MOX Fuel: A Contribution to Disarmament

U.S. Utilities' Response to DOE's Plutonium Disposition Decision

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Introduction

- Two key words associated with the objectives we are addressing at this conference and , in particular, this session are "cooperation" and "collaboration".

- This conference has been an excellent opportunity for fostering cooperation; especially so, recognizing the varying perspectives represented by all the speakers -- as always a full debate and an open airing of opinions goes a long way in helping us to find the path to meeting our mutual objectives.

- I will be speaking principally as Chairman of the NEI Plutonium Disposition Working Group. As such, I will provide a U.S. industry perspective, not just a utility perspective.

- The principal areas I will address in my comments include:
  - remarks providing some thoughts on the challenge at hand
  - the role of the NEI Working Group
  - specific remarks related to the Utility perspective
  - some views on collaboration

- Overall, what we will suggest is a focus on plutonium disposition through unparalleled cooperation and collaboration.

The Challenge at Hand

- Perhaps our greatest challenge will be to keep sharp focus on the overall objective we are working on -- that objective has been stated in a variety of ways, all of which are essentially the same:
  - Decrease non-proliferation risks to preserve global security now and in the 21st century;
  - Or, as the NAS indicated, eliminate the "clear and present danger" associated with excess weapons grade plutonium.

- The U.S. recognizes that Canada has been talking about this "clear and present danger" for many, many years.

- We must stay focused on our overall objective.

- Many issues will have to be addressed along the way to meeting our objective:
  - storage of materials at various stages
  - conversion of weapons plutonium
  - transportation
  - the role of immobilization
  - the role of MOX fuel
  - fabrication facilities for MOX fuel
  - licensing issues for commercial nuclear reactor use of MOX fuel
  - geologic repository
  - and others

- We cannot let these individual "issues" become the program objectives in and of themselves -- this is all about one thing: "Disposition of excess weapons plutonium and non-proliferation"-- and we should work together to accomplish this important objective in as timely and effective a manner as possible.

- Let me note Canada's efforts in pursuing multilateral agreements among the U.S., Russia, and Canada for use of CANDU reactors for disposition of surplus U.S. and Russian plutonium. Prime Minister Jean Chretien early on and often has led these efforts and as a result the Canadian program has been recognized by the U.S. DOE in its Record of Decision.

- There will be considerable discussion on some issues; for example,
  - Construction of a MOX fuel fabrication facility, as one important issue, should be clearly recognized as a means to the end -- with the end objective being the timely and effective disposition of plutonium.

- Our challenge is to stay focused on the end objective. Moreover, as others have said both here and at other similar forums, we must not only see it through, but greatly accelerate the pace.

NEI Working Group

- At NEI we believe we have taken a significant step toward total nuclear industry collaboration on this issue.

- NEI formed a Plutonium Disposition Working Group in October 1996
  - It was formed as a "committee of the whole" -- meaning that any member of NEI has been welcomed to be a part of this committee.
  - The Working Group includes 30 member companies:
    - 11 nuclear utilities, including Ontario Hydro
    - All fuel fabricators supplying U.S. reactors
    - All the European fabricators of MOX fuel

- Our working group is in support of the conclusions of the NAS when we say we are committed to move forward on a timely basis with the MOX option. Moreover, we support the conclusions of others who suggest that the use of MOX fuel is the preferred method for disposing of most of the weapons plutonium, in line with the "spent fuel standard" and non-proliferation objectives.

- But we recognize that immobilization has a role in the program for certain limited quantities of plutonium where that approach is more practical.

- In short, the working group and NEI fully support the dual track program.

- One of the early efforts of the working group involved the development of a mission statement to guide our efforts and define the basis for our areas of common agreement.

- We established a four point mission statement:
  - 1st point -- **Disposition of weapons plutonium** -- Promote the development and implementation of U.S. policies that achieve safe, effective and timely disposition of surplus U.S. and Russian weapons plutonium
  - 2nd point -- **Mixed oxide fuel as a preferable alternative** -- Advocate, consistent with U.S. nuclear non-proliferation objectives, the use of mixed oxide fuel as a preferable alternative for the disposition of surplus U.S. weapons plutonium
  - 3rd point -- **Resolve generic regulatory and legal issues** -- Coordinate industry initiatives to resolve generic regulatory and legal issues associated with the fabrication, transportation and utilization of MOX fuel
  - 4th point -- **Facilitate communication** -- Facilitate the communication of scientific, technical, regulatory and economic information among industry participants and among the nuclear industry, the U.S. government and the public

- Our intention is for this NEI group be a single voice to the NRC, DOE, and Administration, and Congress where appropriate and helpful, and where we can speak with a single voice.

