CTBT Technical Issues

1) Can the U.S. retain high confidence in the effectiveness of its nuclear arsenal under the Treaty's ban on underground explosive testing?
2) Can compliance by other nations with a test ban be adequately verified?

Important Technical Achievements During the Past Decade

- Successful Life Extension Programs (LEPs) have refurbished materials and components of the weapons in the stockpile to extend their lifetime with high confidence.
- Los Alamos has reestablished the capability to produce new plutonium pits which are the core components of the primaries of thermonuclear warheads.
- A thorough study by the labs, reviewed independently by JASON, has removed a critical concern about the degradation of plutonium metal due to radioactive decay while it ages sitting in the stockpile.
- More robust boost gas transfer systems have been developed that increase the margin by which the primary yield exceeds the minimum value required to ignite the secondary in a thermonuclear weapon.

Essential Ingredients Responsible for the Success of SSP

- A strong cadre of expert scientists and engineers.
- Vigilance in the search for and discovery of both emerging and potential problems.
- Facilities to get data essential for improved understanding, accurate diagnostics, model building and validation, and high fidelity simulations. They include frontier supercomputers, accelerators for accurate radiography (DARHT) devices for the study of material behavior under extreme conditions of pressure, temperature and shock relevant to nuclear explosions (NIF); sub-critical experiments at the Nevada Test Site.
- Strong Peer review.