

Press Release and Technical Background

December 9, 1996

Study Group Blasts DOE Plan to Conduct "Subcritical" Nuclear Tests

The Department of Energy (DOE) announced today its Record of Decision (ROD) for the Nevada Tests Site (NTS), which includes plans to conduct so-called "subcritical" nuclear experiments underground at the Low-Yield Nuclear Experiments Facility (LYNER). The first test is to be conducted by Los Alamos National Laboratory (LANL) and would be called "Rebound." In that experiment, three simultaneous explosions would shock plutonium, impacting it with high-speed metal plates to simulate the initial implosion of a nuclear weapon. The stated purpose of the three experiments and the ones to follow is to gain data useful to calibrate computer models of weapon performance.

The real reasons the Department is planning these tests are:

- o to maintain the test site in a state of readiness so that the U.S. can break out of the Comprehensive Test Ban Treaty (CTBT) if desired,

- o to provide data wanted or needed to redesign the weapons in the stockpile, a practice condemned by the JASONs, DOE's own consulting experts,

- o to placate the Pentagon, which does not care so much about the details of the tests (since they have little to do with maintaining a nuclear deterrent) so much as about the Clinton Administration's loyalty to nuclear weapons in general and its commitment to the \$40 billion "deal" that was struck for acquiescence to the test ban, and

- o to provide something for the labs to do.

Each test will cost many million dollars to conduct; maintaining the test site as a whole to conduct nuclear tests (tests we have signed a treaty to prevent) costs in the neighborhood of \$270 million per year, if not more.

More than thirty experiments of this general type were conducted at Los Alamos during the 1958-1961 nuclear testing moratorium, leaving a legacy of approximately 90 pounds of plutonium in shallow holes in the Bandolier Tuff. No cleanup is planned.

More subcritical experiments involving plutonium are to be conducted *aboveground* at the DARHT facility when it is completed, using giant steel tanks for containment, and involving what we consider to be unacceptable environmental and safety risks to the region.

Plans for the tests announced today have been advanced without adequate independent, or indeed internal, review. They have already caused considerable international concern, and will play

into the hands of pro-nuclear-testing factions in India and elsewhere.

Some arms control experts, such as Dr. Frank von Hippel of Princeton University, have argued that these impacts could be minimized by conducting the tests aboveground at DARHT, given that similar tests are to be conducted there anyway.

Further Information and Background

The proposed subcritical tests will have national security costs, impacting:

- The process of signing and ratifying the Comprehensive Test Ban Treaty (CTBT) among the world's nations
- The perceived legitimacy of, the CTBT once it is signed
- Attitudes among nations toward the Nuclear Nonproliferation Treaty (NPT), affecting their willingness to a) sign the treaty if they have not done so; b) abide by the treaty if they have signed it; and c) negotiate further nonproliferation-oriented restrictions
- The debate in India on whether or not to conduct one or more nuclear tests and on nuclear proliferation in South Asia generally
- The evolution of comparable subcritical test programs in other nuclear states and associated verification issues
- The scale, capabilities, and direction of nuclear weapons research, development, and testing in the other nuclear states

These potential national security costs do not all inhere in the fact that they would be conducted underground in Nevada. Most of these possible impacts would occur no matter where the tests were done.

What purported benefits could possibly balance these costs? So far, the Department has justified these tests primarily on the basis of maintaining skills at the Nevada Test Site (NTS) and the labs, and secondarily on the basis of the data they will produce--data which is said to improve the stockpile stewardship program *generally* without being necessary for any weapon *in particular*. Despite the purported urgency of these tests, as of this date only two of the proposed tests have actually been designed.

The DOE has failed to consider the following salient facts:

- Aging of pits and pit materials cannot be a reason to conduct these tests, at least for the next two decades or so, because Los Alamos has determined that there are no aging problems which could affect pit performance for the first several decades of pit life, provided the pits were manufactured correctly.¹ Indeed, the purposes of the initial two tests² are to obtain equation of

¹ Personal communication from Paul Cunningham, Director, Nuclear Materials Technology Program, LANL.

state data, not to ascertain aging effects.

o If the purpose of these tests was, *arguendo*, to test the performance of remanufactured pits--a purpose for which these tests are not necessary, nor probably very helpful (see next bullet)--then it makes no sense to conduct these tests prior to actually having the remanufactured pits in hand, i.e. prior to circa 1998 at the earliest. Experiments like Rebound are not relevant for this purpose.

o The performance of a pit will be reliable if the physical characteristics (e.g. dimensions, surface finish) and metallurgical quality (e.g. composition, phase, grain size, weld qualities) are adequate. All these properties can be measured in the laboratory; it is far from clear that subcritical tests would be useful for this purpose. Pits produced at LANL, LLNL, and RFP all worked well in Nevada (even the *first* test of *new-design pits*³), despite inevitable minor variations in manufacture.

Given the foregoing costs--some predictable, some not--and lack of benefits, we do not believe there is an intellectually-defensible justification for these tests.

The Department has received requests for independent reviews of the utility and nonproliferation impacts of these tests. Much money and time could be saved if the Department were to simply cancel these tests without further studies, given the absence of even a *prima facie* case to conduct the tests. Should the Department conduct these reviews, they should be as fully public as is possible, consistent with classification concerns, both in the sense of public *disclosure* and in the sense of public *involvement*.

The public review of the purported benefit of these tests should include a detailed justification of *each* proposed test, showing the necessity of that test to maintain the reliability of existing, unmodified, weapon types in the arsenal.

Any sound nonproliferation review should include two or possibly three elements. The first is a review by *independent* experts not in any way beholden to the Department or its contractors, experts whose views are published in full by the Department without redaction or abridgement. The second element is public disclosure and review. The third element of is review by *foreign* experts (e.g. former diplomats), who may be much better placed than we to assess the impact of the proposed tests on their country's policies and cooperation with U.S. security goals.

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² The first test, Rebound, would actually be three simultaneous explosions (and thus three separate, related tests); see LANL Weapons Insider, April 1996, p.4.

³ Ray Kidder, "Maintaining the U.S. Stockpile of Nuclear Weapons During a Low-Threshold or Comprehensive Test Ban," October 1987, UCRL-53820, LLNL.