

Nuclear Energy Advisory Committee International Subcommittee Report
Recommendations Specifically NE Related
December 8th, 2013
(Prepared for the December 19th, 2013 NEAC Meeting)

Introduction

There is a broad array of U.S. policy objectives in which nuclear energy plays a role, including: prevention of nuclear terrorism; nonproliferation; nuclear safety; energy security; climate change and environmental protection; and exports of American nuclear products with increased jobs to strengthen the U.S. economy. Each of these interacts with the others in complex ways.

President Obama and the administration has made significant progress in a number of nuclear related areas (Heads of State Security Summits, Blue Ribbon Commission, response to Fukushima, Obama Prague speech, the launch of the Small Module Reactor program, promotion of TEAM USA with a White House official designated for this purpose, the International Framework for Nuclear Energy Cooperation (IFNEC) strengthening and coordination, arms reduction, etc.). The Department of Energy (DOE) has been a player in promoting these initiatives, along with the White House, State Department and Commerce Department. Within DOE, there are a number of supporting efforts and responsibilities. DOE has an Office of Nuclear Energy (NE) that is mainly about R&D, an Office of Policy that is focused primarily on non-nuclear fuels and the National Nuclear Security Administration (NNSA) that is focused on nonproliferation and security. State has an Office of Nuclear Energy Safety and Security that is small, primarily focused on 123 agreements; the Department of Commerce has only a very small nuclear energy effort without major technical expertise, but which can be a very important stakeholder when international nuclear power plant sales are on the horizon; the National Security Council (NSC) and National Economic Council (NEC) have one shared official (a recently created position) to manage the intersection of all of these issues. Secretary Moniz, Deputy Secretary Poneman and Nuclear Energy Assistant Secretary Lyons have been active participants in the formulation of many of these policies including strong statements of support for nuclear energy during this 60th anniversary year of Atoms for Peace, an initiative of President Eisenhower to exhibit American leadership in the Era of the Atom. These complex relationships identified by every President since those times illustrate the challenge of maintaining U.S. leadership. This leadership is required if the world of nuclear is to remain safe, secure and economic in decades to come.

The focus of our recommendations is on NE and its international cooperation division, NE-6, although we recognize government-wide coordination remains a priority. To date, NE and NE-6 have done a commendable job in supporting the administration-wide nuclear enterprise. The following recommendations are intended to strengthen two primary goals of NE: maintain world-class nuclear energy technological R&D leadership, while, at the same time, promoting nuclear technology and reactor sales globally through the administration-wide effort known as TEAM USA.

DOE NE, in regard to its specific programs, should:

- Increase the budget for NE-6 to \$8-10 million as this relatively small increase could do much good in regard to accomplishing overall objectives.
- Develop an international nuclear energy R&D roadmap (recognizing it needs to be integrated with the emerging national view of the future) delineating areas of existing and possible collaboration internationally with the objective of sharing expertise, expenses and facilities. Particularly, countries with less established nuclear programs should be focused on as the U.S. can positively influence new build decisions as well as the regulatory, safety culture, and education environments. (Bring to bear the creative thinking of U.S. suppliers, national laboratories and key universities into this process.)
- Develop a catalog of existing and planned NEUP-type university projects and study if any of these are related or could be linked to international nuclear initiatives. Consider giving special credit when evaluating the proposals that explicitly include international universities from targeted countries as team members in NEUP bids.
- Continue efforts to complement existing SMR program activity, with the aim of seeking early overseas deployment within legal guidelines.
- Establish a more comprehensive program to maintain nuclear workforce expertise, both domestically and internationally, noting this can only be done in conjunction with a healthy U.S. nuclear industry. It also must be recognized that DOE NE cannot be successful overall without a healthy U.S. nuclear industry.
- Assign a high priority for participating in climate change initiatives across DOE.
- Develop a specific topic of increased interaction with ARPA-E; a specific example for a nuclear related “stretch goal” could be: “expedited (i.e. less than 10 years) operational deployment of zirconium-free fuels.”

DOE NE, in regard to TEAM USA programs, should:

- Identify the competitive advantages and disadvantages of international competitors for nuclear plant construction, fuel services and infrastructure support for nuclear energy development in emerging economies (in cooperation with the Department of Commerce and Department of State) by looking at the last several international reactor sales and dissect them into: what did the USG do in support of these?; what did other governments do to support their vendors?; and why did the sale go in the direction that it did? This would help identify a possible better TEAM USA strategy for future opportunities.
- Assess the potential for the United States to provide bundled services, including priorities, processes and recommended actions.
- Analyze the extent to which current lending terms are inhibiting investments, and to what extent an expansion of lending terms (OECD-based and others) would relieve this limitation (case studies).

- Leverage current U.S. nuclear industry design innovation advantage (e.g., the AP1000 and the ESBWR) through the TEAM USA initiative with an emphasis on manufacturing innovations (case study).
- Continue to enhance efforts to aid American vendors in their bids to compete in key nuclear markets. Work through TEAM USA to enhance the NRC's role in this regard to leverage the continued regulatory "gold standard" that the agency still holds, thereby promoting the highest level of safety of U.S. approved designs.

