

Interstage

In a two-stage thermonuclear weapon, three types of energy emerge from the primary to impact the secondary: the expanding hot gases from high explosive charges which implode the primary, plus the electromagnetic radiation and the neutrons from the primary's nuclear detonation. An essential energy transfer modulator called the interstage, between the primary and the secondary, protects the secondary from the hot gases and channels the electromagnetic radiation and neutrons toward the right place at the right time.

There is very little information in the open literature about the mechanism of the interstage. Its first mention in a U.S. government document formally released to the public appears to be a caption in a recent graphic promoting the Reliable Replacement Warhead Program. If built, this new design would replace "toxic, brittle material" and "expensive 'special' material" in the interstage.^[15] This statement suggests the interstage may contain beryllium to moderate the flux of neutrons from the primary, and perhaps something to absorb and re-radiate the x-rays in a particular manner.^[16]

The interstage and the secondary are encased together inside a stainless steel membrane to form the canned subassembly (CSA), an arrangement which has never been depicted in any open-source drawing.^[17] The most detailed illustration of an interstage shows a British thermonuclear weapon with a cluster of items between its primary and a cylindrical secondary. They are labeled "end-cap and neutron focus lens," "reflector/neutron gun carriage," and "reflector wrap." The origin of the drawing, posted on the internet by Greenpeace, is uncertain, and there is no accompanying explanation.^[18]