

NEAC International Subcommittee Recommendations December 2014

Background

Externalities of nuclear power are major considerations in the international arena. These externalities are primarily geopolitical considerations and considerations related to:

- Safety of nuclear power plants – because of the potential impact that severe accidents can have on the nuclear industry globally;
- Energy security – particularly in countries with little domestic energy resources because of the stable and reliable energy that is provided by nuclear power plants;
- Reduction of green house gasses as they can impact global warming, severe weather, and eventual flooding of major coastal areas; and
- Proliferation – particularly as it relates to the construction of sensitive nuclear fuel cycle facilities as well as nuclear power plants in less stable regions. It is noted that proliferation of nuclear weapons is a concern everywhere and continued attention must be placed globally.

The “lifetime” of commercial nuclear power plant activities is on the order of a century when project initiation, plant operations (including life extension), and the decommissioning period are included. Consequently, the potential impacts of externalities are long-term. The geopolitical situation today will not be the same in future decades and certainly not a century from now. Moreover, strategy decisions are more difficult and complex than they were many years ago when most of today’s U.S. strategies were formulated. At that time, U.S. nuclear vendors were the global leaders, U.S. enrichment capacity dictated the source of fuel, and U.S. government influence was preeminent globally; this is no longer the case.

Now there are many non-U.S. reactor and fuel vendors and, because of their strong domestic markets, they can conduct business as global leaders. They are well supported by their governments both domestically and internationally. Uranium enrichment options are multiple, with potential new entrants emerging. Regional political influence can supplant global influence because of political alliances, impact on local economies, and supplies of imported energy.

If the U.S. expects to continue to influence the geopolitical considerations noted above, the U.S. government nuclear strategy must be one of engagement in the international marketplace. These geopolitical considerations are all important for U.S. national security.

The engagement being recommended includes providing training and assistance from the excellent capabilities at our universities, national laboratories, Nuclear Regulatory Commission, nuclear vendors and major suppliers, and our export credit

agency. The U.S. possesses the design innovation, the R&D capabilities, the quality processes and openness that are the best in the world. In addition, the rigor in how we design, license, and operate our nuclear power plants are models that should be deployed and adopted globally.

U.S. government processes must acknowledge the new realities of the global nuclear industry and work toward making it easier to promote this engagement. The reputation and capabilities that the U.S. nuclear industry (and here is meant the totality of players listed in the previous paragraph) processes are generally viewed by those that desire to deploy or expand their nuclear power as the best in the world – as the “gold standard” by which others are measured. If the U.S. is to exert its influence to promote geopolitical considerations and jobs creation, the U.S. nuclear industry must capitalize on this expertise and the U.S. government must facilitate this engagement.

Charge to the NEAC International Subcommittee (February 2012)

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, and
- 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) (a variant of which has subsequently been adopted by the Administration).

NEAC International Subcommittee Activities (Since June 2014)

The Subcommittee reported its progress on the above stated Charge at the June 2014 NEAC meeting via a set of observations as the “Foundation for a Path Forward”. Since that time, the Subcommittee met on October 6 and 7 to collect input from a variety of sources and to formulate the recommendations that are being made now. The agenda for the October 6 and 7 meeting included presentations and remarks from the following organizations on their international activities:

- DOE NE-6 (International Nuclear Energy Policy and Cooperation)
- U.S. National Laboratories (ANL, INL, and ORNL)
- Universities (MIT and Texas A&M)
- Civil Nuclear Energy Trade Advisory Committee (CINTAC)
- U.S. Nuclear Regulatory Commission
- Export-Import Bank

Recommendations by the Subcommittee

Based on this input and deliberations by the Subcommittee from this meeting and since the initial Charge was given by NE-1 in February 2012, the following recommendations are given.

1. Project U.S. nuclear energy leadership through enhanced nuclear technology education, safety and safeguards training, collaborative R&D, and regulatory collaboration and training. This should be accomplished in a more proactive way, particularly to new emergent/"newcomer" countries that are starting or about to start nuclear power programs. This should have a distinct U.S. footprint rather than a more generic footprint, e.g., IAEA. This initiative should have the following elements:
 - a. Be initiated early, e.g., when nuclear power program intentions are being discussed and deliberated, prior to any announcement or formal reactor bid process;
 - b. Be funded through a collaborative effort by government and non-government sources – sources of funding are an implementation issue discussed below;
 - c. Be geared to building the infrastructure needed to have a safe, secure, and effective nuclear power program; and
 - d. Use the "gold standard" processes listed above, taking advantage of the existing facilities and institutions that already provide much of this in an ad hoc and uncoordinated way.

Specifically, DOE NE should issue a Request for Proposal (RFP) to select an entity that can collect the training and education capabilities and offerings that already exist among the nuclear industry and organize this information into a comprehensive and coordinated program. The selected entity should be tasked to develop a model project to offer this program to new emergent nuclear countries. The entity should also be tasked to develop a fund raising process (e.g., a Fulbright approach), identify potential funding sources, and solicit funding to provide a sustainable program. Finally, the ultimate goal of the effort should be to find or establish an independent company or organization that would deliver this program to new entrant countries.

