

Before the  
UNITED STATES NUCLEAR REGULATORY COMMISSION  
Washington, D.C. 20555

In the Matter of  
LOS ALAMOS NATIONAL LABORATORY Docket No. 11004909  
(Export of MOX Fuel to Canada) License No. XSNM 02943

## **PETITION OF THE NUCLEAR CONTROL INSTITUTE, NATURAL RESOURCES DEFENSE COUNCIL, INC. AND GREENPEACE FOR LEAVE TO INTERVENE AND REQUEST FOR HEARING**

Pursuant to Section 189a. of the Atomic Energy Act of 1954, as amended, 42 U.S.C. § 2239a., and Section 304(b) of the Nuclear Non-Proliferation Act of 1978, 42 U.S.C. § 2155a. (the "NNPA"), and the applicable rules and regulations of the United States Nuclear Regulatory Commission (the "Commission"), including 10 C.F.R. Part 110, Subpart I, the Nuclear Control Institute ("NCI"), Natural Resources Defense Council, Inc. ("NRDC") and Greenpeace (collectively "Petitioners") hereby respectfully petition the Commission for leave to intervene as parties in opposition to the application of Los Alamos National Laboratory ("LANL"), dated July 11, 1996, for a license to export plutonium-uranium dioxide fuel pellets to Canada.

In addition, Petitioners request that the Commission order a full and open public hearing at which interested parties may present oral and written testimony and conduct any discovery and cross-examination necessary to resolve the factual and legal issues relevant to the Commission's determinations with respect to the pending license application. Such a hearing would be in the public interest and assist the Commission in making its statutory determinations under the Atomic Energy Act, as provided for by Section 304(b) of the NNPA, 42 U.S.C. § 2155a., and 10 C.F.R. § 110.84.

### ***I. Petitioners' Interests***

The interests of the three Petitioners in this matter are as follows:

#### ***(a) NCI***

Petitioner NCI is a nonprofit, educational corporation, organized and existing under the laws of the District of Columbia, whose principal place of business is also in the District of Columbia. Its address and telephone number are: 1000 Connecticut Avenue, N.W., Suite 804, Washington, D.C. 20036; (202) 822-8444. Founded in 1981, it has been and is actively engaged in disseminating information to the public concerning the proliferation, safety and environmental risks attendant upon the use of sensitive nuclear materials, equipment, and technology. It develops strategies for halting the further spread of nuclear weapons and is deeply concerned with the inadequacies of present national and international systems for the safeguarding of nuclear materials against theft, diversion and other unauthorized uses.

In 1982, NCI was instrumental in raising the specific issues that prompted enactment of the Hart-Simpson-Mitchell Amendment (Section 214 of Pub. L. No. 97- 415), barring use of licensed power reactors as a source of plutonium for weapons. It also played an active role in the 1983 Congressional decision to suspend funding for the Barnwell reprocessing plant. In 1986, publication of the findings of its International Task Force on the Prevention of Nuclear Terrorism helped lead to enactment of Title VI ("International Nuclear Terrorism") of the Omnibus Diplomatic Security and Anti-Terrorism Act (Pub. L. No. 99-399). In 1987, NCI's publication of a report, "Air Transport of Plutonium Obtained by the Japanese from Nuclear Fuel Controlled by the United States", stimulated enactment of the Murkowski Amendment (Pub. L. No. 100-203, Subtitle H), effectively barring plutonium transport through U.S. airspace.

NCI has undertaken special efforts to educate the public about the risks associated with the use of mixed oxide ("MOX") fuels in general and in particular the inadvisability of pursuing the MOX option as part of the surplus weapons-plutonium disposition program. NCI has convened a number of international conferences and task forces on nuclear proliferation and terrorism issues that have been published as books. These include: *Averting a Latin American Nuclear Arms Race: New Prospects and Challenges for Argentine-Brazilian Nuclear Cooperation* (Macmillan and St. Martin's 1992); *The Tritium Factor: Tritium's Arms Reduction Potential* (NCI/American Academy of Arts and Sciences 1989); *Preventing Nuclear Terrorism: The Report and Papers of the International Task Force on Prevention of Nuclear Terrorism* (Lexington 1987); *Nuclear Terrorism: Defining the Threat* (Pergamon-Brassey's 1986); and *The Plutonium Business* by Walter Patterson (Sierra Club Books 1983).

NCI has issued a number of influential reports illuminating the weapons utility of reactor-grade plutonium, the difficulties of applying effective safeguards to reactor-grade plutonium in bulk and in the form of MOX fuel and the diseconomics of plutonium use in relation to the use of low-enriched uranium fuel. These include an authoritative 1990 study by J. Carson Mark, former head of LANL's Theoretical Division and member of the Commission's Advisory Committee on Reactor Safeguards, "Reactor-Grade Plutonium's Explosive Properties", in response to which the International Atomic Energy Agency (the "IAEA") acknowledged that there was "no debate" on this question ("Blix Says IAEA Does Not Dispute Utility of Reactor-Grade Plutonium for Weapons", *NuclearFuel*, November 12, 1990, at 8); another 1990 study by Marvin Miller of MIT's Department of Nuclear Engineering, "Are IAEA Safeguards on Plutonium Bulk-Handling Facilities Effective?"; and a 1994 report by Paul Leventhal, NCI's President, "IAEA Safeguards Shortcomings -- A Critique". In 1994, NCI published a report, "A Japanese Strategic Uranium Reserve: A Safe and Economic Alternative to Plutonium", proposing a Japanese strategic uranium reserve as a more cost effective approach to energy security for Japan than its MOX and breeder reactor programs.

