Presentation

Theme A

Cooperation for Dismantling Decommissioned Nuclear Submarines

A-1. Federal Atomic Energy Agency, the Russian Federation
"Present condition of decommissioned nuclear submarine dismantlement projects in the Russian Far East"

Mr. Viktor Akhunov, Head of Department, Federal Atomic Energy Agency, the Russian Federation

As of today, 195 nuclear submarines of the Russian Navy have been dismantled. Among them, 118 have been dismantled. However, in the Pacific Ocean region, among the decommissioned 77 nuclear submarines, only 40 have been dismantled. In short, there are 37 that are waiting to be dismantled, and 14 that are already in the process of being dismantled.

There are two plants for the dismantlement in Vladivostok as well as one in Petropavrosk-Kamchatkiy called the Vilyuchinsk plant that is also operating for dismantling nuclear submarines.

The state of the remaining nuclear submarines is very bad. Nuclear reactor containers lose pressure and ballast tanks go rusty. Therefore, there is a need to keep them afloat in order to retain buoyancy since they create additional risks of radioactive accidents. We have set an ambitious goal to dismantle all decommissioned nuclear submarines by 2010. In order to achieve this goal, it is necessary to dismantle about 10 nuclear submarines in the Pacific Region. However, Russian budget can cover the expenses of dismantling maximum six submarines per year. Hence, financial support is necessary for dismantling four to five per year. We have conducted negotiations with Japan regarding dismantlement of five submarines for more than two years.

In his statement in 1997, Hans Blix, former IAEA General Director, said that the whole world community gained both political and economical benefits from the end of Cold War. He also said, however, that burdens of the Cold War were on the shoulders of Russia. Of course, we are able to solve these problems by ourselves, but it will require a very long time. That is why currently we need financial support. Our plants have the capacity to dismantle up to 10 submarines per year. The problems can only be traced to financial resources.

Russia is dealing with not only dismantlement of submarines, but also safe handling of nuclear fuel. However, not a single donor country is supporting us in gaining safety of nuclear fuel. After the reprocessing, nuclear materials cannot become weapon-grade nuclear material. I disagree with the representative of Bellona on his opinion that to store fuel on bases is safe. Bellona itself, on numerous occasions, said that to handle nuclear fuel in the northern bases is necessary and we are in the process of solving this problem today.

In the Pacific region today, there are 56 active zones in reactor cores on 30 nuclear submarines and two on the cruiser "Ural". Furthermore, there are 28 active zones on the former base in Sysoev Bay.

In reality, however, it is impossible to perform the tasks of dismantling 10 submarines per year. It is because we cannot carry out nuclear fuel from the Primorskiy District in normal conditions. Thanks to the United States, we built a coastal complex for

unloading the fuel. Nevertheless, this complex is almost not in operation since we are not able to carry out fuel from there. Therefore, we need support in rehabilitation of railway. We have been negotiating this project with Japan for seven years , but we have not come to a concrete decision yet.

For this year, dismantlement plans will probably be accomplished. However, Containers with nuclear fuels will have to be stocked in the Zvezda shipyard. If we are not able to carry out these containers, we will not be able to normally unload fuels next year because there will be nowhere to put them.

Here in the Primorskiy District, there are two damaged submarines with damaged reactors. Until today radiation contamination remains very serious and we cannot unload fuel from these submarines without putting worker's lives at risk.. After numerous investigations, we have come to a conclusion that the only certain way is to isolate these submarines onshore. Currently we are working on a program, in which a special sarcophagus will provide isolation of two submarines for hundreds of years onshore. This is also a very expensive project and we cannot complete it without international help.

Furthermore, after nuclear submarines have been dismantled, reactor compartments as well as reactors remain. They contain a very high level of radiation. Currently, damaged submarines are moored in the Pavlovsk Bay. 30 compartments are kept afloat in the Razboynik Bay, but they are in dangerous conditions. In order to address this matter, we are currently building an onshore storage facility. We are building it only with the Russian budget in the Far East, while we are doing it with great assistance from Germany in the North West. Unfortunately, financial circumstances are unfavorable and we eagerly need support in this project.

Furthermore, in the Pacific Region, the nuclear cruiser, "Ural" and 12 other maintenance vessels have been decommissioned. There are special tankers as well as floating bases which are used for collecting radioactive waste and for refueling reactors. Although it costs about $30 million to dismantle only one "Ural", we cannot afford such expenses. So we need support in this project, too.

In total, four floating bases have been decommissioned in this area and they are to be dismantled. The displacement tonnage is about 3,500 tons respectively, and we cannot avoid the creation of huge amounts of radioactive metal when dismantling them. This is why we are taking the following procedures. First, radioactive wastes will be taken out from these vessels. Second, we will seal reactors of the vessels and keep them afloat until we are able to build a complex for conditioning of solid radioactive waste. Hence, in order to continue our work in this region, we need to build a facility for conditioning solid wastes in the Sysoev Bay on the plant DalRAO.

As mentioned before, two coastal technical bases were ceded to Rosatom for rehabilitation. One is on the Kamchatka Peninsula and the other is in the Primorskiy District. The one on the Kamchatka Peninsula stores about 400 tons of radioactive waste. We plan to carry out these radioactive wastes from the base and rehabilitate the base to the socially-accepted level. Spent nuclear fuels will be transferred through the base in the Sysoev bay where radioactive wastes will be reprocessed. Therefore, we need support in rehabilitating the base there.

All together in the Pacific Region, we have about 20,000 cubic meters of solid radioactive waste which are stored in coastal bases of DalRAO. Parts of them are in the dismantling facilities and also on nuclear maintenance vessels. Actually, all solid waste produced by the dismantlement of submarines are confined in a reactor compartment, and the compartment itself will be kept in the coastal base for no less than 70 years. But if we start a large-scale rehabilitation of the base and dismantlement of decommissioned nuclear submarines, a large amount of radioactive wastes will be produced subsequently.

We have enough capacities to deal with liquid radioactive wastes on the Kamchatka Peninsula as

well as in the Primorskiy District. In 1993, 500 tons of radioactive waste with activity 005/curie were dumped into the Sea of Japan from a Russian tanker. This was a very small amount. And since 1993, Russia has not dumped radioactive waste into the sea. Three months ago, Russia joined the London Convention of 1993 which prohibits the dumping of radioactive wastes into the sea.

In this process, the floating complex "Suzuran", became a great support. By order of Rosatom, the Zvezda shipyard is reprocessing radioactive wastes at this complex. On this account, we are not only reprocessing all liquid nuclear wastes which are the result of rehabilitation of the bases and dismantlement of decommissioned nuclear submarines, but also those that were accumulated before.

There are six projects regarding priority issues for Rosatom. Of course, these are, however, not the only priorities. There are other projects such as creating regional system for monitoring radioactivity. This is also a very important project. But these are multi-faceted projects which other works will depend on as well. That is why, in my report, I have characterized the support which we need and I ask the participants of this seminar to give support to the necessity of solving these problems. All of them are well-grounded. Furthermore, all of the issues were introduced by Senator Nunn in the Global Partnership program in 2002. Moreover, these priorities are included in the Russian complex program for dismantlement.