  - We are already cooperating and collaborating. We recognize, however, that we will have business differences, yet we are united in our resolve to rid the world of excess plutonium.

  - In an earlier era, engineers and scientists -- through the Manhattan project-- created the nuclear technology, in line with the objectives of that time. We, the engineers and scientists of the nuclear industry -- under NEI -- would like our legacy to include our having helped to accomplish what has been referred to as the "un-Manhattan project" -- the disposal of weapons materials and the promotion of non-proliferation objectives.

  - Since Canada played a role in the Manhattan project, it is only fitting that Canada be a part of the Un-Manhattan project.

  - We are already carrying out that role through a number of actions.

  - In January, a few of us met with each of the NRC Commissioners to provide a short briefing on the efforts of the Working Group.

  - On February 21, we supported a workshop involving the NRC, DOE and the industry which provided a forum for discussing the current experience in the use of MOX fuel in commercial nuclear reactors.

  - On March 26, we also supported a similar workshop at which all the European MOX fuel fabricators presented their experiences in licensing and fabricating MOX fuel.

  - Moreover, we have formed several subcommittees working on such topics as communications, regulatory support, nonproliferation, and procurement issues.

The U.S. Utility Perspective

- The electric utility industry in the U.S. is going through dramatic change. We are faced with addressing simultaneously:
  - Industry restructuring
  - Economic deregulation, and
  - Full competition

- Our principal focus must remain on safe, reliable and economic operation of our nuclear plants, with continuous improvement in our safety culture, never being satisfied with today's level of performance.

- As a nuclear utility, looking to the future in this environment, and making observations regarding the potential use of MOX fuel, we make the following observations:
  - MOX fuel technology is a mature and proven technology with a good record of performance in comparable LWR's in Europe.
  - MOX fuel has energy value which could benefit the electricity consumer and taxpayer.
  - Europe's existing capability could be used to quickly implement plutonium disposal in LWR's, in parallel with construction of a U.S. MOX fabrication facility.

- Overall, U.S. utilities believe the technology is acceptable, but that there are institutional issues associated with fabrication, transportation, and storage, which must be addressed to assure a reliable fuel supply, and issues associated with operation and licensing which must be addressed to assure reliable operation of MOX fuel in U.S. nuclear plants.

- Moreover, we must meet the interests of our stakeholders, including:
  - Our customers
  - Our communities, and
  - Our shareholders

Note on Collaboration

- Short term parochial interests must be subordinated to our mutually accepted overall objective:
  - dispose of plutonium as safely and rapidly as possible
  - directly or indirectly assist the governments of the U.S. and Russia in accomplishing this objective
  - "absolute collaboration"

- The complexity of the issues demands collegiality to resolve all the institutional and technical problems.

- The United States Department of Energy has been sponsoring a trilateral project called Parallex in which the Russian Federation and the United States would irradiate small quantities of their surplus weapons plutonium in Canada's National Reactor Universal at the Chalk River Laboratory (NRU/CRL).

- My company formed and led the efforts of the Project PEACE team -- A team consisting of ComEd, Duke, BNFL, Cogema and EdF, collaborating in response to the DOE initiative. We have acted as very effective single, "one voice", team, while remaining open to collaborating with others. Most of all, we are keeping focused on the overall objective. When the first quantities of weapons plutonium are being burned in a commercial nuclear reactor, we will all be winning, we will be disposing of weapons materials. Our short term objective should be to get to that point as safely and quickly as possible.

- There is no current U.S. MOX fuel fabrication capability. In order to proceed with plutonium disposition through MOX in the most timely manner, European experience and excess MOX fuel fabrication capacity should be used. The Europeans have manufactured and burned over 400 tons of MOX fuel since 1963. Additionally, MOX fabrication capacity additions already underway in Europe will more than double the current capacity before the year 2000. The European capacity should be utilized for the U.S. weapons grade plutonium disposition program until comparable MOX fabrication capacity is established in the U.S. That is the most timely and effective approach to begin meeting our end objective. Utilities are prepared to move quickly to assist in ridding the world of this "clear and present danger".

- We want to promote plutonium disposition through unparalleled cooperation and collaboration. Our role is one of "implementing", through MOX fuel in commercial nuclear reactors, the policies made by our federal government -- policies which will be directed at resolving a critical national and global security issue.