

# **ATOMS FOR PEACE + 50**

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United States Enrichment Corporation, Inc. (USEC)

**Megatons to Megawatts: Turning Nuclear Warheads into Nuclear Energy**

**Panel Chairman:**

**Ambassador Linton F. Brooks**, Administrator, National Nuclear Security Administration and Under Secretary for Nuclear Security

**BROOKS:** Phil Sewell is Senior Vice President of USEC, United States Enrichment Corporation. And he is responsible for international trade and, in particular, for implementing what remains the largest, single nonproliferation program ever, the elimination of 500 tons of Russian weapons grade highly enriched uranium under what is often called the Megatons to Megawatts Program.

Before he came to the U.S. Enrichment Program in 1993, he was the Deputy Assistant Secretary in the Department of Energy, where he was deeply involved in the uranium enrichment activities and represented the United States in negotiating the agreement on highly enriched uranium. And before that he held a number of positions in the Department.

**SEWELL:** Good afternoon. I want to first thank you for the opportunity to speak at this forum. It's an honor to participate at the anniversary of, the 50th anniversary that addresses issues associated with President Eisenhower's monumental "Atoms for Peace" proposal delivered to the United Nations in 1953.

The Eisenhower proposal sought to address the proliferation of nuclear weapons by sharing information and nuclear materials with other nations to promote the peaceful use of atomic energy. Over the past 50 years the pursuit and accomplishments of the peaceful atom have achieved tremendous success in many fields. And, as mentioned this morning, that's shown by the fact that about 16% of the world's electricity comes from nuclear reactors today.

But these peaceful achievements are still obscured by the shadow of nuclear weapons proliferation. Almost every day we see news reports about nuclear weapons proliferation by

nations and stories about the possibility of bomb-grade material falling into the wrong hands. So the subject of this meeting today is indeed timely as is the panel discussion on controlling nuclear material. As you can see from the program, the title of my presentation pretty well captures the importance of what we are doing to secure nuclear bomb-grade material.

Megatons to Megawatts is a 20-year program and an agreement between the U.S. and Russian governments to turn 500 metric tons of Russian nuclear warhead material into fuel to produce electricity. Eliminating 500-metric tons of bomb-grade material is the equivalent of eliminating 20 thousand nuclear warheads. So, this Megatons to Megawatts Program is among the most ambitious and successful efforts to control nuclear weapons material. It also uses the most effective method of controlling nuclear weapons material--eliminating it.

Some of you may not be familiar with this program, so please bear with me. I would like to briefly describe some background information about this program. We're all familiar with the Nunn-Lugar Cooperative Threat Reduction Program and other disarmament agreements. They have achieved tremendous results by the dismantling and destruction of thousands of nuclear weapons systems and the removal of warheads for secure storage.

In the late 1980s, representatives from the United States and Russia began to focus on how to improve safeguards for the nuclear weapons material that was in storage. As the collapse of the Soviet Union took place these discussions moved into high gear. In 1992, the outline for an innovative U.S.-Russian nuclear materials control program was adopted and in 1993, a formal government to government agreement was signed by the United States and Russia, committing the two nations to an ambitious 20-year undertaking--the elimination of nuclear weapons-grade material, capable of making 20,000 nuclear warheads.

The formal title of the landmark 1993 agreement is as follows, "The Agreement between the Government of the United States of America and the Government of the Russian Federation Concerning the Disposition of Highly Enriched Uranium Extracted from Russian Nuclear Weapons." One could fall asleep reading that. As you can tell, it's a big mouthful. So what we tried to do was capture the essence of what this agreement does by labeling it Megatons to Megawatts.

This agreement provides over 20 years, that 500-metric tons of HEU taken from dismantled Russian nuclear warheads will be converted in Russia to low enriched uranium, suitable for use as fuel in commercial nuclear reactors. Over this period an executive agent, appointed by the U.S. government will purchase this recycled weapons material, valued at \$12 billion dollars. The fuel will then be sold to utility customers for use in commercial nuclear reactors to produce electricity.