With respect to effectiveness of safeguards in MOX fabrication facilities, NCI disclosed in 1995 a 69 kilogram plutonium discrepancy at the pilot PFPF plant in Japan. Japan thereafter agreed to a clean-out inspection of the plant -- an operation that is still underway.

In the current public debate over the disposition of excess military plutonium, NCI has been a leader in seeking to define the fundamental basis of a national plutonium policy, championing an approach that seeks to integrate both civilian and military plutonium policy and urging that a clear decision be made in favor of plutonium disposal over plutonium use. To this end, in October, 1994, NCI provided initial comments to the Department of Energy ("DOE" or the "Department") on the scope of DOE's *Programmatic Environmental Impact Statement for the Storage and Disposition of Weapons-Usable Fissile Materials* (the "PEIS"). In June, 1996, NCI provided detailed comments to DOE on the Draft PEIS issued in February, 1996 (DOE/EIS-0229-D). Subsequently, in August, 1996, it provided comments to DOE on the draft outline of the related Nonproliferation and Arms Control Assessment and on the *Technical Summary Report for Surplus Weapons-Usable Plutonium Disposition*.

Finally, NCI has been active in a number of prior proceedings before the Commission. These include, *inter alia*, those related to its own proposals to upgrade the design basis threat for radiological sabotage of nuclear reactors (PRM 73-9), the proposed export of highly enriched uranium to the HFR/Petten Reactor in The Netherlands (In the Matter of Transnuclear, Inc., Dkt. No. 11004440, Lic. No. XSNM 02611, filed 1991), and the proposed export of irradiated fuel elements from the Shoreham Nuclear Power Station to France for reprocessing (*In the Matter of Transnuclear, Inc.*, Dkt. No. 11004597, Lic. No. XSNM 02702, filed 1992). The Petten intervention highlighted issues which led to adoption of the Schumer Amendment, Pub. L. No. 102-486, § 903, 42 U.S.C. § 2160d., restricting exports of highly enriched uranium for research reactors, while the Shoreham intervention resulted in an eventual decision by the utility not to export spent fuel to France for reprocessing.

As reflected in the activities described above, NCI has important institutional interests which would be directly affected by the outcome of this proceeding. Most significantly, its interest and ability to carry out the public information and education programs described above concerning arms control, the spread of nuclear weapons, and the risks of proliferation and nuclear terrorism in general and the use of MOX fuel in particular would be significantly and adversely impaired by the absence of a full, open and independent review by the Commission of the factual, legal and policy issues raised by the pending license application.

#### (b) NRDC

Petitioner NRDC is a national non-profit membership organization incorporated under the laws of the State of New York, with its principal offices in Washington, D.C., New York City, San Francisco, Los Angeles and Honolulu. The address and telephone number of its Washington, D.C. office are: 1200 New York Avenue, N.W., Suite 400, Washington, D.C. 20005; (202) 289-6868. NRDC works to preserve, protect and defend the human environment against misuse and unreasonable degradation, to gather data and inform its members and the public concerning governmental actions and policies that threaten the environment, and to take appropriate legal action to carry out its goals. NRDC has over 336,000 members nationwide dedicated to the defense and protection of the environment. Through its Nuclear Program, which seeks to reduce the risk to the human environment from exploitation of nuclear energy for both military and peaceful purposes, NRDC has played a leading role for over twenty-five years in opposing the development and use of weapons-usable plutonium as a fuel for nuclear reactors, and in helping to shape U.S. plutonium use policy.

In 1971, NRDC represented plaintiffs in the landmark case of *Scientists' Institute for Public Information v. Atomic Energy Commission*, 481 F.2d 1079 (D.C. Cir. 1973), which forced the Atomic Energy Commission (the "AEC") to prepare a programmatic environmental impact statement on its Liquid Metal Fast Breeder Reactor program. NRDC then mounted a

successful campaign to halt the construction of the plutonium-fueled Clinch River Breeder Reactor (the "CRBR"). In this campaign, NRDC participated actively for six years as an intervenor in the Commission's CRBR licensing proceeding (*In the Matter of U.S. Energy Research and Development Administration (Clinch River Breeder Reactor Plant)*, Dkt. No. 50-537 (filed 1975)).

In 1973, NRDC staff served as a consultant and expert witness in a case brought by the West Michigan Environmental Action Council to enjoin the Consumers Power Company from loading the Big Rock Point nuclear power plant with MOX fuel. *In the Matter of Consumers Power Company* (Big Rock Point Nuclear Plant), Dkt. No. 50-155 (filed 1973). During the course of this case, the AEC decided to prepare a programmatic impact statement on the use of MOX fuel in light water reactors. The newly-created Commission proposed in 1975 to halt all licensing of plutonium fuel use until the programmatic statement was completed. When the Commission reversed itself and decided to allow interim licensing before it had completed its environmental review, NRDC sued and won in *NRDC v. Nuclear Regulatory Commission*, 539 F.2d 824 (2d Cir.), *reh. denied*, 9 ERC 1414 (1976). In 1976, the Commission began extensive administrative proceedings to evaluate the environmental impacts of reprocessing spent nuclear fuel and recycling the recovered plutonium in light water reactors. *In the Matter of Generic Environmental Statement on Mixed Oxide Fuel* (GESMO), Dkt. No. RM-50-1 (filed 1976). NRDC was an active participant in these proceedings.