DOE NE, in regard to International Collaboration, should:

- Maintain active involvement in OECD NEA activities, recognizing that recent activities of NE have led to the sustainability of the NEA.
- Continue to support post-Fukushima research and development (including U.S. commercial assistance and U.S. national laboratory expertise) to assure that the lessons of Fukushima are studied and experience gained (including reducing radioactivity at the site, as well as taking steps to decommission the facility). This should be done in close coordination with the international community so that the lessons learned are applied globally assuring a safer nuclear future.
- Work at being more involved and influential at the IAEA as new entrant countries always look to the IAEA for guidance and help.
- Continue to support the IAEA international laboratory at Seibersdorf and international activities within the Idaho National Laboratory.
- Maintain the IFNEC program, recognizing that U.S. leadership in an international forum strengthens overall U.S. nuclear objectives as supporting the IAEA in these functions is a positive, but its budget is not large enough to add a mission as potentially broad as nuclear energy operations and safety.
- Reinvigorate the U.S.'s role in the Generation IV International Forum (GIF) through the leadership of the DOE Deputy Assistant Secretary for Nuclear Reactor Technologies in his new role as the new chairman of GIF.

Next Steps: The Subcommittee authorizes Susan Eisenhower and William Martin to convene a discussion group under the auspices of the NEAC International Subcommittee with experts and policy officials from government, industry, academia, international organizations and research centers. The aim of this group will be to broaden the dialogue and exchange of views on the topic of regaining U.S. nuclear energy leadership globally with a focus on key issues including: contributions to climate and energy security initiatives by nuclear energy; U.S. nuclear industrial competitiveness; nonproliferation; nuclear security; nuclear safety; as well as national and global energy R&D requirements.

The International Subcommittee members are William F. Martin (chair), Dr. Matthew Bunn, Dr. Thomas Cochran, Susan Eisenhower, Marv Fertel, Dr. Sue Ion, Dr. Regis Matzje, Dr. Richard Meserve, Dr. Lee Peddicord, Dr. Burton Richter, Dr. Allen Sessoms and Dr. Thomas Shea. The Subcommittee would also like to thank Dr. Joseph Perkowski and Jonathan Gillman for their efforts to organize the meeting and prepare the document.

APPENDIX DOCUMENT - TERMS OF REFERENCE FOR SUBCOMMITTEE

Tasking Definition for the Nuclear Energy Advisory Committee (NEAC) Review of the Office of International Nuclear Energy Policy and Cooperation's Program Activities

Task Title:

Review of the Office of International Nuclear Energy Policy and Cooperation (NE-6)

Responsible Office of Nuclear Energy (NE) Program Office:

Office of International Nuclear Energy Policy and Cooperation

Statement of Work:

NEAC will review the full scope of NE-6 international activities in order to evaluate:

- How to most effectively use limited program resources in engaging in bilateral and multilateral agreements in a prioritized and synergistic manner.
- Multilateral and regional approaches to advancing commercially based comprehensive fuel services.
- How to most effectively support U.S. nuclear exports and overall U.S. international nuclear commercial leadership as part of a "Team USA approach" that has been proposed by the Civil Nuclear Energy Trade Advisory Committee (CINTAC).

Background:

NE-6 serves NE as the overall lead for its international civil nuclear energy activities. NE-6 consolidates and integrates NE international activities, including:

- Coordinating international cooperative research and development (R&D) activities that further NE's mission;
- Leading international nuclear energy collaboration efforts through bilateral and multilateral forums;
- Providing technical and policy support to carry out the civilian nuclear energy aspects of international agreements and other relevant U.S. international commitments;
- Providing advice and support to other DOE offices and Federal agencies that are planning and/or implementing new agreements and other U.S. commitments related to civilian nuclear energy;
- Leading international nuclear fuel service matters and other related activities; and
- Advising other Department of Energy (DOE) offices and Federal agencies on general issues related to the international use of civilian nuclear energy.

NE-6 engages both bilaterally and multilaterally to support broader U.S. policy and commercial goals related to nuclear energy domestically and globally and allows more

effective integration of NE international R&D and policy objectives. NE-6 coordinates its efforts with the National Security Council, Departments of State and Commerce, the Nuclear Regulatory Commission, and other Federal agencies to facilitate the execution of U.S. nuclear energy R&D and civil nuclear policy. Efforts include support for U.S. commercial competitiveness and interests internationally with the aim to bring American nuclear technologies (current and next-generation), products, and services to foreign markets and to help create new high-quality U.S. jobs.

NE-6 supports key functions to include international discussions, negotiations, and related analyses on a range of international nuclear energy strategies.

NE-6 Objectives

Specific objectives under the NE-6 Program include:

- Provide policy analysis and guidance on international civil nuclear technical cooperation activities that allows DOE to undertake R&D more efficiently by collaborating in key facilities and in the development of technologies unique to the foreign partners;
- Serve as the central coordinating program for international engagement within NE and represent NE in international nuclear energy policy and technical interactions with other Government agencies;
- Oversee and manage DOE's international nuclear fuel management initiatives which are focused on providing comprehensive fuel services on a global basis;
- Support U.S. commercial nuclear advocacy efforts in coordination with other agencies;
- Develop, negotiate, and execute international bilateral and multilateral agreements; and
- Support U.S. participation in international organizations that engage in technical collaboration and influence global nuclear energy policy, such as the International Atomic Energy Agency (IAEA), Nuclear Energy Agency (NEA), the Generation IV International Forum (GIF), and International Framework for Nuclear Energy Cooperation (IFNEC).

Deliverable:

1. NEAC will provide a report to the Assistant Secretary for Nuclear Energy with the results of their assessment including recommendations. The Committee should also identify any conditions or actions associated with recommendations.
2. NEAC will provide briefings on the results of the review as requested.

Schedule:

9/28/2012: Final Report approved by NEAC provided to the Assistant Secretary for Nuclear Energy.