A-2. Canada

"Global Partnership Program (GPP) – Submarine Dismantlement Program"

Mr. Stéphane Jobin, Political Counselor, Embassy of Canada in Tokyo

Canada's declared contribution for submarine dismantling is up to 300 million Canadian dollars. The program has been split into two five-year phases, covering 2004 to 2008 and 2008 to 2012. Two projects are currently being implemented in 2004; 120 million CAD for bilateral based submarine dismantling and 32 million CAD for multilateral projects related to nuclear issues in North West Russia through the Northern Dimension Environmental Partnership Support Fund, which is managed by the EBRD. Plans for the remaining 148 million CAD are getting underway so as to implement a second submarine dismantling-related bilateral project with Russia no later than April 2008.

Turning to the current bilateral project, it is important to note that exceptional cooperation received from our Russian partners enable to plan and initiate the project in such a short time. The project was in full implementation within two months of signing the Canada-Russia bilateral agreement. This four-year project will look to dismantling a minimum of three submarines per year. The project's scope covers the transportation of 10 VICTOR-class submarines to the Zvezdochka shipyard and a complete de-fueling and dismantling of 12 submarines. Eleven of the 12 submarines will be VICTOR class submarines; and the remaining one will be a Yankee notch class submarine.

Canada is also provided financial assistance for minor infrastructure improvements. Currently, these improvements are focused on the scrap metal handling area so as to provide a concrete base for metal scrap handling together with a special drain system to remove pollutants from any water or liquid runoff.

The actual legal instrument to provide funding is in the form of a contribution arrangement under the legal protections in the Canada-Russian bilateral agreement. The contribution agreement sets out clear milestones against which contributions will be made. The contributions are based on fair value being obtained for the money provided on each occasion. The first arrangement was initiated in July 2004, covering the towing of two submarines and the complete de-fueling and dismantling of three along with some minor improvements to the Harris pad (improvements to concrete pad area by Harris Sheers).

The second arrangement has been overlapping the first for the past two months. This overlapping will be a future of the program.

All eight submarines in this arrangement require towing from their various naval bases in North West Russia to the Zvezdochka shipyard. Towing preparations are already well in hand with seven civilian crews in place relieving the burden of the Navy crews so as to prepare and accompany the submarines to the shipyard. Only four of these eight submarines will be de-fueled and dismantled in this contribution arrangement. Three will be completely dismantled and the fourth will be dismantled for approximately 10 percent in total as a result of the de-fueling. Regarding the infrastructure assistance, the scrap metal handling area will be expanded 2400 square meters.

Zvezdochka is the only location regarding Canada's bilateral submarine dismantling activities. It is situated at the southern end of the White Sea. It was selected as Canada's preferred shipyard because of its excellent infrastructure, including an onshore de-fueling facility for spent nuclear fuel recovery.

The submarine dismantling project is directly managed by the Canadian Ministry of Foreign Affairs in a hands-on form. The project is assisted, as needs arise, by Teledyne Brown Engineering under con-

tract for negotiation support and progress-monitoring service.

The project conducts a site visit every month to the shipyard to review and document progress. The monitoring team must see participation of two people; usually it is organized by three. Each team takes photographs as well as documents according to the goals of the output respectively. Copies of all the original Russian documentation are made so as to provide a comprehensive weight of evidence package to support each payment. Canada usually pays by result in 10 to 14 days interval.

Regarding the procedures of the project, NPS 641 and 652 will be the first submarines that will be towed this year. These two will be transported half the distance of the destination per day over two days. They will first be brought to the naval bases in Gremikha, and then to Zvezdochka as the final destination. The stop to Gremikha allows the towing crews to open up and check the submarine; there is no crew on board during the tow.

Once the submarine is in the shipyard, the first major task is gaining access to the reactors for the fueling. Once the submarine's outer hull has been cleared away above the reactor, a large pressured soft patch is removed. The dismantling of the NPS 608 is commenced while the other two submarines are been prepared and towed. The access area above the two reactors is covered with a "rubbuka" which provides a double barrier for nuclear containment.

After the spent nuclear fuel has been removed from the submarine, it is temporarily stored in the shipyard: the term is about two to three weeks at most regarding the Canadian case. It is then transported by train to the chemical processing plant in Mayak. Currently, all spent nuclear fuel from the first three submarines has been transported to Mayak under the first contribution arrangement.

The polluted primary coolant and other contaminated liquids are first sent to a holding tank complex, and then they are pumped across to the adjacent building for processing. Solid radioactive wastes are sorted into those that can be compressed and those that cannot. Metals and non-compressible items are cut up inside this handling box to gain efficiency for packing. Both types end up being packaged in 45-gallon drums that are stored in a specialist AMEC container.

After de-fueling, submarines are placed in a dry dock for the actual dismantling task. Dismantling involves a careful removal of large pieces onto the jetty. These pieces are transported for the final stage at the dry dock area in order to enhance scrap values.

The dismantling activity removes the bow and stern leaving a floatable reactor section and an adjacent compartment at either end. These compartments are finally transported to Sayda Bay.

To summarize the project, we have contributed over 60 percent of spending. The second contribution arrangement awaits the arrival of a further decommissioned submarine, although $150,000 has been contributed for planning and project management.

In closing and by way of summary, I repeat that the bilateral project with Russia is proceeding on schedule and to cost to de-fuel and dismantle 12 nuclear-powered submarines. Three submarines have been de-fueled and two completely dismantled down to three-compartment units. We have initiated a second arrangement that covers the towing of eight submarines within this year, four of which will be processed around this time next year. Thank you.

A-3. Germany

"German support for the dismantlement of nuclear submarines in Russia"

Mr. Holger Schmidt, Project Leader, Projektleitung Atom-U-Boot-Entsorgung, Energiewerke Nord GmbH

My presentation is composed by two parts: first, explanations regarding this project, and second, regarding the German support in Murmansk.I begin with the second part due to the limited time I have for this presentation.

The German support in North West Russia is based on the decision of the G8 countries for the Global Partnership in 2002. Our task is composed of the final dismantling of the so-called three-section compartments floating now in Sayda Bay, and the building of large, long-term interim storage facility onshore with the capacity for 120 final composed reactor compartments of utilized Russian submarines.

These projects are concentrated on two locations, approximately 50 kilometers north of Murmansk. The first location is Sayda Bay, where the new storage facility is currently under construction. The second is in the Nerpa shipyard near the town Snezhnogorsk.

Why is the project necessary? In the North West region of Russia, about 50 nuclear submarines are already partly dismantled; nonetheless, they are unsafely stored afloat in Sayda Bay. 8 to 10 sections consisting of three compartments are added per year. Furthermore, for the 17 decommissioned nuclear submarines, there are nuclear fuels that have to be disposed; however, there are no rooms in the floating storage. The spent fuel from these submarines are reloaded and transferred to Mayak. Hence, there is a need to create new land-based facilities for reactor compartments storage.

In the year 2003, both parties, the German Federal Ministry of Economics and Labour and the Russian Ministry for Atomic Energy signed an agreement which settled the content as well as the frame conditions of the German support. Germany will afford €300 million project within five years. The agreement was signed on October 9, 2003 and started very successfully. In 2003, we actually afforded €4.5 million. In 2004, we afforded €54 million: with one-third of this money, we have spent for new equipments for the Nerpa shipyard and for constructions at Sayda. This year, in 2005, €60 million is planned for affordance.

We have three independent levels of acting: the political level, the ministerial level, and the project management level. For the project management level, there is Energiewerke Nord GmbH, which I represent, on the German side, and Kurchatov Institute and the Nerpa shipyard on the Russian side. And the practicing level is composed by the actual contractors. EWN, as the project manager from the German side, concludes the executing contracts with all German and Russian partners directly. They are also responsible for the cash flows. Our management counterparts are Kurchatov Institute and Nerpa shipyard. All technical decisions are common decisions of both nations.