NRDC was instrumental in the 1983 Congressional decision to terminate funding for the CRBR project, effectively ending consideration of plutonium as a commercial fuel in the United States for more than a decade. From 1982 to 1995, NRDC produced an unprecedented series of authoritative databooks (now totaling five volumes) on world nuclear arsenals and fissile material production complexes. In 1995, NRDC published *Making the Russian Bomb: From Stalin to Yeltsin*, including detailed analyses of Soviet/Russian nuclear fuel cycle activities and estimates of plutonium and tritium production. In 1989, a complaint filed by NRDC against DOE led directly to DOE's agreement to prepare a series of broad programmatic analyses on its plans to reconfigure the nuclear weapons production complex, including its plans for the storage and disposition of excess weapons plutonium that have triggered the present export license request.

From 1989 to 1993, NRDC co-sponsored six international workshops with Soviet-Russian officials to discuss nuclear weapons elimination and plutonium disposition issues. In August 1994, NRDC issued a report disclosing technical errors in the IAEA's "significant quantity" ("SQ") standard for assessing potential diversions of plutonium and highly enriched uranium from peaceful uses. The report recommended a drastic tightening of the standard, and as a result a major reduction of the current SQ value is now under review by the IAEA and the U.S. Government.

Long concerned with the inadequacy of fissile material controls in Soviet/Russian bulk handling facilities and research institutes, and impatient with the lack of progress in this area at the government-to-government level following the collapse of the Soviet Union, in 1994 NRDC vigorously (and successfully) advocated creation and funding by Congress of a direct "lab-to-lab" program that could swiftly improve nuclear material security and accounting at key research institutes in Russia, and transfer technology that Russian officials could replicate and disseminate to other sensitive sites.

In the period 1994-1996, NRDC staff acted as a technical consultant and a member of the *U.S.-Japan Study Group on the Future of Arms Control and Nonproliferation After the Cold War*, and as consultant to the *Canberra Commission on the Elimination of Nuclear Weapons* (1995-96). A series of six NRDC papers prepared for the Commission was recently published by the Australian government (Canberra Commission on the Elimination of Nuclear Weapons, Background Papers, August 1996). Several of these papers analyzed the technical and political linkages between the civil plutonium MOX fuel cycle and the creation or maintenance of a nuclear weapons option. In 1996, NRDC contributed a technical appendix, "The Explosive Properties of Reactor Grade Plutonium," to a report on *Japan's Nuclear Future: The Plutonium Debate and East Asian Security* (Carnegie Endowment for International Peace, 1996).

In the first quarter of 1996, NRDC organized an International Experts Task Force, which prepared a report on nuclear policy initiatives, including plutonium fuel cycle and disposition issues, for the G-7 and Russian leaders attending the Moscow Nuclear Safety Summit. In June 1996, a representative of NRDC attended a conference, "The Fate of Spent Nuclear Fuel: Problems and Reality," in Krasnoyarsk, Russia, and presented a paper entitled "The Cost of Russia's Civil Plutonium Separation Program," which included a detailed comparative economic analysis of plutonium separation and MOX fuel use versus the once-through low enriched uranium fuel cycle.

NRDC's informational, educational and advocacy interests, as reflected in the activities described above, are directly implicated by the pending license application. These interests would be substantially and adversely affected by the failure of the Commission to consider, in the context of a public hearing in which NRDC could participate fully, the legal and policy issues associated with the proposed export of MOX fuel to Canada. The interests of NRDC's members in a safe, healthy and secure environment may also be adversely affected by the proposed export.

(c) *Greenpeace*

Petitioner Greenpeace is a nonprofit, environmental corporation, having offices in 30 countries worldwide with approximately 5.2 million supporters. Greenpeace USA, the U.S. arm of the international organization, is a duly-registered corporation under the laws of the State of California, with offices in 13 U.S. cities and approximately 1.6 million supporters. The principal place of business of Greenpeace USA is Washington, D.C., with the following address and telephone number: 1436 U Street, N.W., Washington, D.C. 20009; (202) 462- 1177. Greenpeace also has offices in Canada with approximately 200,000 supporters in that country.

Greenpeace was founded in 1971 in opposition to nuclear testing at Amchitka Island, Alaska, and currently works worldwide in the following areas: toxic waste, biodiversity, energy and climate change, nuclear power, nuclear weapons, and plutonium proliferation. The organization engages in a variety of educational and media campaigns designed to inform the public and politicians to take action in response environmental and security threats facing the Earth.

For the past 25 years, Greenpeace has worked for the completion of a Comprehensive Nuclear Test Ban Treaty and has campaigned for the fulfillment by nations of disarmament obligations under the Nuclear Nonproliferation Treaty. For over 10 years, the organization has focused on the environmental and security risks involved with the separation of plutonium from irradiated nuclear fuel and has been an international leader in campaigns against plutonium stockpiling, transport and use in Russia, Japan and Western Europe, as well as the United States. In the course of its work, Greenpeace has authored or commissioned numerous documents related to the proliferation and environmental risks of reprocessing and plutonium.

