

**Preparatory Committee for the 2010
Review Conference of the Parties to
the Treaty on the Non-Proliferation
of Nuclear Weapons**

NPT/CONF.2010/PC.II/WP.35
8 May 2008

Original: English

Second session
Geneva, 28 April-9 May 2008

**U.S. COMMITMENT TO THE NPT:
INTERNATIONAL COOPERATION ON NUCLEAR POWER**

Working paper submitted by the United States of America

Article IV and the Peaceful Uses of Nuclear Technology

1. Article IV of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) affirms the right of all NPT states party to develop and use nuclear energy for peaceful purposes, consistent with their nonproliferation obligations. It further commits the parties to cooperate with one another in the “fullest possible exchange” of nuclear equipment, materials, and information for peaceful purposes. To extend the benefits of nuclear power to more states, as well as to manage the nonproliferation, waste management, and other implications of such nuclear growth, the United States initiated the Global Nuclear Energy Partnership (GNEP) in 2006. This initiative underscores the fundamental U.S. commitment to nuclear power, and in particular to supporting the objectives of Article IV.2 of the NPT, which calls for peaceful nuclear cooperation with non-nuclear weapon states, “with due consideration for needs of the developing areas of the world.”

The Global Nuclear Energy Partnership

2. The U.S. proposal for GNEP aims to help nuclear power fulfill its promise as a global energy source. GNEP is designed to address the key challenges and obstacles facing nuclear power, particularly the challenges of spent fuel and waste management and preventing

GE.08-61228

proliferation. Related activities under GNEP include efforts to establish reliable fuel services, develop advanced safeguards approaches, and promote new reactor designs appropriate to the capabilities and needs of developing countries. Through GNEP, the United States also aims to address technical obstacles many developing countries will need to overcome in order to establish successful nuclear power programs.

Reliable Fuel Supply and Waste Management

3. The greatest concern associated with the expansion of nuclear power is the possibility that the proliferation-sensitive parts of the civil nuclear fuel cycle, enrichment and reprocessing technologies, could be misused to produce fissile material for nuclear weapons. There is broad agreement on this point, and on the need for stronger controls and institutional arrangements to prevent the spread and possible misuse of these sensitive fuel cycle technologies.

4. A component of GNEP is a proposal to offer reliable and comprehensive nuclear fuel services as an alternative for countries that might otherwise consider developing enrichment or reprocessing facilities, notwithstanding the already great reliability and robustness of the nuclear fuel-supply market. By offering both an assured fuel supply and the take-back of spent fuel, this mechanism would create an attractive alternative to the costly and technically challenging pursuit of the nuclear fuel cycle. With a fuel-supply mechanism, countries with an interest in only the peaceful generation of nuclear energy would have no need to pursue enrichment and reprocessing technologies.

5. In his February 2004 speech on new measures to prevent the spread of weapons of mass destruction, President Bush proposed that “the world’s leading nuclear exporters should ensure that states have reliable access at reasonable cost to fuel for civilian reactors.” Such reliable fuel services would serve as an alternative for countries that might otherwise consider developing their own fuel cycle capabilities in case of a disruption in supply. In June 2006, the United States joined five other leading suppliers of international enrichment services in a proposal to the International Atomic Energy Agency (IAEA) to create a backup mechanism to ensure reliable access for other countries to nuclear fuel should a disruption in supply occur.

6. This proposal began with the observation that the current commercial fuel market is working well and that no user country has ever had its nuclear fuel supply disrupted except for serious proliferation concerns. Nonetheless, fuel supply assurances can provide a safety net in the event of a disruption of supply which cannot be resolved by normal market processes. Those market processes could include backup commercial supply mechanisms, where suppliers back each other in case of disruptions due to unforeseen events. The six countries proposed to establish a backup mechanism at the IAEA, including a reserve of enriched uranium to be available as a last resort.

7. This was one among several international proposals on fuel supply that were discussed during the IAEA Special Event on Assurances of Supply and Non-Proliferation held in September 2006. Early implementation of IAEA recommendations on ways to implement fuel assurances is an important step forward in paving the way for global nuclear growth. Indeed, the United States is already taking the lead in helping establish such a system, and has set aside 17.4 metric tons of highly-enriched uranium declared excess to national security needs for down-blending into low-enriched uranium to form such a nuclear fuel reserve. In June 2007, the Department of Energy awarded a commercial contract for this down-blending, and has already begun deliveries of HEU to the contractor. The down-blending has begun and will be completed in 2010.

8. The GNEP fuel services regime would include both the assured fuel supply and take-back of spent fuel and consolidate these services at the front and back ends of the fuel cycle into a comprehensive package. Fuel leasing is one proposed model under which the supplier would retain ownership of fresh and spent fuel supplied to the user. Others have proposed similar, complementary initiatives.

9. Spent fuel take-back is not an easy problem, and requires addressing the longstanding policy challenges of spent fuel disposition and waste management. Countries have taken various approaches to this problem, including direct geological disposition of spent fuel, reprocessing and disposition of high-level waste, and deferring a solution through long-term dry storage. Under GNEP, the United States proposes to demonstrate novel technologies for recycling spent fuel, which would extract plutonium from spent fuel together with other transuranic elements

and consume those elements as fuel in fast reactors. This approach promises both to greatly reduce long-term waste burdens and to increase the amount of energy that can be produced from reactor fuel.