Detailed tasks are erection of the long-term storage facility onshore in Sayda Bay, the improvement of the technical basics of the Nerpa shipyard for efficient and safe dismantling process, offer of modern equipments for dismantling, and the repairing of existing equipments; for instance, the reconstruction of the floating dock and tugboats, and the maintenance of U.S.-sponsored dismantling equipments, the reformation of the floating case in Sayda Bay which is the buffer storage for reactor sections waiting for their final disposition. There are also needs to maintain a new railway-based transportation system for the delivery of very heavy reactor compartments onshore. Additionally, we agreed the implementation of the radioactive material management and support information system and we are

feeling responsible for the elimination of the many convention shipwrecks in Sayda Bay; that means, we clean up the bay.

For the onshore transportation, the German side delivered a new railway-based transportation system. The testing procedure of this system will start at the Nerpa shipyard still in this month. The capacity of this is 400 tons each; furthermore, changes of directions are possible at switching points. They will also be utilized at the Far East storage facilities.

The area of the first part of the storage is scheduled to finish within this year. We hope we can start the operation of this first part of the storage still in November this year.

A-4. Norway

"Concern for safety and environment aspects of dismantlement of decommissioned nuclear submarines"

Mr. Robert Kvile, Deputy Director General, Security Policy Department, Ministry of Foreign Affairs

When the border between Norway and Russia reopened in the beginning of the 1990s, we learned that the environmental problems on the Kola Peninsula were more serious than we had anticipated, only then we fully understood the magnitude of the problems in the nuclear sector. This prompted the Norwegian government to present a white paper to the Parliament devoted to the problems concerning nuclear installations on the Kola Peninsula. The Norwegian Parliament responded by asking the government to set up an action plan for assisting Russia in dealing with her nuclear safety problems. This was in 1995, and since then, the Norwegian Parliament has made substantial annual allocations to our bilateral nuclear safety program with Russia.

For Norway, the nuclear installations on the Kola Peninsula and the Arkhangelsk District represent first and foremost an environmental challenge. We are particularly concerned that a nuclear accident could pollute the abundant fishery sources in the Barents Sea. Of course, the terrorist attacks against the United States in 2001 brought a new dimension to the nuclear safety cooperation with the Russian Federation. To prevent radioactive and fissile materials from falling into the hands of terrorists is, for most countries, the main reason for allocating resources to nuclear safety and security activities in Russia. However, in Norway, the strongest argument is still issues regarding the environment. Nevertheless, there is no doubt that proliferation concerns have reinforced public as well as political support in Norway for cooperating with Russia in this field.

During these past few years, Norway has had five main priorities. First, the dismantlement of decommissioned nuclear submarines from the northern fleet; second, the security of highly radioactive strontium batteries from lighthouse lanterns along the coast of North West Russia; third, the renovation of the infrastructure to close northern fleet service base at Andreeva Bay on the Kola Peninsula, a project that we are now expanding to include also physical protection; forth, improvements of safety standards at the nuclear power plant on the Kola Peninsula; and, finally, cooperation between Norwegian and Russian regulatory and administrative authorities.

The first three areas correspond to the G8 Global Partnership priorities. These are at the same time the most important areas of work in our cooperation program with Russia. Approximately 75 percent of the annual budget is used in these first three areas. Improvement of safety standards at nuclear power plants falls outside the scope of the Global Partnership; however, it is within other Scandinavian countries' scope. As we see it, the Russian nuclear power plants pose a greater risk of radioactive pollution and injury to health in Russia and her Scandinavian neighbors.

The fifth restriction is, in many respects, a Norwegian specialty. Through active cooperation between regulatory and inspection or administrative authorities in the two countries, Norway wishes to assist in strengthening these authorities in Russia. The cooperation is partly linked to the cooperation and implementation of specific projects, partly devoted to questions concerning legislation and best practices.

We have developed our nuclear safety cooperation with Russia during more than 10 years. I believe we are able to say that we have accumulated a lot of experience. We have established networks and we have learned from mistakes. And this, to my mind, explains why a small country such as Norway has been able to develop an effective coop-

eration program with Russia comprising also the nuclear submarine dismantlement.

Last month we signed a contract for our third dismantlement project. According to current plans, we intend to finance at least one submarine dismantlement project annually. Submarine dismantlement projects are not necessarily the most complex. This does not mean that such projects are without risk. Every project involving the handling of nuclear material is.

A key element in the preparation of any nuclear safety project also submarine dismantlement is the risk and impact assessment. This assessment will reduce the likelihood of accidents to a minimum level and avoid unintended effects on health, environment and safety. The prerequisite of the Norwegian Parliament is that assessment be produced before the implementation of the project begins. In fact, this assessment is an important part of the documentation upon which the decision is made on financing or not financing the project and this also explains why the contract of our last dismantlement project was divided into two parts. We first signed a document regarding the contract which included the risk and impact assessment. Once this contract had been fulfilled, we went on to signing the additional contract on the actual dismantlement project.

For Norway, it is an important principle that the risk and impact assessment covers all aspects, to be more specific, all aspects that are financed by Norway of the dismantlement project. This includes towing of the submarine to the shipyard as well as the dismantling there, transporting of the spent nuclear fuel, stocking and transporting of the radioactive waste to their specific storage and/or treatment locations.

Dismantling nuclear submarines generates considerable quantities of environmentally hazardous waste as well as solid and liquid nuclear wastes. Inspections of the implementation of Norway's first two dismantlement projects brought to light improper treatment of such wastes. We will therefore have a strong focus on this particular problem during future projects.

The handling and storage of the spent nuclear fuel is of specific interest. The spent fuel is transported to the Mayak repossessing plant. Repossessing at Mayak entails routine discharges of radioactive waste to the heavily-polluted Karachay Lake. There is also a steady supply of radioactivity to the river systems in the area as a result of leakages from reservoirs. We have heard earlier today that some Norwegians fear that radioactive material we remove from the Kola Peninsula and sent to the Mayak plant will eventually be brought back to the Bering Sea by the Siberian Rivers. We think there is a need for studying alternatives to the repossessing at Mayak: for example, the building of temporary storage facilities on the Kola Peninsula may be one solution. However, the Russian Federation is based on the fact that there is presently no alternative to the repossessing at Mayak.

Preparing projects is time-consuming. There is a need to provide a great amount of documentation on the project, including an extensive impact assessment, under the Russian law regarding the shipyards. These documentations, written in Russian, must be evaluated by donor country experts, although much of the documentations are generic; in other words, the second project will always be easier than the first one.

Furthermore, there is also much to be gained from doing certain projects together with others nations as we are processing with the United Kingdom at Nerpa in the Andreeva Bay: moreover, this is sufficient when it comes to chemical weapons destruction. We are able to save a lot of work by doing all dismantlement projects at one shipyard. Our Canadian colleagues have chosen to do all their submarine dismantlement projects at the Zvezdochka shipyard in Severodvinsk and Norway aiming to concentrate her projects at the Nerpa shipyard on the Kola Peninsula.

Ladies and gentlemen, if you are interested in more information on the Norwegian priorities and what we do, you will find it on this internet address. Thank you very much.