In the United States, Greenpeace is actively involved in decisions related to the disposition of surplus weapons plutonium and believes that a U.S. decision to use MOX fuel will serve as a stimulus to the international proliferation of plutonium. In addition to filing comments on the Draft PEIS, Greenpeace is working with environmental groups in the United States and Canada which are located near to reactors under consideration for using MOX fuel. Due to the location in Canada of a Greenpeace affiliate, the organization is very concerned about actions taken by both the U.S. Government and the Canadian nuclear industry in the development of a plutonium fuel for the Canadian "CANDU" reactor.

As Greenpeace has supporters in all states in the United States (and in the Canadian provinces as well), the organization has a keen interest in the application pending before the Commission to export plutonium fuel to Canada. Of particular concern is that a decision to export MOX to Canada could come in advance of a final environmental impact statement on plutonium disposition, thus possibly biasing the environmental review process. Given the status of that process and the fact that MOX fuel is regarded by the IAEA to be of "direct use" for nuclear weapons, *see* IAEA, *IAEA Safeguards Glossary* 12 (IAEA 1987), a decision by the Commission to allow the export of this material without a full, open and independent review by the Commission would have an adverse impact on the ability of the organization to continue with its public information work on the dangers of plutonium proliferation. The interests of Greenpeace's supporters in a safe, healthy and secure environment may also be adversely affected by the proposed export.

## ***II. The Appropriateness of Intervention at this Time***

Petitioners recognize that this Petition comes more than fifteen (15) days after notice of receipt of the license application in the Public Document Room and thus outside the period within which intervention must ordinarily be sought in order to be considered "timely". *See* 10 C.F.R. § 110.82(c)(2). However, there is "good cause" under 10 C.F.R. §110.84(c) for filing outside the fifteen day period. Because the application involves less than 5 kilograms of plutonium, it was never publicly noticed in the Federal Register. *See* 10 C.F.R. § 110.70(b)(2). Moreover, the Commission has discontinued its practice of mailing monthly reports of license applications to interested persons, upon which Petitioners have previously relied. In such circumstances, Petitioners believe they proceeded in a reasonable and timely fashion following the circulation of the first press reports about the application in mid-September, 1996. In a parallel situation in 1992, involving the proposed export of spent fuel from the Shoreham plant to France for reprocessing, Commission staff did not object to intervention on timeliness grounds.

In any event, because of the inherently unfair nature of strictly adhering to a fifteen day rule for license applications which are not publicly noticed in the *Federal Register*, of greater importance for the Commission in this proceeding in determining whether to allow intervention is consideration of the factors specified in 10 C.F.R. § 110.84(c)(1) and (2). These factors strongly militate in favor of granting intervention. First, Petitioners have no other means to protect their interests in this proceeding, and those interests are not now represented by the existing parties. Second, this Petition is not interposed for delay or to broaden the proper scope of the proceedings. In this regard, it deserves special emphasis that the Executive Branch only submitted its views on the application to the Commission on September 13, 1996, in accordance with 10 C.F.R. § 110.41, and such views, as far as Petitioners are aware, have not yet been formally circulated by staff to the Commissioners. Further, as reported in the press, there does not appear to be any urgent need for immediate action on the



license application, since it is not contemplated that the tests for which the MOX fuel is scheduled would take place until sometime next year. Airozo, "Executive Branch Review Slows LANL Bid to Export MOX to Canada", *Nucleonics Week*, September 12, 1996, at 8. Last of all, since a central contention of Petitioners is that the Commission should defer licensing action pending outcome of current programmatic reviews by the Department under the National Environmental Policy Act of 1969, 42 U.S.C. § 4321, *et seq.* ("NEPA"), any incidental delay is inherent in meeting the mandate of the law.

Finally, Petitioners' contentions raise important questions concerning (a) the relationship between this license and the ongoing, broader review within the Government of how best to dispose of surplus weapons material and (b) the appropriateness generally of commerce in MOX, which, as noted above, is directly usable in nuclear bombs. Petitioners submit that their participation will assist the Commission in developing a sound record on these questions. This is particularly important in this proceeding, since the questions raised by Petitioners are not addressed in the cursory, one page statement of Executive Branch views submitted to the Commission which simply asserts the conclusion that such export "will not be inimical to the common defense and security of the United States." Indeed, the Executive Branch statement contains no analysis of the risks and benefits of the proposed export, and so fails to meet the requirements of 10 C.F.R. § 110.41(b)(1) that a "supporting rationale and information" be submitted to the Commission to provide an adequate basis for licensing action.

### III. Background

The use of MOX in civilian power reactors was, at one time, one of the most contentious issues facing the United States and this Commission. Because of the safety, environmental and proliferation hazards associated with such use, and in light of the policies of the Executive Branch at the time, on December 23, 1977, almost twenty years ago, the Commission terminated its generic rulemaking and preparation of a *Generic Environmental Statement on the Use of Recycled Plutonium in Mixed Oxide Fuel in Light Water Cooled Reactors* ("GESMO"), effectively ruling out plutonium use in the United States for the indefinite future. The Commission refused to reopen GESMO in July, 1980, relying in part upon the views of the Executive Branch that to do so would be inimical to the common defense and security, and, over the past sixteen years, the Executive Branch has declined to take the necessary steps that would lead to revival of the GESMO proceeding.