Safeguards and Proliferation Risk Reduction

10. In addition to reducing waste burdens and facilitating spent fuel take-back, GNEP's approach to spent fuel recycling is also designed to reduce the proliferation risks inherent in the fuel cycle. In contrast to current approaches to reprocessing spent fuel, which rely on the same PUREX process that was first used to produce plutonium for weapons, the GNEP fuel cycle would not separate pure plutonium but would keep it mixed with other actinides in a form that is less readily used in nuclear weapons and is less susceptible to terrorist threats. Such measures reduce but hardly eliminate the proliferation risks inherent in closing the fuel cycle, and it remains of paramount importance to discourage the spread of such sensitive technologies. Eventually, processes such as PUREX that readily separate pure plutonium should become a thing of the past.

11. It is also vital to maintain international confidence that the growth in peaceful nuclear cooperation will not contribute to proliferation. A *lack* of such confidence will inhibit nuclear cooperation and impede the expansion of nuclear power worldwide. Nonproliferation compliance, therefore, is essential to ensure the future of peaceful nuclear cooperation.

12. Like most countries, the United States relies heavily upon the IAEA and its nuclear safeguards system to help provide that confidence. Greater use of nuclear power will place greater burdens on the IAEA, yet the technology base and the expertise we rely upon for safeguards reflect investments made decades ago. This technological gap – not to mention the resource burdens of providing adequate safeguards as the number of nuclear facilities worldwide increases – puts the international community in a precarious position when it comes to responding to the anticipated growth in the need for effective and efficient safeguards.

13. While Article IV refers to the right of countries to use nuclear energy for peaceful purposes, NPT Parties have explicitly agreed – as the text of Article IV makes clear – to exercise

this right in conformity with the fundamental nonproliferation obligations in Articles I and II. Furthermore, as noted by past NPT Review Conferences, because the IAEA safeguards system is designed to help assure fulfillment of parties' nonproliferation obligations, peaceful nuclear activities must also be carried out in conformity with Article III. This is sound policy, and is critical to ensuring that international nuclear cooperation can continue and expand.

14. Strong IAEA safeguards, therefore, are necessary to facilitate the expansion of nuclear power the United States aims to promote. This is why pursuing innovations in safeguards is another element of GNEP, so that we may revitalize the safeguards technology base and build the next generation of safeguards expertise necessary to reinforce international confidence in peaceful nuclear cooperation.

Grid-Appropriate Reactors and Infrastructure

15. Another key element of GNEP that promises to extend the NPT Article IV benefits is the development of new reactors better suited to the capabilities and needs of developing countries. Since many developing countries have small and relatively isolated electric grids, they may not be able to most effectively utilize the 1,000-megawatt and larger reactors currently in use in many industrial countries. Additionally, developing countries may lack the infrastructure and technical capacity to operate such large-scale reactors. Under GNEP, the United States is considering features that could be designed into exported power reactors to make them not only safer and more secure, but also easier to operate. For example, new reactor and fuel designs could extend the period between refuelings or even offer the possibility of lifetime cores.

16. The United States is also working closely with the IAEA to address the nuclear infrastructure needs of developing countries. We joined with a number of other advanced nuclear states to cosponsor a workshop with the IAEA in December 2006 on issues in the introduction of nuclear power, to make clear the demanding requirements of responsible nuclear stewardship. In conjunction with that workshop, the IAEA convened a group of consultants to identify essential milestones any country needs to achieve to be in a position to manage nuclear power responsibly. This group has produced its recommendations in areas such as establishing the necessary legal and regulatory framework for safety, security and safeguards implementation,

and building the organizational capabilities necessary to carry out those responsibilities. We anticipate that this IAEA “milestones” document will become an international standard for nuclear power development, and encourage any country that is seriously considering establishing a nuclear power program to commit to adopting this standard.

GNEP Statement of Principles

17. On September 16, 2007, ministers and senior officials from sixteen countries met and signed the Global Nuclear Energy Partnership Statement of Principles¹, which reflects growing international support for the principles described in this paper. Nineteen other countries and three intergovernmental organizations attended the September 16 meeting as observers. After the addition of three more partners, the Steering Group held its first meeting on December 11-13, and approved an Action Plan that describes initial steps to realize the common vision for the expansion of nuclear power set out in the GNEP Statement of Principles. The Steering Group also established two Working Groups, on Infrastructure Development and Nuclear Fuel Services, to begin practical and substantive work to achieve that vision.

Conclusion

18. The United States is fully committed to the safe and secure expansion of nuclear power, and to fulfilling its commitments under Article IV of the NPT. The Global Nuclear Energy Partnership offers a comprehensive vision for addressing the challenges of a nuclear revival.

¹ Global Nuclear Energy Partnership, “Statement of Principles,” *available at* http://www.gnep.energy.gov/pdfs/gnepSOP_091607.pdf.