A-5. UK

"Dismantlement of decommissioned nuclear submarines from the viewpoint of non-proliferation"

Dr. Alan Heyes, Deputy Director, International Nuclear Policy & Programmes, Department of Trade and Industry

I would like to inform you all that I am not here just only in representing the U.K. but also as Chair of the International Atomic Energy Agency's Contact Expert Group, which acts as an important focus for discussing sharing information and coordination of projects in North West Russia and I find this a very useful forum for sharing the sort of information we have been discussing over the past few hours.

First, I would like to give a very brief background to the U.K.'s Global Partnership program. I believe this will provide the context of what we are doing on submarine dismantlement.

I think it is important to understand that there are certain fields which provide benefit to the U.K regarding the political agenda in terms of the Global Partnership which we have an interest in. Obviously, there are important lessons to learn for dismantling our own nuclear fleet of submarines which are no longer required. We are also able to attain lessons regarding the strengthening of international collaboration in the security and non-proliferation area.

Furthermore, it enhances the Russian Navy to Royal Navy collaboration and helps reduce misunderstandings at times of tension. And our work, hopefully, will enhance the project and risk management skills as well as the sustainability to tackle more complex projects within the Russian Federation which it will fund by itself in future. However, even though more money is eventually forthcoming for the Global Partnership, this will still be only a small part of the funds necessary to allow Russia to tackle the considerable WMD legacy. I think one of the most valuable things we can do is to assist Russia to enhance its capability to manage more complex projects in future.

Moreover, we are working in partnership with Russia and other former Soviet Union countries; it is important to remember that we are not talking about just Russia here but the other countries with similar challenges, cover security, non-proliferation, safety and strong environmental benefits.

In terms of raising the public perception to the value of the Global Partnership program, the environmental spin-offs mean a great deal in the U.K. My colleague, Robert Kvile, just mentioned the interest of the environmental implications of the work in Norway and also we have heard from Japan its interests from the public on the environmental issues. It is not just a non-proliferation security interest which the public is interested in; it is also the environmental benefits as well.

We are also not just in the scrap metal business. Furthermore, we need to make sure that we do not actually make the problem worse by preceding our projects. This may sound like a rather stupid comment to make, but it is very easy to make a situation worse by one's good intentions.

The strategic focus of the U.K. Global Partnership program is concretely about the spent nuclear fuel side of the business. This is certainly one of the main reasons why the U.K. is supporting work in North West Russia. Also in other parts of the Global Partnership program, we are very interested in security alternative employment for former weapon scientists and engineers. Arguably, it can be stated that the way in which you actually measure success in this area and ensure sustainability of creation of new jobs and businesses in nuclear-closed cities and other WMD establishments is one of the most difficult parts of the Global Partnership.

We are, furthermore, very interested in doing more

to enhance nuclear security, and the U.K. is considering in spending more money in this area over the next few years. We are supporting a U.S.-led project to end Russia's production of weapons-grade plutonium, a project which started recently with U.K. funding and we attach a lot of important to working with Russia and the U.S. to get the plutonium disposition agreement underway.

What have we learned and achieved over the past three years? We have actually achieved a substantial portfolio of projects underway now. I think we cannot underestimate the amount of work involved in actually assessing out the program management infrastructure; this is a very time-consuming business and it cannot be rushed. It took us nearly two years to set up our program and I think it has created solid foundations to have successful projects. We are spending significant sums of taxpayer's money now in the U.K.: we have spent £35 million last year and we will be spending about the same this year. Two-thirds of that goes on submarine-related dismantlement projects.

Another key aspect which we have learned is to develop good working relationships with colleagues in the Russian Federation: we currently have very good working relationships with colleagues in Rosatom and the Russian Navy. The other thing is the importance of carrying all your stakeholders such as the Parliament and also the members of the public. To this end, we have published—like Germany and Norway—an annual report setting out why we are doing this program, what we have achieved to date and what we intend to do in the future. Producing annual reports provide an incredible value in managing our stakeholders and reporting has certainly helped us reduce fears that we are wasting taxpayers' money in this area. Therefore, I would recommend publishing annual reports to any country involved in the Global Partnership.

Regarding the U.K. submarine dismantlement program policy, first, we are not just in the metal cutting business. Our focus is securing safely the spent nuclear fuel. The importance is where the real threat lies regarding the spent nuclear side from nuclear submarines. Our policy is, therefore, to focus very much on assisting Russia to deal with the spent nuclear fuel at Andreyev Bay where there are some 20,000 fuel assemblies currently stored. We are also helping the Russian Federation in dealing with some 3,500 fuel assemblies currently on the lotter and move that to a safe containment building at the Atomplot sites. We have done a couple of metal cutting projects. We cut two submarines up to time and cost and we are just about to start a third project at Nerpa shipyard. It is very important that we do this, but again, I would like to emphasize that to spend nuclear fuel is the main part of the business here.

In dealing with the towing as well as long distance transportation of decommissioned submarines, one must be concerned of safely. One of our benefits with our collaboration with Norwegian, Russian and U.S. colleagues under AMEC is that we are able to reassure this safely. However, caution is necessary with multilateral projects. They are certainly more time-consuming, involve more parties, but must make sure that all are satisfied with what we are doing; moreover, each party has their place in the Global Partnership program respectively. We are currently reviewing another spent nuclear fuel storage project at Mayak, and we will hopefully make a decision about this later this year. Once again, this very much focuses not only on metal cutting but also on dealing with the spent nuclear fuel, which is greatly of importance.

Now, I would like to focus on issues regarding non-proliferation on the dismantlement of submarines. Submarines are not worth a non-proliferation issue as long as they are not sold to states of concern. However, they do present security, safety and environmental threats. Particularly if the places in which you are moving these submarines to are areas of significant population, issues regarding concentrating of spent nuclear fuel storage in these areas will rise. Certainly, the spent nuclear fuels in some of the former Navy bases represent particular security and environmental concerns and this is the reason why we are working with Rosatom to address particular challenges in Andreeva Bay.

France is considering work at a similar site at Gremikha as well. Spent nuclear fuels, unless efficiently and effectively stored, does offer potential for a terrorist target.

Submarine dismantlement was agreed to be a priority at Kananaskis; it is, however, seen as an environmental issue as well as security and safety issue rather than proliferation threat issues, and this relative of importance must be enhanced.

In terms of lessons learned, it is absolutely essential to have a sound project management framework in place. This will certainly decrease risks. There is a necessity to deal carefully with material like spent nuclear fuel at sites which have not been looked after for some time. Many nuclear projects are complex; for example, certainly, they are complex at places like Andreeva Bay. You must not hurry in setting up the projects. You must also not hurry in moving spent nuclear fuel. It is said that the money spent was a lot less than that was actually used. While the U.K. is committed to working with Rosatom and Andreeva Bay, we would not be spending significant sums of money until we are absolutely certain that the various options we are looking at, in terms of the best option for moving this fuel, are completed. There is no doubt in the commitment of the U.K., but issues must be dealt considering place for security and safety reasons within a long time scale.

Furthermore, it is important that the general public understands that a large amount of money is just been used. There are actually public who are concerned about nuclear issues; therefore, there is a need to let them know that we these projects are well thought-out. It is important for the donor to be intelligent customers that examine from a bigger picture various alternatives the consequences. The U.K. is not just a donor that just provides money

The negotiation of projects is actually a time-consuming task. The submarine project is just getting underway at the Nerpa shipyard; the negotiation started with Rosatom in April and it just got underway in terms of contractual arrangements. Preparation of documents is also important. Therefore, decisions for schedules must be done rapidly as well as respectively. It is also important that appropriate information is made available to donors so they can actually think about projects in the most effective way to minimize risk, to get a better understanding about value for money issues.