While civil use of plutonium in the United States has for most of the past two decades been a dead issue, this has not been true elsewhere, most prominently in Great Britain, France and Japan where commercial reprocessing facilities have been constructed and become operational and plans for civilian use of MOX fuel have proceeded forward. However, with the collapse of plans to commercialize liquid metal fast breeder reactors in Europe in the foreseeable future, with the major setback to Japan's breeder and plutonium use program caused by the Monju breeder accident of last December, and with the absence of a significant market for recycled plutonium fuel in conventional reactors because of an abundance of low-cost uranium fuel in supply,<sup>1</sup> the viability and survival of the commercial reprocessing/recycle business are in doubt. From the non-proliferation interest of limiting to the fullest possible extent commerce in weapons-usable materials, the complete demise of the commercial plutonium industry would be highly desirable. Indeed, it is the policy of this Administration "not [to] encourage the civil use of plutonium" and to "[s]eek to eliminate where possible the accumulation of stockpiles of ... plutonium, and to ensure that where these materials already exist they are subject to the highest standards of safety, security, and international accountability." White House Fact Sheet, "Nonproliferation and Export Control Policy", 29 Weekly Comp. Pres. Doc. 1901 (September 27, 1993).

While it is the official policy of the United States not to "encourage" commercial reprocessing of spent fuel from civilian reactors and the subsequent recycle of recovered plutonium, and while the reprocessing/recycle business and breeder reactor development have been beset by difficulties, the end of the Cold War has raised a new set of plutonium issues. As the result of arms reduction initiatives, the question of what to do with an excess stockpile of nuclear weapons material in both the United States and Russia, in particular warhead plutonium, has come to the forefront. Some 38.2 tons of U.S. plutonium have already been declared surplus, and additional material may be designated as surplus in the future. In 1993, the Administration promised that the United States would "undertake a comprehensive approach to the growing accumulation of fissile material from dismantled nuclear weapons and within civil nuclear programs." White House Fact Sheet, *supra*, 29 Weekly Comp. Pres. Doc. at 1901. The PEIS now under consideration by the Department represents the Administration's primary effort to implement this initiative. See Draft PEIS, Summary at S-3.

The civil and military sides of the plutonium question are integrally related. The National Academy of Sciences (the "NAS") has underscored that "the risks posed by all forms of plutonium must be addressed," going on to say that "further steps should be taken to reduce the proliferation risks posed by all of the world's plutonium stocks, military and civilian, separated and unseparated ...." NAS, *Management and Disposition of Excess Weapons Plutonium* 34 (NAS 1994) (the "NAS Report"). Similarly, a 1993 report from the Rand Corporation stressed,

It is critical that countries pay attention to the proliferation threat from the civilian side if they want to maximize the nonproliferation value of dismantling U.S. nuclear weapons and those of the FSRs, [i.e., Former Soviet Republics]. If countries ignore the civilian threat, they can compound the problem by making wrong choices on how to deal with military materials.

Chow and Solomon, *Limiting the Spread of Weapon-Usable Fissile Materials* xii (Rand Corp. 1993). The challenge to the United States is to establish and implement a coherent national plutonium policy, harmonizing the arms reduction objective of not returning warhead plutonium to weapons use with the nonproliferation objective of avoiding stocks of separated, weapons-usable plutonium in the world. In meeting this challenge, it *cannot* be assumed that civilian and military plutonium are fundamentally different in terms of the risk of their use for explosive purposes; or that international safeguards can be applied effectively to provide adequate assurance of peaceful processing and use of separated plutonium, either civilian or demilitarized, as fuel for power reactors.

The application pending before the Commission is for only a relatively small quantity (1.04 kilograms) of plutonium. This plutonium would be exported to support "experimental work" to determine the "feasibility" of utilizing MOX derived from surplus weapons material in Canadian CANDU reactors in a program called the "Parallex Dual Irradiation Program". See Memorandum of Understanding Among U.S. Department of Energy, AECL Technologies, Inc., Oak Ridge National Laboratory, Los Alamos National Laboratory, and Amarillo National Resource Center for Plutonium (May 1996) (the "MOU"). The fuel would be tested at the NRU heavy water Test Reactor at the Chalk River Laboratories of Atomic Energy of Canada Ltd. ("AECL") at Chalk River, Ontario.

The Parallex Program itself was first proposed in August 1994 by AECL, with the support of Ontario Hydro, to study the prospects for using MOX fuel containing plutonium from dismantled nuclear weapons at Ontario Hydro's Bruce reactors. The feasibility study contemplates that ultimately some 50 tons of weapons-grade plutonium, coming both from U.S. and Russian military stockpiles, would be burned in two Bruce reactors over a period of 25 years to generate electricity. Therefore, despite the limited nature of the actual proposed export pending before the Commission, there can be no question that it represents an important first stepping stone to a program of substantial proportions.<sup>2</sup>

The proposed export also represents a significant development in the context of DOE's overall Materials Disposition Program. It marks not only the first actual use of military plutonium for purposes of fueling a civil reactor (even a test reactor for experimental purposes) but also the first export of any material for such purposes.

