Testimony
of
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S. 1138 A Bill
To enhance nuclear safeguards and to provide assurances of nuclear fuel supply to countries that forgo certain fuel cycle activities.

Thank you for the opportunity to testify on S. 1138, a bill sponsored by Senators Lugar and Bayh, to enhance international safeguards and to provide assurances of nuclear fuel to countries that forgo certain fuel cycle activities. My remarks will focus primarily on proposals for strengthening nuclear fuel guarantees, especially an international fuel bank, but I will touch briefly on the importance of increasing financial support to the safeguards system of the International Atomic Energy Agency (IAEA).

Improves Fuel Assurances

Enrichment and reprocessing technologies present risks of proliferation since they provide states with materials that are directly usable in a nuclear weapon or a nuclear explosive device. In recent years a number of proposals have emerged offering nuclear fuel guarantees as an incentive to discourage states from acquiring their own enrichment and reprocessing facilities. These include:

> IAEA Director General El Baradei's suggestion to place all enrichment and reprocessing facilities under some form of multinational auspices or control.
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> President Bush's proposal that a) the world's leading nuclear exporters should ensure that states have reliable access at reasonable cost to fuel for civilian reactors, so long as those states renounce enrichment and reprocessing, and b) the members of the Nuclear Suppliers Group (NSG) should refuse to sell enrichment and reprocessing equipment and technologies to any state that does not already possess full-scale, functioning enrichment and reprocessing plants.
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> A proposal by the six states that currently possess commercial uranium enrichment facilities for a multi-layered nuclear fuel assurance scheme.

President Vladimir Putin's proposal for an international fuel cycle center in Russia.

Germany's suggestion for establishing an enrichment facility on international territory administered by the IAEA.

A proposal by the United Kingdom for the use of enrichment bonds that would involve agreement among supplier states, recipient states and the IAEA to cope with supplier disruptions not related to nonproliferation considerations.

A Japanese proposal calling upon states that supply uranium and enrichment service to register with the IAEA in order to supply nuclear fuel through the IAEA to countries that suffer a disruption in supply not related to their nonproliferation obligations.

A US proposal to establish a strategic reserve of 17.4 tons of highly enriched uranium that will be blended down to help qualified states deal with any disruptions in their nuclear fuel supply.

A proposal by the Nuclear Threat Initiative (NTI) for the establishment of an international fuel bank under the auspices of the IAEA that would serve as a supplier of last resort. Legislation has been introduced in both the House and the Senate that would provide US Government funding for such a bank.

The US Department of Energy's Global Nuclear Energy Partnership (GNEP) under which the supplier states would offer so-called "cradle-to-grave" fuel cycle services by, for example, leasing enriched uranium to consumer nations that do not have enrichment and reprocessing facilities and taking back the used fuel that produced as a result of irradiation in reactors.

Having labored in the trenches of the nonproliferation field for 34 years, I believe we should evaluate proposals such as these from a very pragmatic point of view, and with our feet planted firmly on the ground.

With that spirit in mind, I will try to answer several questions.

The first is: why do states want to acquire uranium enrichment and/or reprocessing capabilities?

The second is: what policies has the US Government employed in the past to discourage states from acquiring their own enrichment and reprocessing plants, and how effective have these policies been in thwarting the spread of sensitive nuclear technologies?

The third is: what lessons can we learn from the efforts of various countries to acquire enrichment and reprocessing technologies and the corresponding policies of the United States to prevent the dispersion of such technologies?

The fourth question is: will our current offers of improved fuel assurances enhance or hurt our chances to prevent the spread of sensitive nuclear technologies.

Fifth and finally, what approach will most likely maximize our chances of advancing the nonproliferation objective of minimizing the dispersion of enrichment and reprocessing capabilities?

I believe the answers to these questions are important, if we are to deal with this issue realistically and if we are to devise feasible and effective methods to discourage the spread of sensitive nuclear technologies.

Let me then begin by attempting to answer the first question.

Why do states seek enrichment and reprocessing capabilities?