Quite remarkably the entire Megatons to Megawatts Program is financed not by government funding but by these commercial fuel purchases. My company, USEC, Inc. is the U.S. executive agent responsible for implementing this program with our Russian counterpart Tenex and that is exactly what we have been doing over the past ten years. We are more than one-third of the way through this program, having eliminated more than 190-metric tons of highly enriched uranium,

which is equivalent to more than 7,500 nuclear warheads. And each and every day more warhead material is converted into fuel that will be used to produce electricity.

Now the value of this program extends beyond this basic mission of eliminating nuclear weapons material. There is also a human dimension. Our purchases from Russia amount to approximately \$500 million dollars a year. To date, through the Megatons to Megawatts program Russia has received total revenues from fuel and uranium purchases of more than \$4 billion dollars.

These proceeds have supported thousands of Russian workers at numerous facilities who take part in the process of transforming HEU into reactor fuel and who also work on environmental restoration and clean-up programs in Russia and who work to improve the safeguard systems in place for these weapons materials.

This underscores the importance of addressing issues concerning highly talented people who were previously involved in weapons programs and how to keep them working on peaceful pursuits. We believe the ten-year successful track record of this nuclear disarmament and nonproliferation program can serve as a model for even greater efforts in the future.

The success of this program is based on the ability of the commercial nuclear fuel market to economically assimilate the additional of this material. Thus, it is the private sector market that essentially pays for and sustains this program.

Today the commercial nuclear fuel market is essentially in balance. Demand roughly equals supply. The introduction of substantial amounts of new weapons grade material for use as fuel, would upset that balance and that could undermine the smooth implementation of the Megatons to Megawatts Program. Given market limitations, how can we use this approach to eliminate even more warhead material?

As we heard this morning, there are increasing signs that there will be a worldwide expansion of the use of nuclear power--and that includes in the United States.

There are growing indications of renewed interest by the utility industry and by the government. Both industry and government plans call for a substantial expansion of the use of nuclear power in the decades to come.

The construction of a new generation of commercial nuclear power stations will obviously increase the demand for nuclear fuel. This increased fuel demand could provide a cost effective way of increasing the amount of nuclear bomb grade material that could be eliminated by using it as fuel in these commercial reactors.

Perhaps a radical new proposal will help accelerate the arrival of this new generation of commercial power reactors. Here is one idea that has been recently proposed by Nick Timbers, the President and CEO of USEC, Inc.

Why not seek a commitment by the private sector to build a single, new generating nuclear power station with U.S. government support. This support could be achieved directly by a

number of incentives, such as tax incentives, loan guarantees or financing through the federal financing bank.

You may well ask, why would Congress or the Executive Branch have any interest in direct financial support for a new power reactor? Because we could stipulate that this new reactor would be powered entirely by fuel recycled from dismantled nuclear weapons. This new power reactor would facilitate the government's efforts to reduce the threat posed by nuclear warhead material. For discussion purposes, Mr. Timbers suggested we call the proposed new reactor concept, the Isaiah Nuclear Energy Plant, after the Biblical prophet Isaiah, who called for turning swords into plowshares.

There are different kinds of advanced reactors designs that might be chosen for this Isaiah concept, so for rough calculation and estimate purposes, here are some useful statistics. The initial core for an Isaiah reactor could use LEU derived from three metric tons of highly enriched uranium. That would facilitate the elimination of 100 nuclear weapons just from the first fuel core loading. Each refueling would contain LEU from about 25 additional warheads. And over a projected lifetime for the Isaiah reactor, more than two thousand nuclear warheads could be eliminated.

Could such an Isaiah nuclear energy plant attract U.S. government support? I believe there is a convincing case to be made for this proposal, given three distinct advantages. Number one, it could provide increased domestic energy security. Number two, it could help mitigate the potential of global warming with emission free electricity from nuclear reactors. And three, it could provide enhanced national security by eliminating nuclear weapons material. That's a triple hit.

