

Reducing the Nuclear Threat

In 1988, a landmark event in U.S.–Soviet relations occurred when Soviet and U.S. teams for the first time conducted measurements of nuclear detonations at each other's nuclear testing sites. The event, called the Joint Verification Experiment (JVE), allowed Soviet and U.S. scientists to become more familiar with characteristics of the verification technologies that were proposed to monitor compliance with the Threshold Test Ban Treaty and the Peaceful Nuclear Explosions Treaty. The intent of both treaties was to limit the yield of nuclear explosions to no more than 150 kilotons.

Planning for the JVE took place in Geneva and at the two nation's nuclear test sites. A U.S. delegation made a familiarization visit to the Semipalatinsk Test Site early in January 1988, and a Soviet delegation visited the Department of Energy's Nevada Test Site a short while later.

Russian scientists were on hand to witness the Kearsarge event that was detonated August 17, 1988, on Pahute Mesa at the Nevada Test Site. As a symbol of international good faith and cooperation, the Soviet Union flag was raised to the top of the emplacement tower next to the U.S. flag.

Nearly 150 people from the U.S. traveled to the Semipalatinsk test site to participate in the preparation of the Shagan test on September 14, 1988. Forty-five U.S. personnel witnessed the event, standing just 4 kilometers from the test ground zero.

Both nuclear tests were in the yield range of 100 to 150 kilotons of explosive power. Livermore personnel were heavily involved in fielding the two explosions, with the Laboratory contributing equipment, instrumentation, and technical advice.

For each of the two tests, both sides made hydrodynamic yield measurements in the emplacement hole and in a satellite hole located about 11 meters from the emplacement hole. U.S. scientists carried out CORRTEX (continuous reflectometry radius versus time experiment) measurements. CORRTEX is a technology that measures nuclear yield based on close-in observations of the velocity of the shock wave generated by the nuclear explosion. The Soviets made CORRTEX-like measurements as well as a hydrodynamic measurement using switches. The satellite holes at the test sites were drilled by U.S. personnel with U.S. equipment because of a professed Soviet lack of such capability.

JVE was a turning point in Soviet relations with the West. Many American–Russian friendships were forged, and the more open atmosphere anticipated the post–Cold War era. Since the collapse of the Soviet Union, Laboratory scientists have traveled thousands of miles between Livermore and Russia and the newly independent states. They have monitored and assisted the progress of arms reductions; pursued cooperative efforts to better protect, control, and account for nuclear materials; and collaborated with scientists on nonweapons-related projects.



Associate director J. I. Davis leads a tour of the Nova laser for senior managers from Arzamas and Chelyabinsk (the Russian counterparts to Los Alamos and Livermore) as part of a groundbreaking series of U.S.–Russian lab visits in 1992.



Livermore leads the U.S. team that works with the Russian Navy and Icebreaker Fleet to improve the security of nuclear fuel for their nuclear-powered vessels.