Furthermore, it comes while the decision-making process under NEPA for the PEIS is still underway, with no final determination with respect to desirability of the MOX option having been made. In fact, other options, such as vitrification, may eventually be determined to be preferable from the perspective of cost and proliferation risk. Nonetheless, the MOU notes that the Parallex Program "will be initiated in advance of the ROD [Record of Decision], and will be continued beyond the ROD subject to the ROD itself." The Parallex Program thus appears to represent an effort to avoid the potential negative consequences of the NEPA review for the MOX option or at least to leverage that option in the Materials Disposition Program. Indeed, LANL's letter of July 11, 1996 transmitting the license application to the Commission candidly acknowledges the "aggressive schedule and high visibility of this project."

Finally, the Parallex Program is undoubtedly being watched carefully by other countries interested in potential plutonium use options. CANDU reactors are operated in the Republic of Korea, India, Romania and Argentina. Each of these countries at some point had an active program to develop nuclear weapons.<sup>3</sup> In at least one case, India, that program continues, and India today operates four unsafeguarded CANDU reactors which are "considered to be part of the country's potential nuclear- weapons production infrastructure." Spector, *Nuclear Ambitions* 233 (1990). It has been reported, moreover, that Korea still "would be very interested in obtaining plutonium fuels." Hibbs, "CANDU MOX Fabrication Costs are Unfavorable, Germans Say," *NuclearFuel*, September 11, 1996, at 8. Should feasibility be demonstrated in Parallex and Canada proceed to implement plans actually to burn 50 tons of plutonium, non-Canadian CANDU operators are likely to seize on this as a precedent to justify their own use of plutonium, no matter where derived.

In such circumstances, it is imperative that the pending export not be examined simply as an isolated export of a small amount of plutonium for experimental purposes but within the larger framework of U.S. plutonium disposition and nuclear nonproliferation policy and the risks of tilting, especially prematurely, toward MOX disposition options. Viewed from this perspective, its significant nonproliferation implications must be thoroughly assessed.

The NAS Report proposed three criteria for comparing plutonium disposition options: risk of theft; risk of reversal; and strengthening of arms reduction. NAS Report at 23-27. All three are relevant in assessing the pending application.

The risk of theft is plainly a matter of substantial concern, since weapons-usable plutonium can readily be extracted from MOX fuel by a simple and straightforward chemical process. See Chow, Speier and Jones, *The Proposed Fissile-Material Production Cutoff: Next Steps* 21 and n. 3 (Rand Corp. 1995). The risk of theft arises in two contexts. First, MOX fuel must be transported to Canada. Any transportation link is subject to risks of theft, hijacking and terrorist attack. At this point, however, it is not clear whether MOX shipments would receive the same level of protection as U.S. nuclear weapons transports, i.e., use of "safe, secure transport" (SST) vehicles along the entire route both in the United States and Canada, or whether a different and lesser level of security would be required for the U.S. or Canadian segments, or both, in which case the risk of theft would be aggravated.<sup>4</sup> Second, MOX fuel will be stored on-site at Chalk River. If storage is lengthy prior to loading into the reactor, this would create another point of vulnerability for theft. Security concerns of this sort will be enormously magnified should the AECL implement a full-blown, long-term MOX use program, and the time to begin to address them is now, before a dangerous precedent may be set.

The risk of reversal essentially goes to the difficulty of retrieving plutonium for weapons purposes from final waste forms that meet the "spent fuel standard" and the risks of converting plutonium to weapons from forms that do not meet these standards. While reversibility is not a grave concern when dealing with a kilogram of plutonium, a long-term commitment to MOX, e.g., the 50 tons contemplated by AECL for use over 25 years at the Bruce reactors, is another matter. Of fundamental importance here is that, while burning of MOX is often spoken of as if all or even most of the plutonium were consumed, in fact irradiated weapons-plutonium MOX fuel would contain only about 30% less plutonium than fresh MOX. NAS, *Management and Disposition of Excess Weapons Plutonium: Reactor-Related Options* 270, Table 6-5 (NAS 1995). This plutonium could be recovered through PUREX reprocessing. Furthermore, the isotopic composition of the residual plutonium is such that, even though degraded, it does not pose a substantial barrier to military or explosive use. As the NAS stated in the 1995 study just cited (at 413), "[N]uclear weapons could be made even with the spent fuel plutonium." These concerns are applicable to any country with CANDU reactors at such time as Canada demonstrates the feasibility of MOX use at the Bruce reactors.

Even more important in connection with the pending application are its arms reduction implications and the "fuel cycle policy signal" which approval would give. As the NAS has stated,

[P]olicymakers will have to take into account the fact that choosing to use weapons plutonium in reactors would be perceived by some as representing generalized U.S. approval of separated plutonium fuel cycles, thereby compromising the ability of the U.S. government to oppose such fuel cycles elsewhere. Conversely, choosing to dispose of weapons plutonium without extracting any energy from it could be interpreted as reflecting a generalized U.S. government opposition to plutonium recycle. Either choice could have an impact on fuel cycle debates now underway in Japan, Europe and Russia.

NAS Report at 149. Stated simply, authorizing the export of MOX, even for a limited, initial feasibility test, would effectively lend support to the view that plutonium has an asset value; that effective safeguards can be applied to its use; and that recycle in conventional civil reactors is not only a sensible option but important, if not essential, to nuclear waste management. Needless to say, these are precisely the wrong signals, and they are inconsistent with the Administration's September, 1993 policy statement and premature in relation to the forthcoming Record of Decision on plutonium disposition. Indeed, not only would the signal likely encourage the existing civil reprocessing/recycle business in Western Europe and Japan and reinforce the currently prevailing view in Russia that plutonium is "too valuable to be thrown away" and should be kept for eventual recycle, but it would also likely undercut U.S. nonproliferation diplomacy directed at areas of high proliferation risk. As noted above, South Korea, India and Romania, in particular, currently possess CANDU reactors and may rely on the precedent of the Canadian program to justify their own plutonium programs, regardless of the source of the plutonium.

