Manhattan Project 3 Essay, Research Paper

Manhattan Project

The Manhattan Project was the name for the United States program to develop an atomic bomb during the second world war. It was the largest scientific effort undertaken at that time. It involved thirty-seven laboratories throughout the country. One-hundred thousand people worked on this project. Some of these people include the Nobel prize-winning physicists Arthur Holly Compton, Enrico Fermi, Richard Feynman, Ernest Lawrence, and Harold Urey. In the following, I will briefly discuss what nuclear fission is, the origins of the project, the procedures, and what the resulting product was used for.

Nuclear fission is the splitting of heavy nuclei to release energy. Elements such as uranium and plutonium have heavy nuclei. To produce nuclear fission in a nuclear reactor, a bombarding particle, such as a neutron, and a target material, such as uranium 235, is required. The resulting split material is called fission fragments. The by-products of fission chain reactions are energy primarily in the form of heat, and radioactive waste.

The origin of the Manhattan Project is often traced to a letter from Albert Einstein to President Franklin D. Roosevelt. The letter warned Franklin about German efforts to build a nuclear weapon. Einstein advised Roosevelt to appoint a committee to try to create one before the Germans. He ordered the Office of Scientific Research and Development, a government agency, to investigate the possibility of creating an atomic weapon. In 1942, the Army Corps of Engineers was assigned the job of building facilities at which the research and testing would be done. This job was managed by the Corps of Engineers’ Manhattan District. That is where the Manhattan project got its name. Franklin appointed the Army’s chief engineer, Brig. Gen. Leslie R. Groves, as director.

The scientists working on the Project worked in isolation. Many of them did their research in different parts of the country, unaware of the larger project in which they were part of. One of these scientists, the physicist J. Robert Oppenheimer, became concerned that the scientists’ isolation from one another would jeopardize the project. Soon, he discussed with Groves the need for a central laboratory. Oppenheimer identified an isolated site at Los Alamos, New Mexico. When Groves approved the site, the Corps of Engineers began construction of a laboratory and compound in late 1942. After the Los Alamos Laboratory was completed, Groves appointed Oppenheimer to head the laboratory. The scientists at Los Alamos worked out the bomb s technology. Today, the Los Alamos Laboratory houses the nation s most top secret research on nuclear weapons. Elsewhere in the country, city-like industrial complexes worked to produce enough U-235, and plutonium to power the bomb. The largest of these complexes were the Clinton Engineer Works (CEW) at Oak Ridge, Tenn., and the Hanford Engineer Works (HEW) on the Columbia River in Washington.

In 1945 Roosevelt died and Harry S. Truman became president. During the spring and summer of that year, the United States proposed an invasion of Japan. Some military experts predicted that United States casualties from the attack could reach between five hundred thousand and one million. The Truman Administration and military leaders knew that the Manhattan Project scientists expected to have a weapon ready to test by July so they turned down the previous idea. On July 16, the scientists conducted the first test of the atomic bomb at Alamogordo, New Mexico. The blast given off was equivalent to the force of about forty-thousand pounds of dynamite. The bomb was two-thousand times greater than the most powerful bomb in existence at the time. After learning of the success at Alamogordo, Truman, who was anxious to avoid an invasion of Japan, wanted to bring the war to a decisive end, and to intimidate the Soviet Union. He decided that the United States would use an atomic bomb on Japan. On July 26, Truman and other Allied leaders proposed the Potsdam Declaration, threatening “complete and utter destruction” of Japan if it did not surrender right away. Days later, Japan declared that it would continue the war. On August 6, under Truman’s orders, the United States dropped an atomic bomb fueled by uranium, nicknamed Little Boy , on Hiroshima. Three days later the Fat Man plutonium bomb was dropped on Nagasaki. On August 10, Japan announced its intention to surrender. Japan formally surrendered on September 2.

The Manhattan Project was cornerstone of nuclear energy. It was also the most advanced scientific movement at the time. Many scientists put their full effort into producing the world s most powerful weapon for that period. Not only did they just create a weapon of mass destruction, these dedicated scientists helped fuel the further research on nuclear energy.