

# Nuclear Bombs Essential Points

- ✓ Since the nucleus contains protons and neutrons, the overall force is positive, and therefore the strong force is used to keep these repelling protons intact.
- ✓ An Atomic bomb is caused by the addition of a neutron to Uranium 235 or Plutonium, elements too heavy to be supported by the strong force making it unstable. The addition of another Neutron causes fission and the breakup into 2 new nuclei, and a continuous process called a chain reaction, which gives off an enormous amount of energy.
- ✓ 2 bombs were dropped during World War II by U.S. aircrafts. They were “Little Boy” and “Fat Man” on August 6<sup>th</sup> and 9<sup>th</sup>, 1945, respectively.
- ✓ Little Boy’s blast yield was 13-16 Kilotons.
- ✓ Fat Man’s blast yield was 21 Kilotons.
- ✓ Little Boy’s exact layout still classified. Had Uranium 235 divided into 2 parts, the Projectile and the Target.
- ✓ Fat Man was an implosion type weapon using plutonium.
- ✓ Results - High casualties. Fat Man more powerful but Little Boy caused more deaths as Hiroshima is flat land and Nagasaki is a valley.
- ✓ Once Nazi Germany invaded Poland the nuclear arms race sped up. Albert Einstein wrote several letters to Franklin Roosevelt urging him to establish a nuclear capability before the Germans.
- ✓ The “Manhattan Project” was originally called the “Laboratory for the Development of Substitute Materials,” but this name was changed because of the unwanted attention it brought
- ✓ The three main sites for the Manhattan Project were located at Hanford in Washington State, Los Alamos in New Mexico, and Oak Ridge in the Tennessee Valley.

- ✓ The University of Rochester also played a role in the Manhattan Project through studying the effects of radiation on the human body.
- ✓ The first test of a nuclear bomb occurred on July 16, 1945 in New Mexico known as the "Trinity Test"