While the MOX option for warhead disposition, especially when it involves the supply of MOX from the United States to third countries such as Canada, is sometimes offered as a way to stop the accumulation of surplus civil plutonium and strengthen a "once-through", rather than "closed", fuel cycle, ultimately this option may give aid and comfort to the programs it purportedly would undermine. It would do this by offsetting the poor economics of plutonium use which currently threaten to collapse the civil plutonium industry of its own weight and by greasing the regulatory skids for the use of MOX generally. Concurrently, it would complicate physical protection and verification of plutonium disposition and aggravate regional instability in such areas as the Korean Peninsula. Furthermore, the spent MOX fuel itself may be reprocessed, thus perpetuating use of plutonium in commercial programs. In such circumstances, the soundest nonproliferation policy is to avoid even incremental steps toward implementation of this option, and certainly premature commitments even to "feasibility testing" should not be made before completion of the ongoing NEPA process. This is especially so when such steps could deflect attention from more promising and less risky nonproliferation strategies such as immobilization of warhead plutonium by vitrification.

#### IV. Petitioners' Contentions

As set forth in paragraph (a) below, in order to ensure full compliance with the requirements of Section 102 of NEPA, 42 U.S.C. § 4332, the Commission should defer action on the license pending completion by DOE of its current NEPA review of plutonium disposition options, including the associated nonproliferation and technical assessments, and the issuance by DOE of its Record of Decision thereon. In addition, should the Commission reach the merits of the application at this time, for the reasons set forth in paragraph (b) below, Petitioners submit that the Commission cannot and should not find that "[t]he proposed export would not be inimical to the common defense and security" within the meaning of Section 53 of the Atomic Energy Act of 1954, as amended, 42 U.S.C. § 2073, and 110 C.F.R. §§ 110.42(a)(8) and 110.44(a)(1)(ii). Therefore, such application should be denied.

##### (a) *Commission Action on the Application Should be Deferred Pending Completion of DOE's Review Under NEPA of Plutonium Disposition Options.*

As explained in Section III above, the proper course for the United States to follow with regard to the disposition of surplus plutonium from its military stockpile is the subject of an ongoing review by DOE under NEPA. A draft programmatic environmental impact statement was issued in February, 1996. The public comment period closed on June 7. A *Technical Summary Report* and the outline of a *Nonproliferation and Arms Control Assessment* were released for review this summer, and public comments on these documents were received by DOE through August. The availability of a draft Nonproliferation and Arms Control Assessment was noticed on September 30, 1996, and DOE has announced that it will accept comments through November 6, 1996. Presumably, sometime over the next several months, following completion of the *Nonproliferation and Arms Control Assessment*, DOE will issue a Final PEIS, followed by its Record of Decision, determining "how to store weapons-usable materials and dispose of surplus plutonium." See 61 Fed. Reg. 51092 (September 30, 1996).

Although LANL requested expedited treatment of the pending application, no persuasive reason has been presented to the Commission why action on the application should not and could not await completion of the NEPA process. Indeed, as noted above, AECL has indicated that its schedule for fuel testing is flexible and that fuel loading would not need to occur until some time in 1997. Further, as acknowledged by LANL in its July 11 cover letter, the Parallex Program's very future could be mooted by a DOE decision following completion of the PEIS to abandon MOX as a disposal option, while the conclusions of the Program are clearly not intended to inform the Record of Decision itself. Finally, even to appear to "tilt" in favor of one disposition option at this time -- and that is certainly how a positive licensing decision could well be interpreted -- may have the effect of prejudicing consideration of other options, such as vitrification.

In such circumstances, to grant the application at this time would be inconsistent with the requirements of NEPA. The regulations of the Council on Environmental Quality (the "CEQ") require that, until the Record of Decision is issued,

[N]o action concerning the proposal shall be taken which would:

- (1) Have an adverse environmental impact; or
- (2) Limit the choice of reasonable alternatives.

40 C.F.R. § 1506.1(a). Further, Section 1506.1(c) of the CEQ regulations provides that,

While work on a required program environmental impact statement is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment, unless such action:

- (1) Is justified independently of the program;
- (2) Is itself accompanied by an adequate environmental impact statement; and
- (3) will not prejudice the ultimate decision on the program...[by] tend[ing] to determine subsequent development or limit alternatives.

As noted above, the proposed export marks not only the first actual use of military plutonium for purposes of fueling a civil reactor (even a test reactor for experimental purposes) but also the first export of such material for these purposes. It may establish a precedent for a large MOX program or be regarded as a decision in principle about the future of the MOX



program. It thus should be considered a major Federal action for NEPA purposes under 40 C.F.R. § 1508.27(b)(6). In any event, the proposed export entails potential adverse consequences and may limit alternatives. It is not now supported by any NEPA review of its own, nor does it have any apparent independent justification. Consequently, the proposed export should not go forward before DOE issues a Record of Decision on the PEIS. In order to preserve the integrity of the NEPA process, Petitioners submit that the only proper course for the Commission is to defer licensing action pending publication of the Final PEIS and issuance of the Record of Decision by DOE.