Over the years, several countries have sought such capabilities for a variety of reasons—to carry out entirely legitimate, peaceful programs, to remove doubts about the reliability of fuel supply from foreign sources, to conserve nuclear fuel resources through reprocessing, to improve the management of their nuclear waste problems, to achieve the prestige of possessing advanced, sophisticated fuel cycle facilities, and to sell enrichment or reprocessing services on the international market. Still others sought enrichment or reprocessing technologies as a symbol of national achievement or as an important component of their national security. Some states made a decision to construct domestic enrichment and reprocessing facilities even though they could have availed themselves of less costly means of purchasing external enrichment or reprocessing services from abroad to meet their civil nuclear needs. A few states have sought such technologies in order to develop nuclear weapons or to acquire the option to do so. Some have used ostensibly civil sensitive nuclear facilities as a cover for a nuclear weapons program.

What policies has the US Government employed in the past to discourage states from acquiring their own enrichment and reprocessing plants, and how effective have these US policies been in thwarting the spread of these sensitive nuclear technologies?

US concerns about the spread of reprocessing and enrichment capabilities are not new. In the mid-1970s the United States became alarmed that some major nuclear exporting states were planning to transfer enrichment and reprocessing technology to South Korea, Taiwan, Pakistan, and Brazil. France was seeking to sell reprocessing technology to Pakistan, and South Korea, and Germany was planning to sell reprocessing and enrichment technology to Brazil. These were developing countries whose small nuclear

programs did not justify these expensive technologies. Some of them faced severe national security threats or had apparent ambitions to acquire nuclear weapons.

The United States was most successful in stopping the spread of sensitive nuclear technologies during the 1970s when countries such as the Republic of Korea and Taiwan were highly dependent on the US for their security and for nuclear supplies. In a few cases the US was able to convince the suppliers to halt the transfer of reprocessing technology because of the proliferation risks they involved. It failed to do so in other cases, e.g., the Federal Republic of Germany proceeded with the supply of enrichment and reprocessing technology to Brazil despite US protestations.

Where the US had little leverage, it was unable to halt the establishment of enrichment or reprocessing plants by countries determined to acquire such technologies. Argentina, Brazil and South Africa are good examples.

In response to this problem and to the Indian nuclear test of 1974, the United States took the initiative with other major nuclear exporters to form the Nuclear Suppliers Group (NSG). In 1978, the members of the NSG adopted specific guidelines for the export of nuclear materials, equipment and technology. Under these guidelines the NSG members agreed, among other things, to exercise restraint in the transfer of sensitive nuclear facilities, technology and weapons-usable materials. They also agreed to encourage recipients to accept, as an alternative to national plants, supplier involvement and/or other appropriate multinational participation in sensitive nuclear facilities. In subsequent amendments to the guidelines, suppliers also agreed to authorize the transfer of nuclear materials, equipment or related technology only when they were satisfied that the transfers would not contribute to the proliferation of nuclear weapons or other nuclear explosive devices. Thus the members of the NSG already exercise considerable restraint in the transfer of sensitive nuclear technologies.

To my knowledge, since the establishment of the NSG major suppliers have made only a small number of transfers of reprocessing and enrichment technology for civil projects by the major suppliers, and these have taken place openly and legally and have been made to states that already possessed enrichment or reprocessing capabilities.

However, countries such as Iran, Iraq, North Korea and Pakistan have been able to obtain materials, equipment and technology related to enrichment and reprocessing on the international market by using surreptitious and illegal methods of procurement. They were often able to obtain such items from states that did not have adequate export control laws. In addition the A.Q. Khan network was successful in the clandestine transfer of enrichment technology to the DRPK, Iran and Libya.

The US made concerted efforts from the 1970s to the present, using intelligence sources, export controls and the cooperation of other suppliers to prevent countries such as Pakistan, Iran, Iraq and North Korea from acquiring items on the international market to furbish their enrichment and reprocessing programs. These efforts had some effect in

delaying and increasing the cost of the nuclear weapons programs of some of these states, but in most cases did not prevent these states from acquiring the equipment and technology they were seeking when they were determined to do so.

