

A-Test Muffle Jolts Hope for Arms Slowup

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A new Pentagon report on underground nuclear testing throws fresh obstacles in front of diplomats trying to negotiate a slowdown of the world's arms race.

The report, still under wraps, confirms with a U.S. underground nuclear test that such blasts can be muffled so they are hard to detect.

The test blast, called Project Sterling, took place Dec. 3 in a half-mile-deep hole under the Tatum Salt Dome 22 miles southwest of Hattiesburg, Miss.

The measurements taken from the blast show that the tell-tale seismic waves can be reduced by factors ranging from 100 to 300.

The 100 factor means, for example, that the seismic signals from a Hiroshima-size bomb could not be detected in the U.S. if it were set off underground in Russia in a muffled environment.

The Hiroshima bomb was 20 kilotons, or equal to 20,000 tons of TNT. Reducing it by a factor of 100 means a blast of one fifth on a kiloton. The earthquake-type instruments the U.S. uses to detect nuclear blasts thousands of miles away do not register anything under about 5 kilotons.

Other Devices Needed

Therefore, detecting such muffled nuclear blasts would have to rely on other devices—such as special detection satellites.

Project Sterling was the first time a nuclear device had been set off to test muffling—or “decoupling”—theories.

The measurements from that test are highly significant because they indicate how hard it would be for one nation to detect the underground blasts of another if both had signed a test ban

treaty.

Just how the measurements should be interpreted will be disputed by backers and opponents of the proposed treaty to end the testing of nuclear devices underground.

An opponent, Rep. Craig Hosmer (R-Calif.) said yesterday that the Project Sterling report, written by the Defense Department's Advanced Research Projects Agency, “will definitely establish the very distinct possibilities for undetected cheat testing of low yield (below 20 kilotons) devices in violation of any test ban extending to the underground environment.”

The California Congressman, ranking Republican on the Joint Atomic Energy Committee, said the cheating possibilities are such that “President Johnson should withdraw the U.S. offer to extend the present limited test ban treaty” barring atmospheric and underwater nuclear tests.

Hosmer said he had not seen the Project Sterling report itself. But members of the Joint Atomic Energy Committee usually receive advance briefings on such reports.

Other sources who have read the report said Hosmer was taking an overly pessimistic view of the measurements. They said there are so many complicated factors in assessing decoupled nuclear test blasts that the U. S. Government should take the middle ground rather than be pessimistic or optimistic about the reliability of detection devices.

1960 Warnings Recalled

Back in 1960 when Congress was weighing the risks of signing a nuclear test ban treaty, several scientists warned about the dangers of underground blasts going undetected through the decoupling technique.

Dr. Edward Teller, then director of the Lawrence Radiation Laboratory in Livermore, Calif., said during congressional hearings that decoupling could reduce the strength of seismic waves by a factor of 3000 or more.

In a decoupling setup, the larger the hole, the less pressure the blast exerts on the walls.

The Atomic Energy Commission exploded conventional explosives to test the decoupling theories. The tests substantiated that decoupling could reduce the seismic waves by a factor of 300. But the results from the nuclear, Project Sterling test are the hardest evidence now in hand.