We believe that both the worldwide nonproliferation community and the American public would consider supporting the construction and the operation of a nuclear power plant that would make the world safer.

When you consider the record of the Megatons to Megawatts program, the Isaiah project is quite logical. Twenty percent of America's electricity is generated by nuclear power. About 10percent, or half of all of America's electricity, is generated by fuel derived from Russian nuclear warheads.

Put another way, nuclear warheads that were once aimed at American targets, are now generating electricity to serve those same communities.

And building on what has been accomplished through the Megatons to Megawatts Program, over the last ten years, we could expect impressive results in the future. Let's look ahead. If Isaiah were to stimulate industry to build one, five, ten, 15, 20, or any number of power reactors, a portion of the fuel they would use could come from nuclear weapons material. The increased demand for nuclear fuel would drive the opportunity to eliminate more nuclear warhead material. The vision of thousands of megawatts of electricity being generated by eliminating thousands of nuclear warheads is a vision that should become a reality.

Worries about the use of nuclear energy persist. But, no matter what your view is of nuclear energy, we cannot force the nuclear genie back in the bottle, nor erase  $E=MC^2$ , nor un-invent enrichment, nuclear power reactors or weapons technologies. After all is said and done, nuclear energy and nuclear power are realities. We will have to live with and safely use their benefits to our greatest advantage. The good news is that we are at an intersection of mutual interests.

Given all these facts and ideas, I believe there is a mutual interest between those who advocate expansion of commercial nuclear power and those who seek to eliminate more nuclear weapons material.

Advocates of nuclear nonproliferation can accelerate the increased elimination of this material just by securing the expansion and dynamics of the marketplace to facilitate these activities. Nuclear power plants are eliminating more and more bomb grade material every day. More power plants will consume more warheads.

The Megatons to Megawatts Program is just one example of how the private sector and government policy interests can combine to achieve a tremendous nonproliferation success. The Isiah reactor concept can be another such effort.

I believe that there are a number of areas where the strength of the commercial nuclear industry can help insure positive nonproliferation results in concert with government policy objectives-- whether it be by eliminating nuclear weapons material or preventing its further accumulation. I would ask NNSA Administrator Linton Brooks, and Deputy Administrator Paul Longworth, to consider exploring new approaches to utilizing the strength of the private sector to assist the Administration in achieving further non-proliferation objectives.

And Dr. Scheinman and Ambassador Lehman, as respected leaders in this field, your consideration and thoughts on these proposals would be very useful as well. And that invitation also includes all of you at this conference. I ask you to please consider the mutual interests of those who advocate control and elimination of nuclear weapons material and those who advocate expansion of commercial nuclear power for peaceful purposes.

With the guarantee of rigorous safeguards, the realization of a new generation of commercial nuclear electric generating stations can also make the world a safer place. Safer, because each and every power reactor could be eliminating nuclear warhead material each and every day they operate. Thank you.

[applause]

### **Question and Answers:**

**BROOKS:** We now turn to the part of the program where you get to ask the questions. I'm going to stand for this because I can't see that half of the room from where I'm sitting. I would ask that you identify yourself and, no matter how piercing you think your voice is, wait until the microphone gets to you. And I think we start with a question in the back.

**NEFF:** I'm Tom Neff from MIT. I have a question for Larry Scheinman. First I want to correct one of the things that Phil Sewell said. ...*(Inaudible)* receives about \$425 million dollars from USEC for the enrichment services and I think the company profits by about \$100 million dollars a year. Phil was right. This is money that should go into pockets of the sensitive nuclear workers that protect this material.

My question for Larry was Iran. We have gone from a period of a week ago, in which we were being very tough on Iran and we've gone now to where three countries are now promising cooperation in helping Iran with its civil nuclear program. Larry, could you comment a little bit about this switching of gears and where you think this comes out in the perspective of history?

**SCHEINMAN:** Well, I think it is enormously comforting to see that Iran has, in fact stepped away from what looked like a very conflictual and contentious approach. But I would worry about what kind of an outcome we get in the following sense.