Finally, the US also made efforts to offer enhanced fuel guarantees to discourage the spread of enrichment and reprocessing capabilities. These included Congress's attempts in the Nuclear Non-Proliferation Act of 1978 to promote an International Nuclear Fuel Authority, and US initiatives to win support for an international nuclear fuel bank during the 1970s and 1980s. However, none of those fuel assurance initiatives were able to generate enthusiasm among other suppliers or consumers. Based on the reactions of states and nuclear utilities from the 1970s and 1980s to the idea of back-up nuclear fuel supply arrangements or an international fuel bank, one should not be surprised if the idea of establishing new fuel assurances schemes meets with some indifference. One of the reasons is that commercial markets for nuclear supply and the contractual system on which such markets are based have generally worked satisfactorily in terms of assurance of supply. At the present time, the global enrichment market is operating in a relatively smooth fashion and competition among several enrichment companies has provided a source of security for importing states.

What lessons can we learn from the efforts of various countries to acquire enrichment and reprocessing technologies and the corresponding policies of the United States to prevent the dispersions of such technologies?

The history of this issue should enable us to draw certain lessons.

First, it is doubtful that several of these states would have been prepared to relinquish an independent fuel cycle capability, including small-scale facilities, even if they had been offered guarantees of nuclear fuel, or if they had opportunities to participate in multinational fuel cycle facilities. In several instances the availability of reliable external sources of supply was irrelevant to the decisions of some countries to acquire enrichment and reprocessing. Such states are likely to be reluctant to foreswear irrevocably enrichment or reprocessing capabilities even if they are offered attractive nuclear supply assurances from other countries or participation in multinational enrichment and reprocessing facilities.

If states are determined to acquire enrichment and/or reprocessing facilities for military purposes, they will do so for what they perceive to be compelling national security reasons, and they most likely will not be willing to alter their policy because the US and/or other nuclear exporting states offer improved nuclear fuel assurances. Enhanced fuel assurances and opportunities to participate in multinational fuel cycle facilities are unlikely to have a direct impact on countries such as Iran and North Korea.

Second, nuclear fuel assurances are not going to be a magic bullet. There are limitations to what fuel guarantees or participation in multinational fuel cycle services can do to prevent the spread of sensitive nuclear capabilities.

Third, fuel assurances such as an international nuclear fuel bank can be only one tool among several that the US and other suppliers will need to employ in order to encourage other states to refrain from acquiring their own national sensitive nuclear facilities. The US will also need to utilize a range of policy initiatives, such as export controls, much improved intelligence capabilities, cooperation with other nuclear exporters and political persuasion in order to discourage the spread of enrichment and reprocessing plants.

Fourth, effective fuel guarantees could help establish global nonproliferation norms for the nuclear fuel cycle that would help remove excuses for countries to pursue their own enrichment and reprocessing facilities. In particular, they can help deprive states such as Iran and North Korea of a credible explanation for acquiring sensitive nuclear facilities under the cover of a peaceful nuclear program when their intent is use such technologies for nuclear weapons. They would also help establish a norm that the vast majority of countries have no need to develop their own national indigenous enrichment or reprocessing capabilities. In this connection, it is important to note that several states in the Middle East have recently announced that they are giving serious consideration to the initiation of peaceful nuclear programs. If these countries proceed with civil nuclear programs, they are likely to be small and restricted to one or two research or power reactors for the foreseeable future. It would make no economic or programmatic sense for these countries to acquire either enrichment or reprocessing plants. Moreover, the presence of these sensitive nuclear technologies in such a politically volatile area would only threaten regional stability. I believe the establishment of an effective fuel assurance scheme such as an international fuel bank could play an important role in helping to eliminate any justification for the countries in this region to acquire their own enrichment and reprocessing facilities.

