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OF THE  
  
NATURAL RESOURCES DEFENSE COUNCIL

BEFORE THE  
  
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT  
  
OF THE  
  
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

CONCERNING  
  
PUBLIC HEALTH AND SAFETY ASPECTS OF  
  
OPERATION OF THE DEPARTMENT OF ENERGY'S  
  
NUCLEAR WEAPONS PRODUCTION FACILITIES

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My name is Dan W. Reicher. I am an attorney with the NRDC's nuclear project. I hold a law degree from Stanford University and a bachelor's degree in biology from Dartmouth College. Prior to joining NRDC's staff in 1985, I was an Assistant Attorney General for environmental protection in the Commonwealth of Massachusetts, a staff member of the President's Commission on the Accident at Three Mile Island, and a legal assistant in the Hazardous Waste Section of the U.S. Department of Justice.

Accompanying me is Dr. Thomas B. Cochran. Dr. Cochran is a Senior Staff Scientist with NRDC. He holds a Ph.D. in Physics from Vanderbilt University, and was a member of the Department of Energy's (DOE) Energy Research Advisory Board (ERAB) from 1978-1982; DOE's Nuclear Proliferation Advisory Panel (1977-79); and the Nuclear Regulatory Commission's Advisory Panel for the Decontamination of the Three Mile Island Unit 2 (1980-1986). He is also an editor and co-author of the Nuclear Weapons Databook series including the recently published Volume II, "U.S. Nuclear Warhead Production."

NRDC is a national environmental organization with over 70,000 members and a staff of 100 lawyers, scientists and resource specialists at offices in New York, Washington, and San Francisco. NRDC pursues a broad range of environmental, energy and defense issues. NRDC has long been concerned about the environmental effects of DOE's nuclear weapons production complex. Over the past 12 years, the NRDC Nuclear Project has won a series of lawsuits to enforce federal environmental laws at

every commercial nuclear reactor which has gone on-line since 1969.

On February 9, 1987, DOE Assistant Secretary Mary Walker advised NRDC that the Department had decided to prepare an EIS on the N-Reactor. Our initial enthusiasm with DOE's decision, however, waned when we learned that the EIS will only consider the environmental impacts of the operating reactor with and without the proposed renovations. It will not consider the question of whether the N Reactor should be renovated and restarted at all. Moreover, the EIS will not consider alternatives to the proposed renovation and restart including permanent shutdown, shutdown with restart only in the event of a national emergency, reliance on existing plutonium stockpiles, construction of a new production reactor, conversion of the mothballed WNP-1 reactor, conversion of the N-Reactor to tritium production, or upgrade of the Savannah River Plant production reactors.

DOE's actions with regard to the N Reactor EIS make a mockery of the National Environmental Policy Act (NEPA), which is "our basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a) The Act is overseen by the President's Council on Environmental Quality (CEQ) which has developed a detailed set of regulations to ensure that agencies act according to both the letter and spirit of the law. The CEQ regulations, which DOE has adopted as its own, state that the purpose of an EIS is to:

could do so in a far less comprehensive document called an environmental assessment. The federal District Court in Washington, D.C. disagreed holding that DOE had to prepare a full EIS prior to start-up of the L-Reactor. In reaching its decision the court held that: "start-up of any nuclear reactor is treated as a major federal action requiring consideration of environmental effects...even restarts of dormant reactors which have previously been the subject of environmental impact statements (sic)." NRDC v. Vaughan 566 F. Supp. 1472 (D.C.D.C. 1983).

An EIS on the decision to restart the N-Reactor would answer, comprehensively and publicly, the hard question which DOE has so far avoided. That is, when the safety and environmental impacts of N-Reactor operation are balanced against the need for plutonium from the plant, is renovation and restart justified? Unless and until Congress and the American public have a full answer to this question we believe the N-Reactor should not be restarted.<sup>1</sup>

## II. N-Reactor Restart

Based on available data, we believe DOE has a very difficult burden in proving that the N-Reactor should be restarted. Our

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<sup>1</sup> NRDC recognizes that consideration of the need for plutonium may necessitate a classified appendix to the EIS. However, such a document would, at a minimum, give our elected and appointed officials better information on which to determine the future of the N-Reactor. Just such a classified appendix was prepared in the L-Reactor EIS.

The N-Reactor's failure to meet NRC safety standards reflects the lack of a containment system found on virtually all U.S. commercial reactors including the Three Mile Island reactor. Such a system is designed to seal off the reactor so that radioactivity released from the core in an accident is not released to the environment. In contrast, the N-Reactor relies on a so-called confinement system which in an accident is intended to filter out most radioactive particulates. However, this filtration system, even if it functions properly, is not capable of preventing the escape of radioactive noble gases such as xenon and krypton. Moreover, if the filters are overwhelmed or disabled by smoke, steam, high temperature, or pressure they would also permit the release to the environment of large amounts of radioactive particulates.

Release of most of the noble gases and even a very small percentage of the radioactive particles and halogens could result, depending on meteorological conditions, in up to a few hundred deaths from acute radiation sickness and radiation-induced cancers, up to several tens of thousands of radiation injuries, and the contamination of hundreds of thousands of square miles of land and water in Washington, Oregon and Idaho. The financial loss from a major accident could involve billions of dollars.

