

Rodong Sinmun 4 Sept 2017 [By Kim So'ng-wo'n, dean of Kim Ch'aek University of Technology: "The EMP Might of Nuclear Weapons"]

EMP is the English acronym of electromagnetic pulse.

Nuclear bomb explosions are divided into underground nuclear explosions, above-ground nuclear explosions, air-burst nuclear explosions, and underwater nuclear explosions, depending on where they occur. Of them, air-burst nuclear explosions are known to carry the highest yield.

Air-burst nuclear explosions can be low-altitude, medium-altitude, or high-altitude nuclear explosions. Low-altitude nuclear explosions are nuclear explosions occurring 600 meters or less above the ground, medium-altitude nuclear explosions are nuclear explosions occurring between 600 meters and 10 kilometers above the ground, and high-altitude nuclear explosions are nuclear explosions occurring 10 kilometers or higher above the ground.

High-altitude nuclear explosions are divided into nuclear explosions in the stratosphere and nuclear explosions in space.

In explosions occurring 30 kilometers above the ground, the explosion energy is released mostly in the form of ultraviolet light, X-rays, and flash radiation with a small amount released in the blast wave due to changes in air density, the geomagnetic field, and the water vapor in the atmosphere. In explosions occurring 50 kilometers above the ground, the actual blast wave does not materialize because of the highly rarified state of surrounding air.

In general, the strong electromagnetic pulse generated from nuclear bomb explosions between 30 kilometers and 100 kilometers above the ground can severely impair electronic devices, electric machines, and electromagnetic grids or destroy electric cables and safety devices.

In explosions occurring at such altitudes, large amounts of electrons are released as a result of ionization reactions of high-energy instant gamma rays and other radioactive rays. These electrons form a strong electromagnetic pulse (EMP) through interaction with the geomagnetic field.

This electromagnetic pulse forms a strong electric field of 100,000 volts per meter when it approaches the ground, and that is how it destroys communications facilities and electricity grids.

In general, the yield of a nuclear explosion takes effect in four components: the blast wave, flash radiation, early nuclear radiation, and radioactivity contamination.

However, the discovery of the electromagnetic pulse as a source of high yield in the high-altitude nuclear explosion test process has given it recognition as an important strike method.