<u>Will our current offers of improved fuel assurances enhance or hurt our chances to prevent the spread of sensitive nuclear technologies?</u>

In answering this question it is imperative that we recognize the bargain that we made in negotiating the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), a bargain that was essential to the success of the negotiations and the entry into force of the Treaty. Article IV of that Treaty contained a basic understanding that, in exchange for foreswearing the manufacture and acquisition of nuclear weapons and accepting IAEA safeguards on all their peaceful nuclear activities, non-nuclear weapon-states party to the Treaty would be assured the right to obtain the full benefits of the peaceful uses of nuclear energy. In addition, the bargain included the commitment by the advanced nuclear powers to assist the peaceful nuclear programs of other parties, with special attention to the needs of developing countries.

Unfortunately, the language that the Bush Administration initially used in offering improved fuel assurances has produced a regrettable reaction from many non-nuclear weapon states. For example, the President's February 11, 2004, speech proposed improved fuel assurances only to states that renounced enrichment and reprocessing plants. John Bolton, then Under Secretary of State for Arms Control and International Security gave a speech to the NPT Preparatory Conference in 2005 in which he said that, "The Treaty provides no right to such sensitive nuclear technologies."

The reaction of many non-nuclear-weapon states parties to the NPT to these statements was sharply negative. Non-nuclear-weapon states warned against establishing a new discriminatory nonproliferation regime that would be inconsistent with the provisions of Article IV of the NPT.

For example, the Non-Aligned Movement submitted a working paper to the 2005 NPT Review Conference making clear that the members of this group intended to defend their rights under Article IV of the Treaty. It stated,

> "The Group of Non-Aligned States Parties to the Treaty continues to note with concern that undue restrictions on exports to developing countries of material, equipment and technology for peaceful purposes persist. In this regard, the Group believes that any undue restrictions or limitations on peaceful uses of nuclear energy, incompatible with the provisions of the Treaty, should be removed.
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> In this regard, we recall that the NPT fosters the development of peaceful uses of nuclear energy by providing a framework of confidence and cooperation within which those uses can take place. It is in this context that we reaffirm the inalienable right of the States Parties to the NPT to engage in research, production and use of nuclear energy for peaceful purposes without discrimination and that free and unimpeded and non-discriminatory transfer of nuclear technology for peaceful purposes be fully ensured."

At the May 2007 Preparatory Committee for the 2010 NPT Review Conference, the spokesperson for the NAM emphasized that "access to equipment, material and technology for civilian purposes should not be restricted." South African representative Abdul Minty highlighted the concerns of many consumer states about the proposals by the United States that would restrict improved fuel assurances only to those countries that renounce enrichment and reprocessing plants.

> "With regard to current discussions on the fuel cycle, it is imperative that we do not create another kind of cartel that would exclude full participation, particularly by States in full compliance with their safeguards obligations. We wish to recall that nothing in the NPT shall be interpreted as affecting the inalienable right of all Parties to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I, I and Ill."

NPT parties may find it particularly exasperating that the US proposal appears to acquiesce in the reprocessing and enrichment programs of non-NPT parties such as India, Israel and Pakistan simply because they already possess such facilities while denying such capabilities to NPT parties that are in full compliance with their treaty obligations.

A representative of Argentina has recently made it clear that the right to nuclear technology goes beyond Article IV of the NPT and goes to the rights of states as sovereign entities.

In addition, some states have seen the Department of Energy's Global Nuclear Energy Partnership (GNEP) as a program that aims to create a new discriminatory regime that would divide the world into two classes of states: "so-called fuel cycle states," which would be allowed to have enrichment and reprocessing facilities and so-called "reactor states" which would not be allowed to have such technologies.

The result of this approach as well as the language used by the Bush Administration requiring states to renounce enrichment and reprocessing or denying that states have to rights to such technologies has already backfired to some extent. Several states, including Argentina, Australia, Brazil, Canada, Kazakhstan, Ukraine, and South Africa have made it clear that, while they might not require an enrichment capability in the immediate future, they are not prepared to foreswear their rights to do so.