If it were true that Iran would be prepared to completely dismantle its enrichment activities in exchange for some kind of a guarantee for long-term fuel supply from outside, presumably the European Union from what I understand to be the case, and that this could be done in the context of an additional protocol with all of the bells and whistles of transparency that that could bring-- We may need even more. Then I see this going in a very, very constructive direction because I think this would be a bell weather for how other countries would have to try to treat this approach to their fuel cycle desires in the future.

Iran is a real test case in this regard. If on the other hand, what looks to is to take a leaf from Ron's book, some kind of a multi-nationalization of an Iranian enrichment program sitting on Iranian territory, that becomes more problematic and I would be concerned about that, although I must say that, if I think about some of the questions that Ron just raised in his run down of the issues of what do we mean by this, that, and the other, there's no need for us to be uniform in how we approach this. I think we can take this region by region or country set by country set as long as we stay within the parameters of the arrangement that brings about the outcome that we desire, which is avoidance of further proliferation.

**BROOKS:** I had a question over here and then we'll go over there.

**HORNER:** Dan Horner from McGraw Hill Nuclear Publications. I think that you just made a-- I'll pose this question as a devil's advocate question and then ask the panelists to respond. In Paul Longworth's presentation he mentioned, as part of the U.S. nonproliferation efforts, the effort with regard to the U.S. supplied research reactor overseas and converting those reactors and bringing back the HEU fuel. But wasn't the supplying of those reactors a direct outgrowth of the Atoms for Peace Program and, in that respect, isn't that a proliferation downside of the Atoms for Peace Proposal and wouldn't your job have been easier if that aspect hadn't taken place?

If Paul could respond to that initially and maybe some of the other panelists then could jump in. Thanks.

**LONGSWORTH:** You know, it's not, and I'm going to give you a strange answer here. It's not, because the original deal was that the spent fuel from those reactors would come back to the U.S. and I think, even in 1953 when they kicked that program off as the-- We realized that obviously we needed to repatriate the nuclear material. It is a strange answer because we are going to complete about half of the fuel that we've identified in an environmental impact statement by-- In the next few years we will have only addressed about half of the fuel that, again, we designated to come back to the United States.

So we are about halfway there in fulfilling our commitment from 1953. But I think we are going to continue to work on that and get that stuff back. But, no. I think it was part of the original bargain that that stuff would come back to the U.S.

**INDUCI(?):** Joseph Induci at the Brookhaven Laboratory. There used to be something called the Fissile Material Cutoff Treaty, which I thought had potential to bring in a few countries that aren't currently covered and now I hear nothing. Would one of the panel members be willing to enlighten the group on just what happened there?

**BROOKS:** Ron?

**LEHMAN:** The Fissile Material Cutoff Treaty was initially envisioned as sort of either of two things, one was a universal treaty open to all parties, the other was something that one would do, maybe on an interim basis or a regional basis, but primarily focused on South Asia and perhaps the Middle East, i.e., the non-parties as well as the weapon states. Interestingly enough, there was a UN resolution in the General Assembly co-sponsored by both the United States and India, supporting a fissile material cutoff. And all the P-5 have said that they can live with it.

Having said that, it is in the conference on disarmament. It's caught up on linkages, by and large issues such as Pakistan's concern about making sure that it deals with residual stocks. It is not enough to cut off the production for weapons purposes; they want to deal with the existing stocks. There's linkages to India by the issue of a time bound framework for disarmament. In short, there's been maybe some flexibility on each of those, at least expressed by the parties. But the process seems bogged down in the CD.

ElBaradei in his Economist article raises the question that others have raised before of whether or not this could be the basis either for a new restraint regime or an additional restraint regime. But thus far people have not been able to break it away from these linkages.

**BROOKS:** I would like to just add that as the community thinks about the future, the Fissile Material Cutoff Treaty is a good example of the limitations of formal multi-lateral arms control. It's it's one of the reasons why we probably need to spend more time thinking about, as Ron said in his presentation, whether "international" means the same sort of thing that it has always meant or whether there are commercial international agreements a la the USEC Agreement that are, at least part of the solution.