Despite its indisputable safety advantages and a price tag of perhaps 10-20% of the cost of a new production reactor, DOE will not install a containment system at the N-Reactor as part of

exposure, and that exposure would be below levels causing radiation sickness. Aiken Standard, August 26, 1986 at 1.

The differing conclusions reached by DOE and the NRDC-ERF study reflect disagreement over what constitutes a credible "worst-case" accident at SRP. The NRDC-ERF study assumes a substantial core melt and release of 50% of the radioactive iodine and cesium in the reactor core. This is similar to the spectrum of potential releases upon which the Nuclear Regulatory Commission emergency planning regulations are based for accidents at commercial nuclear reactors. 10 C.F.R. 100. DOE, on the other hand, assumes only a 3% core melt, resulting in a release to the environment of less than 1% of all radioisotopes in the reactor building atmosphere except noble gases and tritium. As a result, DOE's emergency planning at the Savannah River Plant encompasses a minuscule off-site population. Essentially, by assuming little in the way of off-site releases for a worst-case accident, DOE is able to minimize the need for off-site emergency planning.

### C. Routine Environmental Impacts

On top of the risk of catastrophic accidents at the N-Reactor, exacerbated by inadequate emergency planning, must be added risks to human health and the environment from routine operation of the plant. The N-Reactor produces vast quantities of high- and low-level nuclear waste, non-radioactive chemical wastes, and mixtures of radioactive and non-radioactive wastes

D. The Need For Plutonium and Production Alternatives

The DOE has defended its decision to restart the N-Reactor, despite the reactor's significant safety and environmental impacts, citing the need for the plutonium. Our research, however, has shown that the plutonium which could be produced at the N-Reactor over the remaining years of the plant's useful life is not needed to meet DOE nuclear warhead production requirements. As an alternative, DOE could use plutonium in the current stockpile to meet production requirements.

We calculate in a recently published book that there are approximately 100 metric tons (i.e. 100,000 kilograms) of plutonium in the U.S. stockpile. Nuclear Weapons Databook, Vol. II, Ballinger (1987). Most of this material is contained in the approximately 25,000 warheads in the U.S. arsenal. This means that, on average, there are about four kilograms of plutonium in each warhead. When operating at full capacity the N-Reactor produces about 600 kilograms of plutonium each year, i.e. the equivalent of about 150 warheads, on average. During the Reagan Administration the U.S. has retired between 1500 and 2000 old warheads. The plutonium contained in these old warheads is recycled into approximately the same number of new warheads. Our message today is that by increasing the retirement of obsolete warheads by about 10% each year, i.e. 150 warheads, for the next few years we would obviate the need for the restart of the N-Reactor. Members of Congress have for years called on the



#### E. Costs of Renovation and Limited Lifespan

DOE estimates that the five year renovation plan for the N-Reactor will cost as much as \$200 million. Yet when completed the plant will still lack a containment system, the key ingredient for safe operation. Moreover, the renovations will be made to a reactor with an extremely limited useful life. The N-Reactor already exceeds its original design-life by five years. Chairman Roddis concluded that even with safety improvements the reactor should not be operated beyond the early 1990's. And DOE itself has admitted that the useful life of the N-Reactor does not extend beyond the mid-1990's. Hundreds of millions of dollars may therefore be spent on a reactor which may operate for only another three to seven years, and which still does not meet commercial safety standards.

#### F. Conclusion

The safety and environmental risks of the N-Reactor operation are substantial and exceed those of commercial nuclear power plants. The plutonium that would be produced by the plant during its limited remaining useful life is not necessary for national security. On balance, these facts raise serious questions about whether the N-Reactor should be restarted. The Senate Armed Services Committee recently concluded that the N-Reactor should be mothballed and restarted only in a national emergency. The Senate Energy and Natural Resources Committee



effect on public health and safety. Although a step in the right direction, the Nuclear Safety Board created under S. 1085 is inadequate to address the need for outside oversight of DOE facilities. Under S. 1085, DOE would continue to operate its facilities under the authority of its internal Orders subject only to occasional reviews, recommendations and reports by the Board. DOE would not be subject to regulations developed by an outside agency after opportunity for public comment. Moreover, states and citizens would have no formal legal mechanisms to have violations addressed by the Board. Nor would there be a cadre of independent inspectors to insure compliance with the regulations. This last point was raised by a former top nuclear engineer at the Savannah River Plant in a recent letter to the Committee about Title I. Mr. Fred Christensen stated:

[W]e remain most concerned that the proposed Department of Energy Nuclear Safety Board appears to be without qualified, resident, on-site inspectors at reactor sites...[w]e feel that such a Board would be as blind as was the ACRS [Advisory Committee on Reactor Safeguard which oversaw DOE facilities under the old Atomic Energy Commission]....

If reactor operators are not well trained, if safety systems do not function as intended, if industrial fires could disable the confinement system, who, pray tell, is going to identify and report these problems to the Board? Surely not local management that has condoned the problems for thirty years, surely not QA [Quality Assurance] groups that report to local management. Such problems may or may not exist, but pray tell, how will the Board know? And that is the problem:

Overall we believe a reconstituted NRC, with its comprehensive regulatory structure and corps of inspectors, is superior to the Nuclear Safety Board, with its limited oversight function, lack of on-site inspectors and absence of a mechanism for formal public intervention.