*(b) The Proposed Export Would Be Inimical to the Common Defense and Security.*

The proposed export would be inimical to the U.S. common defense and security in a number of respects. When, in July, 1980, the Commission determined not to reopen the GESMO proceeding, it did so in part because of the determination by the Executive Branch that reopening, and so perhaps eventually permitting wide-scale use of MOX fuel in commercial reactors, would be inimical to the common defense and security of the United States. The risks of commercial MOX use to the U.S. common defense and security, even where the source of the fuel is warhead plutonium and the ostensible goal is in theory to rid the world of excess plutonium stocks, remain significant. As set forth in Section III above, these risks include the risks that (i) the plutonium to be exported would be subject to hijacking, theft and terrorist attack; (ii) export of this fuel to Canada would help shore-up existing reprocessing/plutonium use and breeder reactor programs which remain a continuing proliferation threat; (iii) a precedent would be established for future and more dangerous shipments of MOX not only to Canada but also to other nations; (iv) U.S. policies aimed at deterring so-called "rogue states" from pursuing the plutonium option would be undercut; and (v) attention would be deflected from less proliferation-prone strategies, such as vitrification of warhead plutonium. In light of such considerations, the grant of the pending license application cannot be squared with U.S. common defense and security interests, and the license should be denied.

**V. The Need for a Full Oral Hearing**

A full oral hearing to examine Petitioners' contentions is essential both to serve the public interest and to assist the Commission in making its statutory determinations. Such a hearing would fulfill the Commission's mandate to explore fully the facts and issues raised by export license applications, where appropriate through full and open public hearings in which (a) all pertinent information and data are made available for public inspection and analysis; (b) necessary discovery and cross-examination are permitted; and (c) Petitioners and other interested persons are afforded a reasonable opportunity to present oral and written testimony on these questions to the Commission. *See generally* 42 U.S.C. § 2155a. and 10 C.F.R. § 110.44(a), (b), 110.80-110.113.<sup>5</sup>

There is substantial controversy surrounding any MOX use. Only a public hearing in which issues related to such use are fully aired and subjected to public scrutiny will serve to resolve legitimate public questions concerning both the need for granting this license application and the risks associated with such action. Certainly, the unchallenged assertions of LANL and/or the Executive Branch are not enough to satisfy the public interest in the case.

Petitioners include among their directors, staff and supporters individuals with broad experience and expertise in technical and policy matters directly relevant to the risks and implications of the proposed export. A number of these individuals have been involved in the export licensing process since the creation of the Commission by the Energy Reorganization Act of 1974 and the subsequent delineation of its export licensing responsibilities in the NNPA. Additionally, Petitioners have expert consultants fully familiar with all aspects of MOX use, as well as with the pros and cons of various options available to the United States for the disposition of surplus warhead plutonium. These persons would bring to the instant proceeding perspectives which are presently lacking and are pivotal to an understanding and resolution of the factual and legal issues raised by the pending license application.

**VI. Relief Requested**

For the reasons set forth above, Petitioners respectfully request that the Commission:

1. Grant this Petition for Leave to Intervene;
2. Order that an oral hearing be held in connection with the pending license application; and
3. Act to ensure that all pertinent data and information regarding the issues addressed by Petitioners be made available for public inspection at the earliest possible date.

Respectfully submitted,

(signed)  
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Dated: October 3, 1996  
Washington, D.C.

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## End Notes

1. For a general overview of these problems, as well as of the security risks posed by plutonium use, see Barnaby, ed., *Plutonium and Security* (St. Martin's Press, 1992), and Leventhal and Dolley, "A Japanese Strategic Uranium Reserve: A Safe and Economic Alternative to Plutonium", *Science and Global Security* Vol. 5 at 1 (1994). [Back to document](#)
2. It is also not clear, it should be noted, whether there may even be additional shipments of plutonium planned under the Parallax Program itself, thus increasing the Program's more immediate risks. [Back to document](#)
3. For example, in the early 1970s, Korea's top-secret Weapons Exploitation Committee "voted unanimously to proceed with the development of nuclear weapons," and steps were taken to acquire plutonium fuel cycle technology to that end. Subcommittee on International Organizations of the House Committee on International Relations, *Investigation of Korean-American Relations*, 95th Cong., 2d Sess. 80 (1978). In Romania, under the Ceaucescu regime, Romania pursued a secret nuclear weapons program, even separating plutonium in the 1980s in violation of its safeguards agreements. MacLachan, "Romania Produced Unsafeguarded Pu, Blix Tells IAEA Board of Governors", *NuclearFuel*, June 22, 1992, at 16. [Back to document](#)
4. The Draft PEIS, it should be noted, is somewhat ambiguous on transport issues, even as regards a full-scale MOX program, indicating at one point, for example, that MOX fuel will simply be transported within the United States by "truck", Draft PEIS, Table 4.4.2.2-1, and elsewhere that "standard commercial practice" will be followed, even though there is no commercial MOX industry in the United States. Draft PEIS at 4-782. [Back to document](#)
5. The Commission's regulations, it should be noted, include specific recognition that public participation and input are encouraged. 10 C.F.R. § 110.81(a). [Back to document](#)



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