We had a question down here.

\_\_\_: Question for Mr. Sewell, I was intrigued by his suggestion with regard to the government sponsoring a reactor, the intent of which is to get rid of the, let me call it, surplus nuclear materials in Russia and, perhaps, even our own defense programs. We are not only having the problem with uranium 235, we also have a problem with regard to plutonium 239. And if the real objective is to get rid of those materials-- There have been people said, "Well, you just bury them."

But if you really want to get rid of them and get a new reactor into being, you would design the reactor core, which initially would burn straight 235 or straight 239. And if you do that, in the case of the 235 rather than using low enriched uranium, you don't make any more plutonium, which you would in your scenario, and the people would jump on that, the anti's, saying we're really not doing what we want to do.

So initially these reactors, which you are suggesting, could be designed to burn straight 235 or straight 239 and really get rid of all this surplus E-2(?). Economically, and for the long run, it doesn't make any sense, but at least politically, if that's the objective, it would succeed. Thank you.

**BROOKS:** Bill, do you want to respond?

**BILL:** I can't correct you at all, I don't think. That is a very good suggestion. The only thing I could say is that most reactors today are designed to use low enriched uranium and that's the concept that we were trying to do so that we wouldn't have to be any major investments in a nuclear infrastructure for commercial basis. But conceptually, the concept, the idea that you propose is valid.

And the idea that we put forward, in terms of government support in burning basically, nuclear materials, is just that. It's an idea of the government and industry to grasp and design in a way that's optimum, optimum in terms of meeting policy objectives by the government and the world community and also in a way that will help provide incentives to build a new nuclear reactor that will get things started, with respect to the increased use of nuclear power that has so many benefits.

That incentive, again, would be one in which the government doesn't have to pay anything in the end. It's merely a backup incentive that would be paid back and looking in a way that several different objectives can be accomplished at once and that's the main idea in concept. And your concept and idea is just as valid and I just applaud them all. It's good for mankind, good for the world. That's what we're proposing today.

**BROOKS:** Let me just point out a third concept that's actually what we're doing. Some of the defense HEU is, in fact, being burned in U.S. reactors -- TVA reactors. In addition, at a galactically slow pace, we are working with the Russian Federation to the elimination of 34 tons of weapons plutonium in each country through conversion into MOX fuel. It doesn't make any economic sense either but it does allow us to take advantage of existing reactors.

We had a question over there.

**KEEN:** My name is Linda Keen and I'm President of the Canadian Nuclear Safety Commission. My question is for either Ambassador Lehman or for Mr. Longworth. Can you see in the future a safeguard regime for countries who are committed to peaceful use, who have put in extensive safeguards but is more risk based than the blanket program that we see now?

**LEHMAN:** I'll go first and buy you some time. The classic issue is the cookie cutter problem. One size does not fit all. And there are tremendous inefficiencies and actually drawbacks in trying to make one size fit all. The result is that we spend a tremendous amount of money verifying things that are low risk and many of our arms control efforts but then can't apply what is needed to deal with areas that are of higher risk.

In 1991, our approach to dealing with North Korea, for example, was not only to have them be parties to the NPT and have an IAEA safeguards agreement, but there was the North-South Denuclearization Agreement, which would have provided for no processing, no enrichment, North or South, and for separate bi-lateral inspection regime, the idea being that North Korea was a greater risk. This was a way to enhance things.

The problem is that in many of the international fora, the question of a common standard and universality of membership drives much of the debate, much of the question when you deal with India, for example, it has to do with their desire to have a common standard for everybody which would be fine if you could create those conditions but, in fact, things aren't the same everywhere.

However, what I have experienced is, when you get more into the, I'll use the generic phrase, cooperative threat reduction and constructive engagement, you start to deal with practical problems that inevitably have to deal with the specific differences. And in many cases, I think the great debate about the future of arms control, international constraint and cooperative threat reduction is really the great debate between how much emphasis you put on standardization of norms and how much emphasis do you put on engagement, constructive engagement.

