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STATEMENT OF
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ON BEHALF OF
THE NATURAL RESOURCES DEFENSE COUNCIL, INC.

BEFORE THE
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATION
OF THE
HOUSE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

ON THE POTENTIAL USE
OF AMERICAN COMMERCIAL SPENT FUEL
TO PRODUCE NUCLEAR WEAPONS

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My name is Thomas B. Cochran. I am the Senior Staff Scientist with the Natural Resources Defense Council (NRDC). I hold a Ph.D in Physics from Vanderbilt University, was a member of DOE's Ad Hoc Committee on Nuclear Non-Proliferation from 1977-1979, and am presently a member of DOE's Energy Research Advisory Board.

With me today is Barbara A. Finamore, NRDC attorney. NRDC is a national non-profit environmental organization with a membership of approximately 46,000. NRDC has been working for the past ten years to prevent the proliferation of nuclear weapons capabilities and to halt the use of weapon-usable plutonium in civilian commerce. I am pleased to have this opportunity to present our views to the Subcommittee concerning the potential diversion of American commercial spent fuel for use in the production of nuclear weapons.

I. Summary

NRDC is extremely concerned about several recent statements and proposals by the Department of Energy (DOE) which would lead to the use of the spent fuel from civilian nuclear power plants to produce plutonium for nuclear weapons. DOE is accelerating work on the laser technology needed to enrich this so-called "reactor-grade" plutonium to "weapon-grade." A DOE decision to mine commercial spent fuel for plutonium would in effect turn the nuclear power plants of this country into bomb making factories. This would seriously undermine the credibility of the U.S. in persuading other countries not to produce nuclear weapons under the cover of "peaceful" nuclear programs. It would also pose serious health and safety risks and constitute a massive bailout of the faltering commercial nuclear industry. Congress should act now to rule out for DOE the option of diverting American commercial nuclear reactors to the production of nuclear weapons and to terminate development of laser enrichment for plutonium.

II. DOE Consideration of the Use of Commercial Spent Fuel to Produce Plutonium for the Weapons Program

DOE is presently embarking upon a program to accelerate the production of plutonium for use in the projected manufacture of more than 14,000 new nuclear weapons during the next 8 to 10 years.

Currently, the plutonium for the U.S. weapons program is being produced in three DOE nuclear reactors specifically dedicated to that purpose. DOE is considering several options to double the rate of plutonium production which include the restarting or conversion of existing production reactors. Yet several recent DOE statements and proposals indicate that DOE is also considering another, much more dangerous option in its quest for more plutonium. This option is to gain access to the plutonium now contained in spent fuel rods being stored in pools at U.S. commercial nuclear power plants.

On September 3, 1981, the Secretary of Energy endorsed the use of commercial spent fuel as a source of plutonium for the weapons program in a speech before the DOE Energy Research Advisory Board. Secretary Edwards stated that such a move would provide the plutonium needed for both the weapons program and the breeder reactor program. He also claimed that it would solve the nuclear industry's waste disposal problem.

Several other recent statements and proposals by DOE corroborate the Secretary's suggestion. As described below, they point clearly to an emerging DOE plan to mine commercial spent fuel for use in the production of nuclear weapons.

A. Laser Enrichment of Plutonium

Plutonium is now being produced at some 74 commercial nuclear power plants around the country. However, the plutonium remains "locked up" in spent nuclear fuel rods, which are contaminated with other highly-radioactive fission products. Through chemical reprocessing of the spent fuel, the plutonium can be separated out and recovered. This so-called "reactor-grade" plutonium can be used to manufacture very efficient nuclear weapons, provided that sophisticated techniques are utilized. Yet American nuclear weapons designers prefer to use plutonium which contains a higher percentage of Pu-239, the most fissile of the plutonium isotopes.