Emphasis is needed to be put on to the fact that in order to be an intelligent customer, one must make decisions regarding the information gained. An intelligent customer is all about making sure one has the right information to make the right decision. It is also important, obviously, for a close working relationship with the main beneficiaries like Rosatom to make sure that the costs we are paying for and other details are correct, and that the right requirements in terms of Russian legislation are met. Furthermore, to make sure that all projects meet all the requirements of both the U.K. regulations in terms of grant aid and also the Russian regulations in terms of environmental and risk at work is necessary.

Another point that is worth emphasizing is that more money is needed for this work. Obviously, there is not enough money on the table to complete the Global Partnership agenda. However, in order to get more money, there is a need to demonstrate to the taxpayer as well as the Parliament and ministers that we are being successful. Spending much money requires successfully essential results.

What challenges are there ahead? There is a lot of collaboration taking place behind the scenes in many areas of the Global Partnership, particularly in submarine dismantlement. There is not another field that has such excellent collaboration between Global Partnership countries. The United States strongly supported the project when it was set up. There is a lot of close collaboration taking place. There is also sharing information between donor countries. There is a lot of sharing information from the Russian side, which is to be commended; nonetheless, there are a lot more we can do on this and it is something we need to be very mindful of.

As I have previously touched on to several issues, the submarines themselves are not the problem, but it is the spent nuclear fuel that is of concern. We need to make sure that the infrastructure is in place to deal with the other issues that relate to towing and cutting up the submarines, transporting nuclear spent fuels. It is an important set of criteria that is need to be address, to make sure all the issues on the critical path from moving the submarine to the final movement of the spent nuclear fuel to Mayak. That requires an awful lot of collaboration, not just by Rosatom, but also by the donor community to work together to make sure that they are happy with that. We certainly will not be thanked by our major stakeholders, the public and Parliament, if we get that wrong.

Security of sites where spent nuclear fuel is stored is very important. We do not want terrorists getting access to these materials. Also, we would like to make sure the material are moved safely. Again, there are issues and projects around the movement of spent nuclear fuel that we need to make sure of.

Another important point is that although plans in North West Russia have seen progress, plans in the Far East have scarcely moved. For the best practice as well as failure in North West Russia, there is a need to make sure all the information is shared with colleagues working in the Far East. There is a lot more that can be done in order to share information among Rosatom, countries working in North West Russia, and countries such as Japan and other colleagues carrying out or considering projects in the Far East. Japan would also benefit greatly from active participation in the International Atomic Energy's Contact Expert Group, which I am currently chairing; in other words, I would say that, from my position, I believe that there are a lot to learn and benefit from participating in that group. It does not cost much, $11,000 a year, worth paying.

Finally, I think that I cannot emphasize enough that the spent nuclear fuel issues are where the problem lie on.

A-6. Arctic Military Environment Cooperation (AMEC)
"AMEC's viewpoint on decommissioned nuclear submarine dismantlement projects in the Russian Far East"
Mr. Dieter Rudolph, US AMEC Program Director and Steering Group Co-Chair

First as a background, Norway commenced this program in 1995, 1996 timeframe. These programs were put together in response to the concerns about the radioactive waste that was polluting prime fishing grounds. The goal of this is to minimize the impact of military operations; however, the real focus is on the radiological problems in the area.

If you look at the overall distribution of the Northern and Pacific fleet of the Russian Navy, you are able to see that about two-thirds of the fleet in various sites in the northwest. The remaining fleet is the Pacific fleet which is the main focus today. In the following section, the background and accomplishments regarding the program, as well as the way for application in the Far East will be provided.

What can we do to eliminate bottlenecks? A key bottleneck was that there were only transport casks; there were no storage casks, and hence, we came to develop a prototype cask. This is the AMEC cask, or the so-called Tuck 108, that can be used for spent nuclear fuel storage and also for transport.

Another bottleneck was that there was a need to coordinate the arrival of the service ship that had the spent fuel and the railcars so that the fuel could be transported from the service ship onto the railcars as soon as its arrival. There were actually no interim storage area; therefore, a spent nuclear fuel storage site was developed.

I would like to emphasize that a radiation monitoring system is also included. When we initially analyzed these problems, we obviously placed highest priority on the spent fuel. We looked at the radioactive waste, both solid and liquid, but there were also strong intentions to make sure that personal safety, public safety, and the immediate surrounding area were also considered. That is why each one of these sites includes a radiological monitoring site.

As mentioned previously, these containers that we have developed are both for transport and storage. Furthermore, a radioactive waste complex has been completed at Polyarnyi shipyard No 10. This is a solid radioactive waste conditioning facilities which is on the priority list of the projects in the Far East: direct application may be available.

The next section will focus on the ongoing projects. Quite a few of the decommissioned submarines have been in the water for an extended period of time. Therefore, reserved buoyancy is a real issue to keep them from sinking. When looking at the problem, we understood that the technology which injects polystyrene into the ballast tanks to keep the submarines afloat is fairly well established in Russia. However, the focus or the highest priority that we are currently placing on is to remove the polystyrene when dismantling the submarines. This is in order to prevent the floating out of huge blob of lump with polystyrenes.

This project, and also our transportation project, is led by the United Kingdom. For the U.S. side, there was a cooperative threat reduction agreement within the project. Policymakers have informed us in find out our individually separate legal agreement regarding this matter. Most of the legal agreements have contained certain difficulty regarding liability issue. All efforts are put in order to resolve this issue. Since the United Kingdom, as well as Norway, has already reached an agreement, they have taken the lead on these other projects. The United States has been participating by providing the technical expertise.

The next project deals with the safe transport is-

sue. For example, a nuclear submarine, so-called K159, sank with a loss of life. This incident occurred fairly close to shore, and therefore, real concerns emerged. Therefore, a question of how to transport the submarine safely was of great problem. Again, the United Kingdom has the lead on this. There were variety of ways, but one of them had to do with the development of specialized pontoons for short distance transport. Norway, on the other hand is looking at a heavy lift vessel option: a costly way but very safe.

Projects are analyzed before being put into place. Data are analyzed, and bottlenecks are being identified. The same thing needs to be done in the Far East. The Far East has not received enough attention; therefore, we have started research in collaboration with Rosatom as well as the Russian Academy of Science. This research is to assess the radio-ecological state of the nuclear vessels and nuclear bases and also the service ships in the Russian Far East. We have received our first milestone report in January. The second report has just been completed in May and we expect to have this research completed by October/November timeframe. This result will serve as the data that can be used for the next step which is to produce a master plan. The document identified bottlenecks, analyzes the procedures, and then decides high-priority measures that need to be taken into action: moreover, the identification of projects are being initiated regarding these bases.

Methodical approaches to these problems must be carried on in the Far East, and a master plan is needed. However, this should not be a plan developed unilaterally. It needs to be a cooperative and a collaborative effort to make sure that it addresses the priority concerns of each country. For the United States, for example, atmospheric transport is important because that could bring, if an accident occurs, radioactive clouds via atmospheric transport. The same can be said regarding Japan, and more, the waterborne transport would be very an important issue to know if that has polluted prime fishing grounds. The transporting of nuclear submarines are very important issues as well since the distances are much greater in the Far East. Although the investigation of issues in North West Russia has become quite clear, further research is needed since there are differences regarding North West Russia and the Far East. And that is why the study we have currently underway will lead to a development of a master plan so that then we will be able to gain appropriate coordination between the countries to address the problems in the Far East.

