Expanding the Underground A-War

The Administration has given its program of underground nuclear tests a $185-million boost, a fact arms control advocates often overlook in lamenting the President's recent decision to halt nearly two decades of movement toward a ban on all nuclear testing.

The expansion is often at the expense of programs for the simulation of nuclear blasts. In times of tension between East and West, the real thing may be favored because it packs more punch.

"With Reagan's saber rattling, underground tests are quite attractive," says a West Coast physicist whose simulation work has suffered cuts in federal funding. "There's nothing that wakes up the Soviets more than a blip on a seismograph."

An increasing number of rumbles have been heard at Yucca Flat in Nevada, followed by a gentle wave-like rocking of the earth. In 1980 the United States held 14 nuclear tests. In 1981 the figure was 16. This year the Department of Energy (DOE) has already announced 16 tests, with more on the way. On 23 September engineers ignited three separate nuclear fires—the first time in the history of underground testing that so many explosions have taken place on a single day. The total budget for the test site has more than doubled since Reagan took office, going from $169 to $354 million.

A 1963 treaty banned all but underground explosions. Each President in the succeeding years has actively sought a complete halt to nuclear tests. Breaking with tradition, the Reagan Administration in July said it will refrain from test ban negotiations with the Soviets.

The official stance of both East and West is that the main reason for underground testing is the development and health of nuclear arsenals. Yet certain blasts may also contain an element of symbolism, at times suggesting a surrogate A-war between the superpowers. The Soviets began a high-yield series of explosions at Semipalatinsk in Siberia on 4 July 1976, a dark bicentennial salute to the United States. The size of the large blasts is still debated by geophysicists who ponder problems of verification.

The United States has also dabbled at the timing game and on occasion has delayed detonations for the purpose of political gain. In March 1977, the White House postponed for a month a high-yield test known as Marsilly, which had been scheduled to explode during delicate negotiations in Moscow by Secretary of State Cyrus Vance.

With the arrival of the Reagan Administration, the timing of some blasts has raised concern. This year amid much publicity, Secretary of Energy James B. Edwards witnessed his first nuclear explosion. The date was 5 August, the anniversary of the atomic strike on Hiroshima. In Japan the next day, groups protested the timing of the test. DOE officials say such incidents are accidental.

The contrast with nuclear anniversaries gone by is striking. Nearly two decades ago on 5 August, President Kennedy signed the limited test ban treaty.

Periods of accord between the superpowers tend to be times when U.S. nuclear tests slow down and work pushes ahead on machines that simulate atomic blasts. The frequency of U.S. nuclear tests fell to an all-time low during the days of Nixon and détente, about ten a year. Likewise, détente ushered in the world's largest machines for the simulation of nuclear effects. Two came on line in 1972. Located just north of Washington, D.C., one machine stands five stories high and stretches almost the length of a city block. The other is a $65-million particle accelerator at the Los Alamos National Laboratory in New Mexico. Normally used for pure research, the machine was sold to Congress on the promise that it could, if needed, simulate certain aspects of atomic blasts.

Reagan has reversed this policy. The Administration's moves to step up testing and cut back on simulation have also gained support in Congress. An example comes from an item buried deep in a budget report of the Senate Committee an Appropriations. "The Committee recommends that the $11,100,000 reduction be applied against two Defense Nuclear Agency projects, laboratory radiation simulator development and effects simulation using radiation simulators. The Committee directs that no funds be withdrawn from the joint Department of Defense and Department of Energy augmented underground nuclear test program approved by the President."

The biggest cut in long-standing plans for atomic simulation has been a machine known as the satellite x-ray test facility, a $100-million behemoth that would have tested whether satellites can withstand the radiation from atomic blasts in space.

Feeling the pinch, Physics International, a company in California that builds nuclear simulators, this spring put out a 50-page call for help that circulated through the defense community. Decreasing U.S. support, it said, would weaken the national option to negotiate a comprehensive test ban treaty and would reduce the reliability of military equipment that must work amid a nuclear war. One nuclear effect the booklet mentioned was the nuclear electromagnetic pulse (EMP). A question concerning the currently favored basing scheme for the MX missile, known as dense pack, centers on whether EMP from Soviet warheads exploding high above the United States might keep MX missiles pinned down in their silos.

Only a few detonations in Nevada are aimed at seeing how atomic blasts might cripple the machinery of war. Some recent underground explosions have dealt with triggering mechanisms for the MX and weapons safety. Every so often, moreover, bombs are taken out of the nuclear stockpile to make sure they still pack a punch.

Underground tests are crucial for the development of weapons, although powerful new techniques of computer and machine simulation are playing increasingly large roles. Moreover, according to weapons experts at Los Alamos, individual tests are yielding more and more information, due to increasing sophistication in data gathering and analysis. The abundance of data has not resulted in a diminution of testing by the United States.

Curiously, there has been a dramatic slowdown by the Soviets. According to James Cannon at the DOE office of defense programs, the number of Soviet blasts per year since 1978 has dropped from 20, to 15, to 10, to 9, and this year, so far, 4. Perhaps the Soviets are slowing the development of new atomic weapons. When seismographs around the globe record a blip because of a nuclear blast, today the United States most often can take credit.

—WILLIAM J. BROAD

0036-8075/82/1022-0360$01.00/0