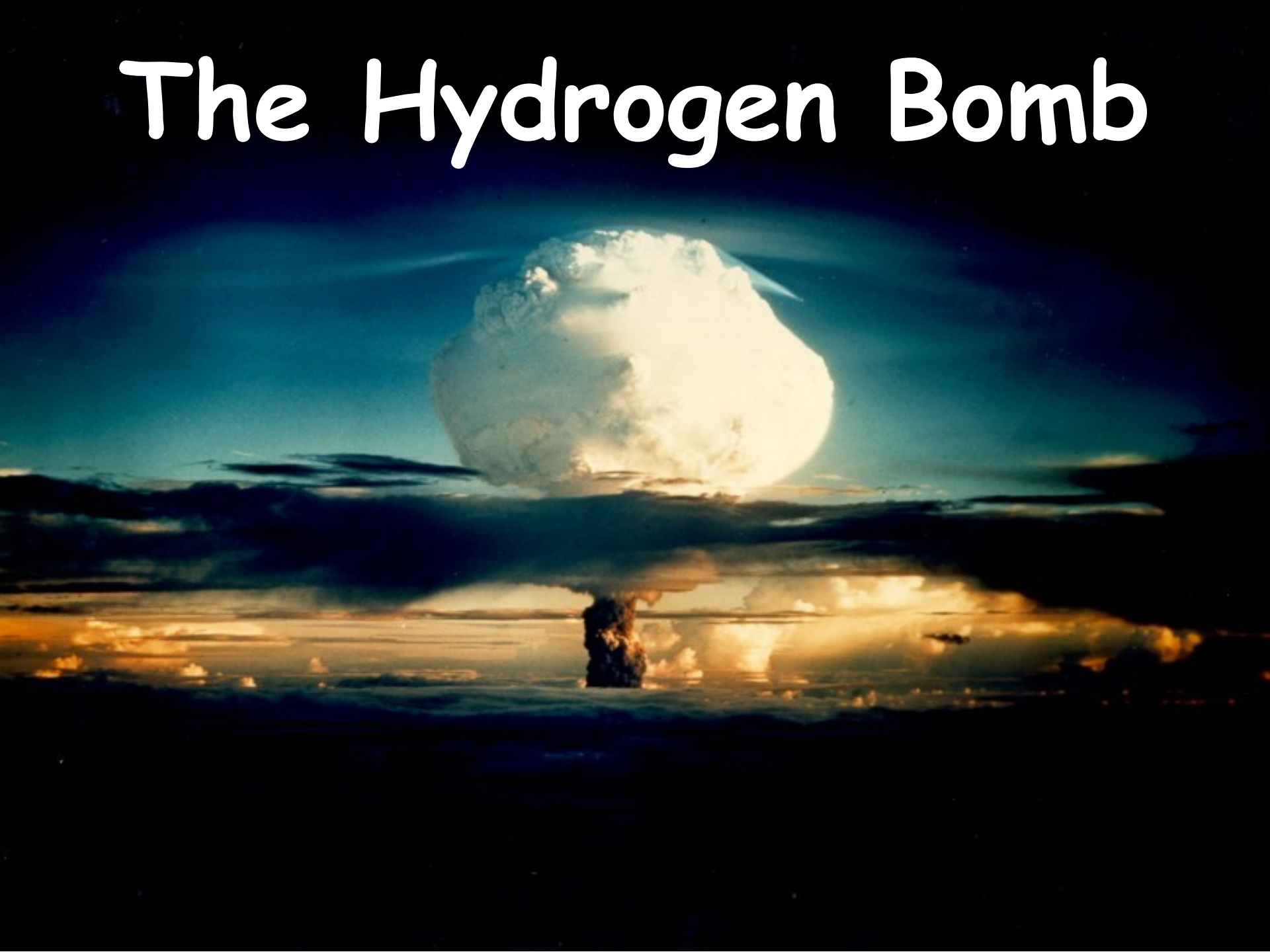
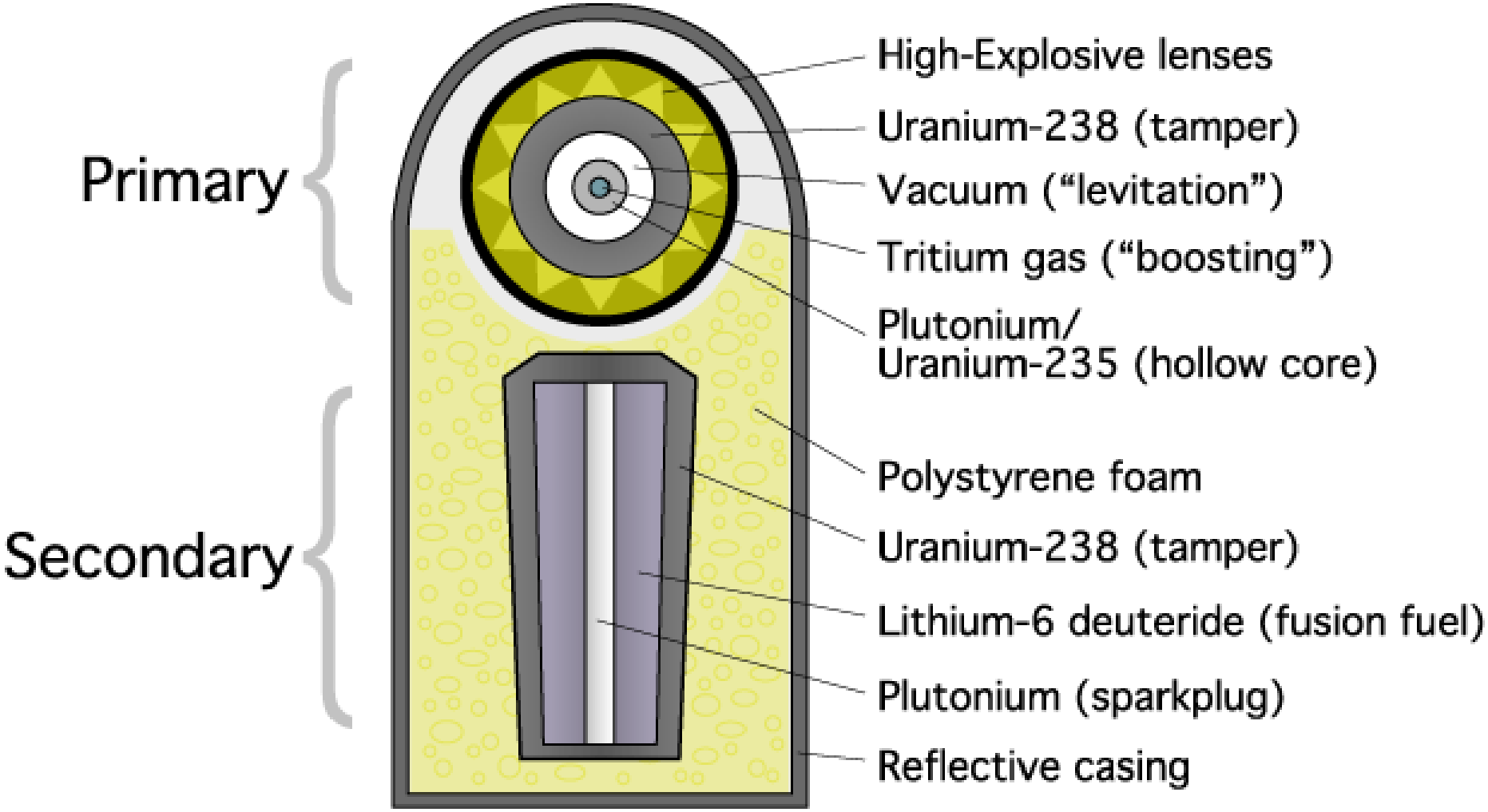
The Hydrogen Bomb