A-7. Russian Academy of Science

"Environmental safety and monitoring measures in the dangerous radioactive facilities in the Far East, as well as possible responses to the accidents which may happen in the facilities"

Acad. Ashot Sarkisov, Academician, Advisor to Director of IBRAE

The results of many years of operation of nuclear fleet and the dismantlement of nuclear submarines were environmental contamination by radiation in certain land and sea areas in the Far East region. Therefore, together with the dismantlement of nuclear submarines which is a routine technological procedure requiring a large amount of money, rehabilitation of the territories contaminated radiologically is also an urgent issue. I would like to speak about the radioecological aspects of utilization of nuclear submarines and rehabilitation of radiologically contaminated facilities for their malignance.

The problems appeared in this region regarding radioecological rehabilitation contains not only factors that are connected with operation of nuclear submarines. There are certain tensions arising from the characteristics of this region. Three factors are focused here.

The first factor is the slow pace of nuclear submarine decommissioning in the Far East region which is slower than that in the North West region of Russia by more than 1.5 times. The second is the existence of two nuclear submarines which have had huge nuclear accidents. And the third is a wide regional distribution of facilities and infrastructures used for the dismantlement of nuclear submarines.

The very important indicator that describes environmental contamination is the amount of potential radioactivity in the area. When investigating the range of radioactivity in this area concerned, the amount in the Far East is not that much less than that of North West Russia.

As it was mentioned above, one of the special features of the region is that there are two damaged nuclear submarines: they are currently harbored in the Pavlovsk Bay. The accident with the reactors on these submarines happened in 1985. The accident of submarine K 431 occurred during its stay in the Chazhma Bay. The reason for this was a chain reaction that occurred while reloading the fuel of the reactor core. On the other hand, the accident of the K314 submarine occurred in the Pavlovsk Bay, where it is currently harbored. The reason was the leakage of the primary cooling water, which, as a result, destroyed the reactor core due to the melting of the active zone.

The average acceptable time to stay in the compartment with radioactive concentration ranges from five minutes to four hours per person per year; hence it can be understood that the dismantlement of submarines is a very complicated, scientifically and technically tough task to fulfill.

Currently, however, since the nuclear submarines have stayed in the Pavlovsk Bay for a long period of time, there are unacceptable radiological changes observed. There is a local zone of radioactive contamination and the maximum contamination level is almost 150,000 times higher than the background level. A decrease of the level of radioactivity pollution may be expected by the radioactive decay of nuclide. However, the scale of radiological contamination has not basically changed during the years because scores of contaminated materials has been coming out of these submarines into the waters of the bay. In addition to that, new spots of contamination are observed where many technical ships come to serve. So, there is another evolution of the radiological spot. Around the site, where an accident of K 314 occurred, radioactivity is slowly decreasing partly because of the natural radioactive decay and partly because of the flow of ocean which washes away nuclide.

Another place of radioactive contamination is the Chazhma Bay area, where an accident occurred due to a chain reaction in 1985 and this was certainly the only and most serious accident ever in the history of the Russian Navy. The contamination actually dispersed in the sea and on the land. Cobalt 60 was the main distributed nuclear material at the accident site. This was because the accident happened on a submarine which had been just loaded with nuclear fuels and the fission product had not been formed yet The initial value of the ground expansion value of radioactive nuclide, which contains 100 times larger background value of exposition zones, is 10 kilometer per one kilometer. The soil contamination ranges from several centimeters to one kilometer. The nuclear contaminants are beginning to enter the Strelok Bay from the Chazhma Bay.

The local zone of radioactive contamination also has begun to appear in the Konyushkov Bay, where the SNF has been unloaded to be sent to the coastal technical base in the Sysoev Bay in compliance with the regional technical transportation system. In this site, the maximum level of gamma rays contained in sea bottom sediments is three to four thousand times higher than the background level. Even if we exclude those highly concentrated areas, the level of gamma rays in the sediments there is 15 times higher compared with the background level. From 1990 to 2001, the level of radioactive contamination of bottom sediments has increased and it is still increasing gradually year by year since this bay continues to be used for such activities.

As a result of prolonged utilization of the coastal technical base in the Sysoev Bay almost 70 percent of the area has been contaminated with radioactive materials. The reason is that half of the buildings and the storage facilities are too old and in a very bad technical state. During the long-term storage of radioactive wastes, a portion of radioactive wastes is going out of these facilities and is beyond the territory of the base. In this area, Cesium 137 contained in the soil is about 100, 000 times higher than the background level.

Other than the area of the technical base and the Sysoev Bay itself, radioactive contamination of bottom sediments is observed in the neighboring sea area. Mainly, this is a result of deactivation of a nuclear maintenance vessel which was affected by radioactive cloud in the 1985's Chazhma Bay accident. Besides that, until 1997 the Bay has been extensively used by maintenance vessels loading with solid and liquid radioactive wastes. Therefore, the maximum level of radiation is 500 times higher than the background level here.

Very negative ecological situation in this area is further aggravated by the slow reprocessing of spent nuclear fuel. The cutting of nuclear submarines is certainly an important priority, but there are also many more important priorities as well. The main priority here is perhaps the handling of spent nuclear fuel and radioactive wastes, both solid and liquid.

As it has already been mentioned, transportation circumstances are very complex. This is because we are not able to transport the spent nuclear fuel from the Zvezda shipyard, where it has started to accumulate.

Another reason is that the whole railway from the Sysoev Bay to Smolyanova is in bad condition. The situation is further complicated by the fact that this area lacks mobile systems for reprocessing solid radioactive wastes and regional storage facilities.

When estimating the potential radiation situation in this area, one should bear in mind potential radiation risks relevant to each stage of work and technical operations of the dismantlement process. Of course, the most dangerous accident is the appearance of a spontaneous chain reaction.

Taking into considerations all these accidents, we conducted the assessment of possible consequences of such accidents. According to the results of our study, expected consequences of an accident in unloading nuclear fuel, could be by several hundred times worse, for example, than the 1985's Chazhma Bay accident. This is because the concentration of radionuclide, which is very dan-

gerous to the ecological environment, is much higher than that of the 1985's accident which occurred on a submarine which had just loaded with new fuel.

If a same kind of accident with spontaneous chain reaction would happen in Kamchatka, the consequences must be extended to Japan and the United States. Even if the nuclear fallout is not so much, the very fact of real fallout of nuclear materials from the sky will bring about some reaction and panic in society. Furthermore, once the cloud passes a certain distance, it will turn to a rainy front.

Quantitative assessments of radiation consequences show following results. If an accident with chain reaction occurs in a shipyard in Kamchatka or in the Laperuz Strait, the consequences will most likely reach the Aleutian Islands and Hokkaido Island in Japan. Of course, this is a small amount of nuclide materials, but the very fact that fallout does occur is thought to be very dangerous.

According to the technical transportation system of this region, nuclear spent fuels are constantly delivered to the Primorskiy District from Kamchatka area. Moreover, there may be a necessity in deciding the transportation of nuclear submarines and reactor compartments to Primirskiy area since the dismantlement of nuclear submarines has been delayed in Kamchatka. Accidents could happen during the transportation of spent nuclear fuel, for example, in the case of a terrorist act. If an explosion of a support vessel carrying spent nuclear fuel occurs in the Laperuz Strait, nuclides will be carried by clouds, and it will lead to the almost unacceptable level of contamination near Japan. If an accident occurs while transporting spent nuclear fuel from Kamchatka, nuclides will drift on the sea current which will, in the end, reach Japan and the United States. This will contaminate the areas of fishing, fishing grounds. It is a nuclear terrorism that is a real threat and careful consideration should be given to possible use of spent nuclear fuel or radioactive wastes by terrorists.