DOE's Lawrence Livermore National Laboratory is currently accelerating development of a laser technology to enrich plutonium to weapon-grade, by removing unwanted plutonium isotopes (e.g., Pu-240 and Pu-242). In a hearing last spring before the House Armed Services Committee, Dr. John Emmett, head of the laser isotope separation (LIS) program at Livermore, testified that the LIS process could be used to enrich plutonium from commercial reactors to weapon-grade. On July 22, 1981, NRDC wrote to Secretary Edwards, urging that the program be terminated or, at a minimum, carried out in compliance with the National Environmental Policy Act. Our letter and DOE's recent response are attached to this statement.

In its response to our request for termination of the LIS program, DOE has changed its emphasis as to the program's goals. On July 1, 1980 Donald M. Kerr, the Director of the Los Alamos National Laboratory, stated:

"I am also concerned that our capability to respond rapidly to changing defense requirements may be compromised in the future by a critical shortage of special nuclear materials. Most nuclear stockpile projections indicate that these materials may not be available in a few years. We need strong programs to design advanced production reactors, to refurbish existing production facilities, and to implement advanced isotope separation technology in a context entirely separate from civilian nuclear materials requirements.^{1/} [emphasis added]

DOE now claims that a primary goal of the LIS program is to reduce personnel radiation exposures caused by unwanted plutonium isotopes. Yet DOE has presented no data to support the claim that such exposures are indeed a problem. In addition, there are less costly methods of reducing radiation exposures to personnel handling nuclear weapons, such as improved shielding. This objective alone does not serve to justify the funding increases sought by DOE for the program over the next three years, nor a large \$200 million LIS production plant DOE wants to build by 1987. Furthermore, when

^{1/} Los Alamos Scientific Laboratory, Institutional Plan, FY 1980-FY 1986, July 1, 1980.

the LIS program was described to the Energy Research Advisory Board in a briefing last fall, its potential for reducing intrinsic radiation was never discussed or even raised. The only justification then given was the enrichment of four metric tons of plutonium produced in DOE's N-Reactor at Hanford. DOE now claims it has not decided from what source the plutonium to be enriched will come. Yet the \$560 million accelerated LIS program makes no economic sense unless it is used to enrich plutonium from commercial spent fuel. Only about 3 metric tons of fuel-grade plutonium from the N-Reactor will remain in 1987 and none after 1990, if this plutonium is used to fuel the Clinch River Breeder Reactor. The small plutonium inventory at Hanford could readily be converted to weapon-grade without the LIS technology simply by blending it with highly pure plutonium produced at the Savannah River Plant. In fact, such a program is underway.

By using the plutonium in the spent fuel accumulated from commercial reactors, the LIS production plant could produce about 300 metric tons of plutonium by the year 2000, at a cost that might ultimately be much less than that of building a new DOE plutonium production reactor.

B. DOE Support of Commercial Reprocessing of Commercial Spent Fuel

DOE is continuing to work with the nuclear industry to secure financing to complete the Barnwell, South Carolina reprocessing plant. One proposal is that DOE guarantee to purchase all the plutonium recovered at the facility. The only suggested use for this plutonium has been the breeder reactor research and development program. Barnwell can process 1500 metric tons of spent fuel per year and recover from it 13 metric tons per year of reactor-grade plutonium. Yet the entire breeder program would require only 1.5 metric tons of plutonium per year after existing stocks run out in 1990, even including fuel for the Clinch River Breeder Reactor, should it be built. Without a massive government subsidy, industry clearly would not be interested in buying back this plutonium for use as fuel in conventional light-water nuclear power plants. The completion of the Barnwell facility makes sense economically only if 85 percent of the plant's plutonium output were to be utilized for weapons.

DOE has also proposed to modify its fuel reprocessing plant at Savannah River, South Carolina to enable it to reprocess commercial spent nuclear fuel. The Savannah River Plant can currently recover only weapon-grade plutonium from DOE production reactors and some research reactors. DOE officials claim that the Savannah River modification is needed

to obtain plutonium for the breeder reactor research and development program. Yet once this and the LIS technology are in place, it would require only a change in policy for DOE to use the recovered plutonium in the production of weapons.