**LONGSWORTH:** You know there are so many nuances with how safeguards work actually gets done at facilities and I'd just like to parrot what Ambassador Lehman said. Inspections are the tool to the end not the objective. And I think everyone would agree that the IAEA probably spends a lot of money inspecting facilities that are not really a proliferation risk. For example, in the U.S., I don't think anybody has accused the U.S. of selling plutonium or weapons on the open market. But because inspections are a tool and because of the universality principle, I think we allow inspectors to come in and we fully support that but it is a problem because it does take limited IAEA resources and the UN is inspecting facilities that don't pose a great proliferation risk. But it is the way you get other countries to open up their facilities. So it is a tool to the end.

**BROOKS:** Back here.

**LYMAN:** Hi. I'm Ed Lyman with the Union of Concerned Scientists. I wanted to ask a follow-up question to Dan Horner's question on research reactors. With all due respect, I don't think you really gave a complete answer to the question of whether exporting HEU research reactors all over the world was the best idea or not and, in fact, the other part of the answer you left out, is

that not only are we taking the spent fuel back but we are persuading reactors that we had shipped that only used highly enriched uranium to convert so they no longer need to use highly enriched uranium but can use low enriched.

And that was a flaw in the original regime that we're trying to play catch up on. In that respect, I'd just like to ask you, it would be a terrible legacy, 50 years after Atoms for Peace, if our own export control law was to be significantly weakened, yet that's exactly what's going on in Congress right now, where's there's an attempt to modify the U.S. HEU export control laws to make it easier for certain countries to receive highly enriched uranium without any obligation to work with the US to convert.

And I am just wondering why the administration is not, to my knowledge, going on record and said anything about this particular question, which I think is quite important and something that my organization is fighting very hard for. So, thank you.

**LONGSWORTH:** Let me start at the beginning of your question and work through it. It wasn't possible to build reactors at the time with low enriched fuel to achieve what you needed to do for science, medicine, agriculture and other purposes. I wouldn't describe it as a flaw in the original approach because I think the United States took the best course available to it at the time was, we'll send the fuel out and we'll take it back. And it's taken 50 years to start doing that but we're making progress on that.

I do want to point out, on behalf of Ambassador Brooks, it is not his program or mine that is responsible for taking those back. It is another part of DOE, but (laughter) so, for the record-- But now low enriched fuels are becoming available and it is possible to have the same nucleonics in a reactor and get the same performance with difference kinds of fuels, low enriched fuels, and we're beginning to do that.

One of the programs that we carry out is to convert these reactors as I mentioned in my remarks. With regard to the Burr, Schummer, depending on which one is being debated in the energy bill, you know, interestingly enough, we were unaware that that provision was in there. I believe we are opposed to it. Frankly, I may get in a lot of trouble here, but I think we were opposed to the Schummer amendment because we have all of those authorities that Schummer, which was the underlying provision that was amended, that it required us to take a lot of steps that aren't necessarily appropriate to have in the statute.

And so I don't know if we agree with either provision, the underlying Schummer amendment or the Burr amendment, which you refer to would weaken the Schummer provision. So I think we are opposed to the Burr, but we are also opposed to the underlying Schummer amendment, which was being modified.

**BROOKS:** There was a question over here but I lost where it was. Yes, sir.

**POMPER:** Miles Pomper from Arms Control Today. A question for either Ambassador Brooks or his Deputy-- You mentioned the additional protocol and that it might come up before the Senate in the next few weeks, what's been holding it up? It's been held up for close to a year

now and my understanding is that it is infighting in the administration between the State and Defense Departments.

**LONGSWORTH:** President Bush has sent it to the Senate so it is pending action by the Senate Foreign Relations Committee. While they are doing that, we are having discussion within the administration on exactly how we would implement it. But it think the next step is for the Senate to hold hearings and provide its advice and consent or not provide its advice and consent.