It is quite natural that any real fallout of radioactive materials in the sea areas of the Far East region, even small, can provoke a very strong, serious reaction from the population in these countries. Therefore, we should have the knowledge about the radiological state of this region. Furthermore, in case of an accident, which we may not be able to avoid, we should be ready to take necessary measures to minimize its consequences. Hence, the establishment of an information analytical center for environmental safety and monitoring situation in this region is most urgent.

A-8. Russian Academy of Science

"Safety issues regarding the cessation and dismantlement of facilities in the Russian Far East which are used for the Russian nuclear fleet"

Prof. Leonid Bolshov, Director of IBRAE

Nuclear Safety Institute of the Russian Academy of Science is an independent organization. It is not under the control of Rosatom or any other ministry of Russia. Our institute was given the task to conduct strategic survey on the problems of the dismantlement of nuclear submarines in the North West region and to prepare Strategic Master Plan (SMP). I would like to speak about what this SMP for the North West is and the necessity for the same process in the Far East.

The main task of SMP should be to provide the government of the Russian Federation with basis for making strategic decisions regarding works related to the decommissioning of nuclear submarines (NS) and the management of nuclear spent fuels (NSF) and radioactive waste (RW) in North West Russia. This basis will also be useful for the donor countries to evaluate the economic efficiency and the safety of relevant projects and to make balanced and justified decisions with due consideration to interests of both Russia and donor countries.

Specific features of the SMP, as compared to other conceptual documents, are as follows. First of all, the SMP is not an internal document of Rosatom. It is rather like an interministerial document which has comprehensive characteristics. Second, the development of the SMP was financed by the Northern Dimension Ecological Partnership Fund in which the international expert group plays an important role. Finally, the tasks of SMP are prioritized not only by experience, but also by scientific basis.

The SMP should elaborates a variety of inter-consistent subprograms and projects, and determine the ultimate goal, the scope of work, significance within projects, duration of project, potential executors, range of cost, as well as provide necessary basis for safety and other characteristics.

The SMP plan started in February 2004; and phase I was completed in October 2004. Then, phase II will be approximately 20 to 22 months. The scope of the work on the SMP targets NS, including reactor compartment units, nuclear support vessels, spent nuclear fuel, radioactive waste, and noxious chemical substance so on.

A report was created as a result of phase I by the Russian Academy of Science as well as two famous institutions, a related institute of Rosatom and the Kurchatov Institute. The report was approved by the meeting of donors and put into action by the order of the Head of Rosatom in December.

Phase I is a preparative stage for phase II, the main phase of the SMP. Therefore, phase I included addressing technical and radiological conditions of all objects, necessary management cycles as well as bottlenecks, developing the methodology for priority assessment and creating a list of top priority tasks and measures.

As a result, 21 projects were selected as top priorities and 24 projects - high priorities. Many projects are included in the list as top priorities It is no coincidence that the work that commenced on the bilateral agreement overlaps with a result of our independent high-level research. It assures us that our work, together with Rosatom, is heading in the right direction.

I believe that the SMP for the Far East must include two phases. Phase I, which analyzes actual conditions of all concerned objects, would need 10 to 12 months and cost about $500,000. Phase II, which compiles a more comprehensive and detailed

plan, would need 18 months with much more expenses.

The initial steps towards the preparation of the SMP for the Far East have already been spoken of earlier today. Since Rosatom allocated only a small amount of funds which we have already spent to start this work. Regarding some projects funded by the Ministry of Defense of the United States, it seems that they are preparing a contract. However, I would like to underline here that the funds which we have already received account for only three percent of the total amount, which is necessary to conclude this work. Therefore, unifying our efforts and resources for this work is an inevitable step to gain necessary information for decision-making and to inform non-governmental organizations and the general public about what is going on and being done. I would like to emphasize that public hearings have been organized in Severodvinsk, Murmansk, and Moscow regarding the phase I of the SMP for the North West. Non-governmental and public organizations such as Bellona have shown a great interest and highly valued our work. I think the SMP would help the Far East to move the situation forward as well.

Theme B

Disposal of Surplus Plutonium

B-1. US

Dr. Michael Guhin, Ambassador, U.S. Fissile Material Negotiator,
U.S. Department of State

We have long been working to avoid a catastrophe. And we also always knew that these would become much more complex and difficult with the spread of materials, technology and know-how. But this has become even more critical now with the rise of terrorism and the rise of the power of non-state actors. And so it is incumbent on all of us to do what we can to solve and to crack these problems and to make the possibility of weapons materials, in my case, nuclear weapons materials coming into the wrong hands, to try to reduce that possibility as close to zero as we possibly can.

The plutonium disposition project is the project to convert the already separated, readily usable weapons plutonium into spent fuel so that it becomes like any other spent fuel, more or less, not dangerous. It has been a longstanding project both of the United States and of the G8. In 1999 and 2000, we negotiated a bilateral agreement with Russia, which set forth some of the conditions, the framework and the time schedules for those programs. Now, the time schedules were, of course, very optimistic, unrealistic, that has proven to be true. But the goal is valuable today and probably more valuable today than it was in the year 2000. It has been difficult to get plutonium disposition up and running and in some senses, I have to be honest with you, this is no surprise. We said in 1999 that the 2000 agreement with Russia would be difficult and it was. It took 19 trips to Russia in 18 months.

We always knew that a multilateral framework under the agreement and the follow-on agreement would be the most difficult; this was known from the beginning. And it was difficult for a number of reasons; one, what we did not know in the beginning, is that we could not decide on liability in 2000. But it was also more difficult because this is the only truly multilateral G8 project in the kind of the Global Partnership in the non-proliferation realm. We are looking at multilateral arrangements, multilateral funding and a system for conducting that. And I would guess that there are two other, or at least one other reason why it has been difficult. That is that as we have seen to date that Russia has not given this program the priority that it has given other programs the priority. We have seen that it started to evolve and we hope that that will change much to the better in the near future.

So, while we have had a lot of difficulties, it has taken a bit longer to accomplish and overcome some of the hurdles. Why am I optimistic today and why do I think 2005 will be a turning point for this program? I said last September that 2005 would be a critical year. I did not know if it would be critical in one direction or the other direction. But this year I feel very optimistic or confident, reasonably confident let us say, that it will be a year when we make this program get on its feet and start to get down to the task and the job that it was designed to do.

And I say that for a couple of reasons. First, the issue of liability has gone back between the United States and Russia since 1999. Although it is not solved, we think it is on the verge of being resolved. We have been in intense negotiations with our Russian colleagues for the past four or five months.

We have several developments in those negotiations. There have been several moves in those negotiations, including moves which were just as recent as the President and the Secretary of State's visits to Moscow. After those visits, there was an announcement that they had made significant process on a common approach to liability. Those words are very carefully chosen. It does not say significant progress toward developing a common approach; it says significant progress on a common approach, which means that there has been substantial movement in those negotiations. Our goal or our hope is that those negotiations will come to a conclusion in a very few weeks, if not, a couple of months.