III. Nuclear Non-Proliferation Risks

The diversion of U.S. commercial spent fuel for use in atomic weapons would represent a radical departure from U.S. non-proliferation policy. It would completely undermine the U.S. commitment to the Non-Proliferation Treaty (NPT) and to the International Atomic Energy Agency (IAEA) safeguards regime. It would destroy U.S. credibility by setting an example that non-nuclear weapon nations will be only too eager to follow.

For the past quarter-century, the United States has promoted the export of nuclear technology and materials abroad under the often-repeated justification that peaceful nuclear energy programs must and can be kept separate from nuclear weapons development. Under the rubric of "Atoms for Peace," both Republican and Democratic Administrations have repeatedly told the American people that safeguards measures were adequate to assure that nuclear equipment, technology, and materials provided for civilian purposes would not be diverted for military uses. Some have pointed to the fact that no nation has arguably acquired a nuclear weapons capability through an

ostensibly peaceful program as proof of the international non-proliferation regime.

The United States has joined the more than one hundred nations who have signed the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Under the NPT non-weapon nations pledge not to develop nuclear weapons or other nuclear explosive devices and to subject all their peaceful nuclear activities to safeguards.

Although the safeguards requirement does not apply to the United States and other nuclear-weapon countries parties to the NPT, the United States announced that it would voluntarily accept the application of IAEA safeguards to all its nuclear activities, except those of direct national security significance. This offer was first made by President Johnson on December 2, 1967, on the occasion of the 25th anniversary of the first nuclear chain reaction, when he stated:

I want to make it clear, very clear, to all the world that we in the United States are not asking any country to accept safeguards that we are unwilling to accept ourselves. . . .

President Johnson later explained that the offer was made "in order to encourage the widest possible adherence to the Treaty by demonstrating to other nations that they would not be placed at a commercial disadvantage by reason of the application of safeguards under the Treaty." In 1977, the United States

signed an agreement with the IAEA for the application of safeguards to U.S. facilities. This agreement was ratified by the Senate in 1980 and entered into force less than a year ago. Following our lead, France and Great Britain have also voluntarily accepted the application of IAEA safeguards.

There has been a parallel trend in domestic U.S. policy to separate civilian and military nuclear programs. In 1954, Congress took the first step toward the development of a commercial nuclear industry with amendments to the Atomic Energy Act to permit private ownership of atomic power facilities under federal licenses while retaining mandatory Government ownership of all nuclear fuel. Ten years later, Congress, believing that Government nuclear fuel ownership was not necessary to protect the common defense and safety, and was hampering the economic development of the nuclear industry, amended the Act to permit private ownership of plutonium and uranium. The weaning of the commercial nuclear industry away from the federal military program continued with the 1974 division of the Atomic Energy Commission into the Energy Research and Development Administration (now DOE) and the Nuclear Regulatory Commission (NRC).

The Reagan Administration is now openly considering proposals which would render the distinction between atoms for peace and atoms for war totally meaningless. By diverting our own civilian nuclear fuel to weapons use, we would in effect

repudiate our own safeguards agreement with the IAEA. We would destroy whatever credibility we might have in persuading non-weapon countries to accept IAEA safeguards on their civilian facilities. Furthermore, if the U.S. openly turns its commercial nuclear power facilities into virtual defense installations, we can no longer export nuclear technology and materials to non-weapon nations with the cavalier justification that such exports bear no relation to weapons development.