CA Standards

Students know protons and neutrons in the nucleus are held together by nuclear forces that overcome the electromagnetic repulsion between the protons.
Students know the energy release per gram of material is much larger in nuclear fusion or fission reactions than in chemical reactions. The change in mass (calculated by $E = mc^2$) is small but significant in nuclear reactions.

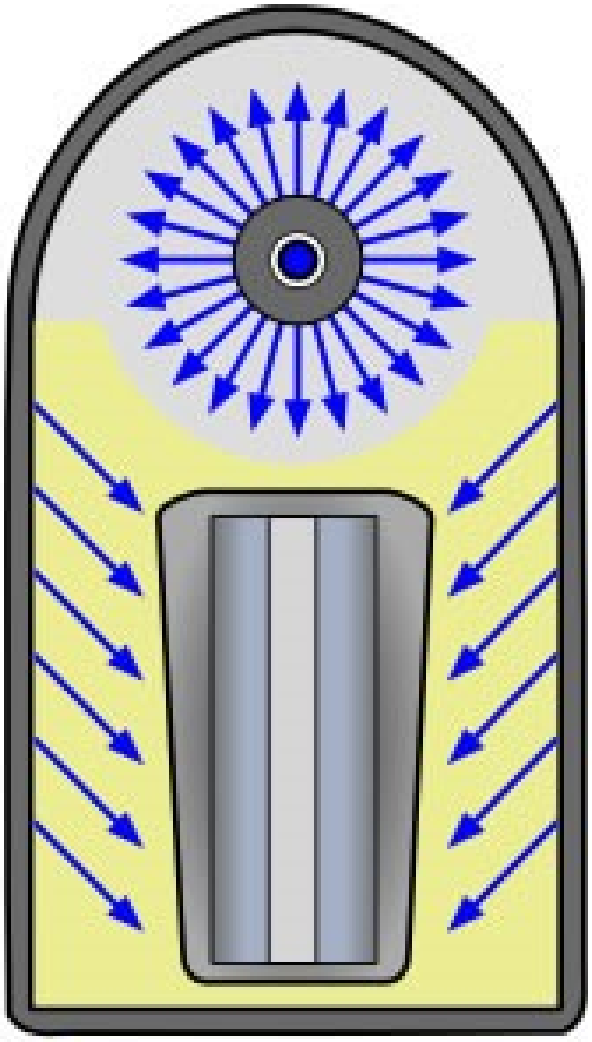
Basic Construction of the Teller-Ulam Device



Stage 1

High-explosive fires in primary, compressing plutonium core into supercriticality and beginning a fission reaction.

Stage 2



Fission primary emits X-rays which reflects along the inside of the casing, irradiating the polystyrene foam.

Stage 3

Polystyrene foam becomes plasma, compressing secondary, and plutonium sparkplug begins to fission.

Stage 4

Compressed and heated, lithium-6 deutheride fuel begins fusion reaction, neutron flux causes tamper to fission. A fireball is starting to form...