Thus the Bush Administration's rather inflexible and unbending language in laying out its requirements for states to qualify for fuel assurances did not get off to a very auspicious start.

<u>What approach is most likely to maximize our chances to advance our objective of minimizing the dispersion of enrichment and reprocessing capabilities?</u>

What is needed in my view is a much more sophisticated and deft approach to this issue. It is quite clear that Article IV does not oblige NPT parties to engage in nuclear cooperation or to transfer sensitive nuclear technologies to any particular NPT party. Moreover, the US has always believed that suppliers should withhold nuclear cooperation from any state that is pursuing a nuclear weapons program or is otherwise violating its nonproliferation obligations. The US has long believed that there is no economic justification for the spread of enrichment and reprocessing to most countries. The vast majority of NPT parties have not sought enrichment or reprocessing for this very reason. Moreover, the United States has never supported the view that Parties to the NPT have an unfettered right to acquire enrichment and reprocessing plants.

However, the success of our efforts will depend critically on the language we use and the conditions we impose. If we demand that countries renounce what they regard as the rights under Article IV of the NPT or indeed their sovereign rights as states, we will face strong opposition. This suggests that the US and other supplier countries may not wish to insist that states forego for all time what they regard as their right to acquire enrichment

and reprocessing plants, but instead offer fuel assurances or cradle-to-grave benefits to those countries that have no perceived interest in acquiring sensitive fuel cycle facilities or that have agreed voluntarily to forgo such facilities

In this connection, I have been encouraged by less inflexible statements from the Administration on this issue.

For example, US Special Envoy for Nuclear Nonproliferation Robert G. Joseph gave a press conference recently that seemed to back away from the rigid position of earlier statements and place stress on the voluntary nature of countries' decisions to forego enrichment and reprocessing. He said,

> "And finally, I would emphasize that this is not about the rights of countries under the NPT. This is not about changing or taking away rights. This is about encouraging sovereign states to make sovereign choices based on their own interests, financial as well as nonproliferation interests. It's about providing an alternative path to energy development that becomes a win for energy security, a win for environmental security and a win for nonproliferation."

It remains to be seen whether the Administration will demonstrate any new flexibility in its approach to this issue, or whether it will stick to its rigid requirements for renouncing enrichment and reprocessing as a condition for receiving improved fuel assurances

In any event, a certain amount of damage has already been done. This makes it all the more important that the legislation enacted by Congress in support of an international fuel bank avoid language that challenges the Article IV rights of NPT parties or requires them to forego such rights. Rather, I believe any new legislation in support of an international fuel bank should emphasize that the United States is offering incentives to states, not requiring them to renounce what they regard as their fundamental rights. Incorporating such a positive approach in US law will be giving legal force to US policy and is more likely to win acceptance with other countries than a policy of denial. The formulation used in Senate bill S. 1138 requires that fuel from an international fuel bank should go to countries that "decide to forgo a national uranium enrichment program and spent nuclear fuel reprocessing facilities." Presumably this means a voluntary decision. The House bill HR. 885 specifies, among other things, that a recipient of fuel from an international fuel bank, "does not possess uranium enrichment or spent-fuel reprocessing facilities of any scale." Either of these formulations is more likely to be acceptable to consumer states and therefore have a better chance of success than the approach initially taken by the Bush Administration. In other words we need to make sure that we offer supply assurances to states that voluntarily choose to rely on the international market for their nuclear fuel requirements. No country should be asked or expected to give up or abridge any of their rights under the NPT.