Those negotiations will not only facilitate progress and moving ahead in plutonium disposition; I would hasten to add that they will also help unblock a number of other programs that have been impeded by the differences between the United States and Russia over liability. It could be in non-proliferation areas; the joint data exchange center never got underway since its establishment in 2000. But it could also make progress.

It could be a rejuvenation of nuclear cities initiatives or, it could go into other areas like defense technology cooperation areas of agreements. So there are a lot of things and areas that have been backed up but not been able to go forward where we hope that resolution will unblock these and put our non-proliferation and our other cooperation on far more solid footing for the long haul.

Adding to this, there is another critical area that we hope will be benefited by this. That is the Cooperative Threat Reduction umbrella agreement itself. This agreement was extended in 1999. As you know, it is not the grandfather, it is indeed the sire of all of these programs. Since 1999 it has not been ratified by the Russian Federation. It has been provisionally applied and it comes up for extension next year again. And our hope is very much that between the United States and Russia we will be able to make the progress that we have gained to date and which we hope to achieve soon that with that we will be able to put the Cooperative Threat Reduction agreement, the CTR agreement itself, on a very solid footing for the very long haul. That is a very positive, upbeat. I hope I am not proved wrong in this assessment but we do still have some negotiations to complete. And negotiations are negotiations.

The second thing that has occurred is that since early this year, the government of the Russian Federation has been reviewing its disposition program. I do not know what results will come out of that review. We have been informed that that review should be completed later in this summer, in August or July, whatever timeframe. It could take longer; I do not know that. But we can hope that the results of this review, will include one critical component and that critical component will be a stronger recommitment of the Russian Federation to this program, combined with an ability and a commitment to contribute and to carry its part of this program itself. We really do not view this in many ways, as assistance to Russia; it is not. Everyone is serving their own interests. But at the same time, particularly given the level and the cost of this program, it is a program where the Russian Federation itself will, of course, need to shoulder a good part or at least a fair part of the responsibility and that burden.

I think the dynamic has changed to when we solve liability, it is no longer if we solve liability. When we solve liability and if the results of the Russian review are positive, I think it will position us by the end of this summer to move rapidly to seek to resolve the other outstanding issues. Now, those are not small issues. But compared to liability and Russian Federation's commitment and contribution, they certainly are not nearly in that category. Monitoring inspections will be something that needs to be completed quickly. Updated cost assessments will need to be completed quickly because they are outdated and some of the assumptions are not quite accurate. Of course, multilateral financing arrangements will need to be completed quickly. And we have made great progress, both with Russia and with our other G8 colleagues. We have made great

progress on defining multilateral arrangements and how this fund might be structured.

Japan was one of the first ones to come out and pledge some funds in advance. Of course, the United States and then the U.K. and then all other G8, except for one, have pledged substantial amounts of money to this program. I would conclude by saying that when we do solve these other problems, everyone is, more than likely, going to have to give some more. This is not an inexpensive program. As you all know, it is not like uranium, it is not a commodity that can make money. But it is a critical program to get this material into safer forms and I hope we can look forward, at the end of this year, to saying that it is just a matter of putting together the pieces so that this program can go forward.

B-2. Japan

Mr. Yasuyoshi Komizo, Director of International Nuclear Energy Cooperation Division, Ministry of Foreign Affairs

Japan is thoroughly dedicated to the peaceful use of nuclear energy as it is not a nuclear weapon state. The non-proliferation as well as disarmament and counter-terrorism, this issue is quite relevant and important to us. That is the reason why Japan is putting much emphasis on this project. The United States and Russia, as a consequence of the START I, have reduced respectively the strategic nuclear warheads significantly but for the large quantity of plutonium generated from the dismantled nuclear weapons, should be prevented from being diverted or reconverted into other nuclear weapons. How can we be able to prevent that? By securing irreversibility we will be able to further encourage and promote disarmament by the United States and Russia. And we would also be able to strengthen the counter-terrorism measures as well as the non-proliferation regime. As symbolized by 9/11, we see the new trends happening around us and against this backdrop, the nuclear fissile materials should never, ever be held by terrorists. This is the most urgent and important question at hand for all of us.

First and foremost, the framework was established between the United States and Russia in the year 2000. Based upon the agreement, they have agreed to dispose in parallel 34 tons of surplus weapons plutonium respectively and they are implementing this agreement. For the international community, this is a highly urgent matter. Ever since the Cold War has ended, Russia in particular is plunged into much difficulty of rebuilding her economy. Thus, other countries need to provide the necessary co-operation, financially as well as in technology. The G8 countries particularly have agreed at the Okinawa summit in 2000 to provide the necessary cooperation. In 2002, at the Kananaskis summit, the G8 Global Partnership was adopted and four priorities were set forth, one of which is the disposal of the surplus plutonium.

Japan believes that together with other G8 countries, it should participate in the program for the disposition of surplus plutonium. We are actively participating in the program but first and foremost, the relevant parts should take on the responsibility and ownership in bringing about the solution. But as the G8 leaders' statement has set forth at the Kananaskis summit, it is a major issue for the international community to prevent the proliferation of the WMDs and that is the reason why Japan has also agreed to this immediately Prime Minister Koizumi at the Kananaskis summit has announced to contribute $200 million, of which $100 million would be provided for the disposal of surplus plutonium.

As I mentioned earlier, Japan is a non-nuclear country but the Japan Nuclear Cycle development institute, the JNC, being at the center, we have developed fast reactors as well as new converter reactors and also the MOX fuel technology to be used for both reactors. In all these areas, what can we do to assist and render cooperation to Russia? Of course, the major technology, the largest technology is, of course, the French technology (Pellet fuel fabrication technology). And also the Vibropack, the vibration compaction technology, are also important. The existing reactor, the BN 600 in Russia, is the different option for the disposition. The BN 600 reactor core could be changed over to MOX. The data need to be accumulated as it is necessary for the approval and we could, of course, provide the cooperation for this. And also to manufacture the fuels as well as to render cooperation for the combustion demonstration experiment, we are working together with the research institutions in Russia, including RIAR as well as IPPE and OKBM. And we have been implementing all these programs from 1999 and already 60 kilograms of weapons grade plutonium has been processed back into the fuel and this has been disposed at the fast reactor, BN

600, in Russia.

In Japan, although the Japanese contribution may be quite limited in the overall picture, but I very much hope that the whole package would be successful, working with the other G8 countries and working with Russia as well, I very much hope that we could see successful ending of the project, which would contribute much to the international community. Thank you very much.

Q&A

Mr. Alexander Bulychev, Project Manager, Center for Policy Studies in Russia
I would like to ask a question to the representative of Canada. You mentioned two stages of cooperation of the Canadian government with the Russian government from 2001 to 2004 and 2008 to 2012. Is there a possibility that starting from 2008, the financing of the eastern part of Russian project will be increased in funding? It is a possibility we have found from EU, but how about Canada; do you see any possibility of moving in financing from east-west regions of Russia to the Far East, taking into consideration that EU will help the area in the east-west?

Mr. Stéphane Jobin, Political Counselor, Embassy of Canada in Tokyo
What we do after the completion of phase II is, of course, under consideration; but it is in very early stages and we have made no decision as to what we will do with our program. Maybe I should invite Michael Cull from Teledyne Brown to comment since he is closely involved with our program.

Mr. Michael Cull, Senior Analyst, Teledyne Brown Engineering, Inc.
I think they are exploring the opportunities of where they may go in the future. There is no decision on whether they will go to the Far East or where the areas will go and they are certainly talking to their Russian colleagues to determine where the priorities may be.