**BROOKS:** The President has made it very clear on wanting to see the additional Protocol brought into effect. As to what's holding up hearings, you're talking to the wrong branch of the government when you are talking to Paul and I.

More questions. Yes, sir. Down here--

\_\_\_: I was glad to hear of Mr. Sewell's proposals for cost-benefit to the public of expanding nuclear power to burn up some of these materials. It doesn't stretch my imagination very much to think that the public would also accept a certain amount of public funds going to try to purchase this material and keep it out of the hands of terrorists, if it is only a few billion dollars a year, when the public supports hundreds of billions for defense, if the public was just explained the affect of not doing this compared to the effect of the 9/11 incident on our country.

Could somebody answer why we don't have the government proposing to spend some taxpayers' money on this in advance to get this material and then put it in reactors as we build them?

**BROOKS:** Well, I'll answer it. Secretary Abraham proposed and his Russian counterpart agreed well over a year ago to a parallel program that would create a strategic uranium reserve. We would purchase basically whatever the Russians would chose to sell us and the quantity is still being debated. Right now it is only a few tons a year. Blend it down and make it sort of the uranium equivalent of the strategic petroleum reserve. It would just sit there minding it's own business, but it would be in a form that would be suitable for energy us and unsuitable for weapons use.

There is dispute on the hill as to whether that is good use of public funds and I'll let you know when I see the appropriations act. But the idea is one that the President thought of a year ago and it's basically a good idea. We're also purchasing, and this is small amounts, I mean small amounts in the Russian context but large amounts in anybody else's, HEU from Russia for the handful of U.S. research reactors that have not yet been converted to low enrichment fuel. They'll be burning Russian HEU here very shortly, once again, the will of the funders permitting, and I'm pretty sure it will.

Did you have a question down here? [pause] Can we get a microphone down front?

\_\_\_: Firstly, I would like to make one historical remark. Indeed, historically, all technologies have become, as they were introduced ...(inaudible) technologies, and all have proliferated in the past. So, what we're trying to do here is historically, totally, unprecedented and, therefore, one should not be surprised that it is extremely difficult. I mean that is one remark. In that sense,

Administrator Longworth gave a list of the program achievement and his note was certainly quite optimistic. And there are, indeed, many achievements to be proud of.

But I think it is a matter of the glass either being half full or half empty, namely, there have been developing many impediments and the time scale in which some of these programs have been proceeding have slipped really extremely badly. I mean the plutonium disposition has slipped very badly that one is now talking about 17 years, or whatever the number is. There have been glitches in the HEU Purchase Agreement. There are major problems in the MPC&A [Material Protection, Control and Accounting] improvement in Russia due to, on the Russian side, them not giving access sufficiently, on the American side, due to the insistence on liability protection for the American participants.

These are problems that we don't let the Americans to attend various conferences and so on and so forth. And I was wondering, whether one of the panelists can give some comments, whether there are really some major efforts being made to try to re-accelerate some of the lost time on some of these programs.

**BROOKS:** Let me, because I think that is really a question that is addressed to those of us who are in government. I can tell you that Secretary of Energy has been more active, as far as I'm concerned, than any Secretary in history in trying to accelerate programs and remove roadblocks I can tell you that the President has been active in pushing these. I can tell you that it was discussed with President Putin at Camp David. And so we are trying to accelerate but I think the honest answer is, it is a very slow process and a very difficult process.

I think that is going to have to be the last question. As I listen to your comments and the comments of the panel, I came to sort of three broad conclusions that I will leave with you. One is that the international regime that grew out of President Eisenhower's vision, hasn't done everything, but it's done a lot. The second is that there are lots of good ideas for the future and we ought to explore those, but all those good ideas are going to take time. And, therefore, I guess, the third is that redoubling our efforts at material protection is probably pretty important in the near term.

With that, I think what is next on your schedule is a break until four, but before you do, I wonder if you would join me in thanking our panel.

[applause]

**END OF SESSION 3**