nation's nuclear weapons.

On November 1, 1952, just less than three years after the announced decision to build a hydrogen bomb, the first test was conducted on Enewatak, an island west of Bikini in the Pacific. One island was completely destroyed by the force of the blast.

The next major nuclear weapons work challenge given Y-12 resulted from the explosion of the Soviet Union's first thermonuclear test on August 12, 1953. It was a surprise to the United States.