2. Give greater confidence to new nuclear power entrants as well as established nuclear power countries in the once-through fuel cycle by promoting dry spent fuel storage more aggressively as an interim step to be followed by direct geological disposal as soon as is practical. Continue ongoing efforts on Comprehensive Fuel Services programs, especially those suggested by the "Blue Ribbon Commission on America's Nuclear Future" as part of a comprehensive nuclear waste management approach. This initiative should have the following elements:
 - a. Involve new entrant countries in the ongoing R&D of the long-term storage of dry spent fuel, particularly for high burnup fuel, which is now

the standard. This could include programs under DOE-sponsorship at universities and national laboratories, as well as work being conducted by others, e.g., the NRC and EPRI.

- b. Work with international partners, particularly those who have accepted the once-through fuel cycle to gain broader agreement of this approach as the preferred solution for spent nuclear fuel until geological repositories are viable. Dry fuel storage is the “here and now”; it will be effective for many years and will provide a bridging process until local or regional geological repositories are available.
 - c. Provide training on the regulatory requirements for dry fuel storage so that the solid basis for such regulations is understood and validated.
 - d. Continue working within the existing International Framework for Nuclear Energy Cooperation (IFNEC) on a multinational approach for storage and/or disposal of spent nuclear fuel while continuing to investigate other approaches that might have long-term benefits.
3. Work with the Department of Commerce (DOC) to rethink their approach for formal and “informal” advocacy for nuclear power companies when new opportunities arise. NE should work directly with DOC within existing mechanisms or jointly develop new mechanisms to strengthen the advocacy approach. When there is a single U.S. company involved, DOC’s traditional advocacy support can be very helpful. However, when multiple companies are involved, their advocacy is typically “vanilla” which is not helpful. It does not appear that the DOC fully appreciates the influence it can wield if it could be more flexible and proactive. Better understanding of the full spectrum of opportunities needs to be obtained so that a broader range of U.S. companies can get advocacy support, not just the big multi-national companies such as reactor vendors, architect/engineers, constructors, etc. New market opportunities include smaller consulting companies that act as advisors to emergent nations as they start their nuclear programs. Suggestions for improvement are:
- a. Have greater coordination between U.S. agencies when U.S. companies are showing interest in an opportunity so that no agency puts up unnecessary barriers. An example of this might be to promote better connections between Foreign Commercial Services and other U.S. government agencies.
 - b. Insert nuclear expertise in U.S. advocacy centers so that the situation is better understood and the specific advocacy can be tailored to provide the maximum support for U.S. companies.
 - c. Support the continued role of the White House Director of Nuclear Energy Policy in the Office of International Economics at NSC; it has been very helpful in coordinating the Team USA approach among U.S. Government agencies.

For this last suggestion, it is recommended that the Secretary of Energy write the Director of the NSC, indicating the importance of the White House Director of Nuclear Energy Policy to the long-term success of U.S. nuclear energy exports.

4. The importance of a strong, knowledgeable, and independent nuclear regulatory body cannot be overly stressed. This has been a constant and well-articulated theme over the past few years since the Fukushima reactor accident. Since the nuclear industry is global and events anywhere in the world influence programs all over the world, it is vital that the U.S. continue to support this type of a regulatory body in emergent nuclear power countries. With the U.S. NRC generally regarded as the “gold standard” of regulatory bodies, it is appropriate that it helps set the standard worldwide. DOE should work within existing mechanisms or help develop new mechanisms in cooperation with the NRC to help accomplish the goal of this recommendation. The funding for this increased NRC activity could be encompassed by the first recommendation above or by direct authorization from Congress. The following elements should be considered in this initiative:
 - a. Encourage the NRC to continue to support various nuclear training to less advanced nuclear programs that is currently organized by a variety of other organizations, e.g., universities, through their active participation, presence, and encouragement.
 - b. Proactively look for opportunities to provide a context and a venue for greater engagement of the NRC with these new regulators. Facilitate their participation in such activities to the greatest extent possible.
 - c. Broaden or open up more internship positions in the NRC to “newcomer” countries. This would help develop a more in-depth understanding of a “gold standard” regulatory approach and thereby would help create a more effective regulator in these countries.
 - d. In collaboration with the NRC, consider the scope and delivery model of the current NRC International Regulatory Development Partnership (IRDP) to look for ways that it might be expanded and more universally embraced. The current support to the IAEA program for “newcomer” countries should be continued, but it is not sufficient given the less prescriptive approach promoted by that agency.

5. Financing support from the U.S. Export-Import Bank (ExIm) for new international nuclear projects is a critical factor in the success of U.S. companies. Without this financing, it is doubtful that U.S. companies can compete with companies from other countries that are state owned or highly supported by their governments. Initiatives in this area should have the following elements:
 - a. Continue support for the long-term reauthorization of the ExIm Bank as a vital element in U.S. exports in the nuclear power industry.
 - b. Promote more flexibility in the ExIm Bank to allow U.S. financing to better match Export Credit Agencies (ECAs) of other countries, e.g., Japan and Korea can finance portions of international projects even though they have no direct local content. This is not now possible under current U.S. ExIm Bank policy. Russia and China are not members of the OECD and therefore do not have to follow the agreed upon basic principles for member ECAs. Thus, there is a need for a more flexible approach or different options for financing international nuclear projects.

Specifically, the Secretary of Energy should write a letter to Congress supporting reauthorization of the ExIm Bank, stating the importance of its financing to the success of U.S. nuclear suppliers in the international market. The Secretary of Energy can also write to the head of the ExIm Bank requesting that it evaluate ways to be more flexible to better match the financing provided by other foreign ECAs.