Other attributes of a successful fuel assurance arrangement, such as an international fuel bank, that will help the chances of success in discouraging the spread of sensitive nuclear fuel cycle facilities include the following:

> The principal and preferred mechanism for providing for adequate assurances of nuclear fuel supply should be a competitive market. Any mechanism for offering improved fuel supply such as an international bank should serve as a supplier of last resort and should be structured so as to avoid destabilizing the market.
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> An IAEA nuclear fuel bank should be designed to meet short-term supply interruptions that may occur in small countries that are unfamiliar with the workings of the international nuclear market. It therefore may only have to be modest in size. Moreover, a modest-sized bank is more likely to obtain the required financing than a large one and is not likely to be seen as a threat to the stability of the market.
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> A nuclear fuel assurance arrangement or international fuel bank should be able to respond to sudden supply interruptions in a prompt and reliable manner. It should therefore employ an agreed set of predetermined release criteria which, when met, would automatically trigger fuel supplies to countries suffering an interruption in supply for reasons unrelated to their nonproliferation obligations.
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> It will also have to take into account fully the nonproliferation requirements of suppliers. Presumably this would mean that the recipient would have to agree in advance to accept the export guidelines of the Nuclear Suppliers Group and, in the case of US-origin material, the requirements of the Atomic Energy Act for peaceful nuclear cooperation.

Finally I believe that active US support will be crucial for the successful establishment of a strengthened system of fuel assurances, including an international nuclear fuel bank, and I therefore strongly endorse the legislation introduced by Senators Lugar and Bayh.

Global Nuclear Energy Partnership

Let me make a few comments on the Global Nuclear Energy Partnership because it contains an important component that is designed to discourage the spread of enrichment and reprocessing facilities. GNEP proposes that, if the US and other supplier states can successfully demonstrate and commercialize advanced reprocessing and nuclear reactors, it should be more physically and politically feasible than it is today for supplier countries to lease nuclear fuel or to offer a spent fuel take-back arrangements to consumer countries.

In my view, a “credible cradle-to-grave” fuel supply program by the US and other suppliers may prove far more effective than some other techniques in discouraging the

spread of enrichment and reprocessing facilities since it would relieve states of the burden of disposing of their own nuclear wastes.

However, none of the major fuel-cycle states, with the possible exception of Russia, appear to be in a position to offer such options to consumer states on any widespread basis. Moreover, the prospect of offering cradle-to-grave services appears to be several years, indeed possibly decades, away from being realized. In addition, the United States Government would face formidable public and congressional acceptance problems if it were to try to initiate a program to take back power reactor spent fuel. Most importantly, the inability of the US Government to meet its responsibilities under Nuclear Waste Policy Act to take spent fuel off the hands of American utilities means that US would have no credibility in offering a cradle-to-grave policy to foreign countries unless and until it can move to solve its own waste management problems.

Safeguards.

Before closing, let me say a few words about the provisions in S. 1138 for providing financial support to the IAEA's Safeguards Analytical Laboratory (SAL.) I strongly support the US providing $10 million to the Safeguards Analytical Laboratory, and I hope the other Member States of the Agency will come forward with voluntary contributions to add another $10 million to bring the laboratory up to snuff. This laboratory has a lot of equipment that is antiquated, and the Agency must rely on a very small number of external laboratories for analyses of environmental samples. The IAEA needs additional as well as new types of equipment for conducting its safeguards activities. The IAEA does not have a state-of-the-art lab for particle analysis, which has become an indispensable tool in determining the existence of undeclared enrichment or reprocessing activities.

Let me end by saying a few words about the overall budget for IAEA safeguards. Starting in the mid-1980s, Member States imposed a "zero real-growth" budget on the IAEA. The Bush Administration can take credit in leading the effort to increase financial support for the IAEA safeguards system in 2003. However, the IAEA's safeguards workload is likely to increase in the years ahead. The demands on the IAEA safeguards system are likely to increase as more countries turn to nuclear power. The Vienna Agency also will need to devote more resources to evaluating information supplied by Member-States in connection with Additional Protocols to their safeguards agreements. In addition, the IAEA will have to verify the freezing, disablement and dismantlement of the North Korean nuclear program. On June 15, 2007 the Director General of the IAEA Mohamed El Baradei warned that Agency's "safeguards function is being eroded over time" and said he was "very distressed" by the failure of the Board of Governor's to approve a 4.8 percent funding increase for 2008.

I, therefore, hope that the US will take the lead again in urging Member States to provide the resources the IAEA needs to carry out its vital safeguards mission.

Thank you.