Under the NPT, the U.S. and other nuclear-weapon nations have pledged to undertake efforts to control the buildup of their nuclear arsenals. A decision to divert American civilian nuclear fuel to weapons use would raise serious questions as to whether we will ever be able to put a lid on the nuclear arms race. The current U.S. inventory of weapon-grade plutonium now in or available for use in nuclear weapons is estimated by NRDC to be about 100 metric tons. By mining the plutonium in spent commercial nuclear fuel, DOE would be able to increase the plutonium inventory in the U.S. weapons stockpile by about 50 percent, or enough for some 5,000 additional warheads.^{2/} The cumulative increase by the year 2000 would be 300 percent, or enough for 30,000 additional warheads. Given that the U.S.

^{2/} This estimate is based on the assumption that each warhead would utilize 10 kilograms of plutonium, an amount that may vary somewhat depending upon weapon design.

currently has about 26,000 nuclear weapons, this would put DOE in the position of doubling the size of the U.S. nuclear arsenal.

IV. Health and Safety Risks

DOE mining of commercial nuclear fuel for weapons use could lead to a militarization of the entire back end of the civilian nuclear fuel cycle. This would shield these facilities from NRC licensing requirements and public accountability.

By turning commercial nuclear spent fuel into the raw material for nuclear weapons, DOE would be able to evade NRC licensing reviews and full public accountability for the transportation and storage of radioactive wastes. For example, the reprocessing of commercial utility fuel at the Savannah River Plant would not be licensed, and the resultant high-level waste would be considered "defense waste." As such, it would not be subject to the NRC criteria for transportation and interim storage now applied to commercial waste. Furthermore, although at present any permanent repository for defense waste must be licensed, the House and Senate Armed Services Subcommittees have made it clear that they are opposed to NRC licensing of DOE defense activities. If these committees are successful in repealing licensing requirements for defense

program sites or activities,^{3/} such a repeal would enable DOE and the nuclear industry to avoid completely NRC licensing of the back end of the fuel cycle. In fact, since uranium enrichment is already an unlicensed DOE activity, DOE's proposals would result in a situation where the only commercial fuel cycle activities requiring NRC licensing would be the operating reactors and milling of uranium in some states.

DOE's record in protecting health and safety at its already existing facilities has been appalling. The General Accounting Office issued a report on DOE's nuclear facilities in July 1981 which recommended major changes in DOE's oversight program to correct security and health violations, emergency preparedness program shortcomings, and the lack of adequate safety criteria and standards. DOE's development of adequate long-term storage facilities for military wastes is also lagging.

A DOE decision to use utility spent fuel for weapons could be used to justify curtailment of public access to information on utility management of commercial reactors and the rest of the nuclear fuel cycle. The de facto designation of our nation's nuclear power plants as nuclear weapons

^{3/} The DOE waste isolation program is currently examining several alternative sites for a high-level waste repository. Two of these are on DOE sites: the Nevada Test Site and the Hanford Reservation in Richland, Washington, where major weapons activities are conducted.

production facilities could lead to an increase in police surveillance of workers and groups opposing nuclear power and to other infringements on civil liberties. DOE has already proposed legislation, recently approved by a Senate Armed Services subcommittee, that would allow DOE to prevent the dissemination of a broad range of unclassified information regarding atomic energy defense programs.

Finally, a DOE takeover of civilian spent fuel would serve as a massive governmental bailout of the faltering nuclear industry. It would relieve the industry of its radioactive waste problems, shifting the tremendous financial burden away from the utilities to the American taxpayers. At a time of deep cuts in the federal budget, the public simply would not tolerate Secretary Edward's simple solution.

V. Conclusion

NRDC believes that Congress should act now to foreclose the option of the use of civilian spent nuclear fuel in DOE's weapons program and to terminate the continued development of laser plutonium enrichment. There is a great danger that if Congress hesitates, this technology will be developed and the inevitable pressure to apply it will follow. We would be totally irresponsible if we ignored the prospects of a world in which plutonium would be widely used and extremely vulnerable

to theft or diversion by unstable nations or terrorists seeking to obtain atomic weapons.

It would be a tragic irony if the Reagan Administration, in a myopic rush to build up our nuclear arsenal, took steps which would severely and permanently undermine our national security.