

**G8 Global Partnership**

# **Japan-Russia Cooperation Programme for Dismantling Decommissioned Nuclear Submarines**

## **Star of Hope**



**Technical Secretariat of the Committee on Cooperation to Assist  
the Destruction of Nuclear Weapons Reduced in the Russian  
Federation**

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# Background

After the end of the Cold War, the drastic reductions in and the destruction of nuclear weapons and nuclear submarines, which were deployed in the Former Soviet Union, mainly in Russia, were agreed on. However, due to the social turmoil and deterioration in economic conditions, the promised reductions and subsequent destruction of nuclear weapons, etc. were not implemented and this situation became a matter of serious concern to the international community.

In the Russian Far East, which has close relations with Japan, a number of the decommissioned nuclear submarines have been left without being dismantled. Serious concern has been expressed over this situation from the point of view of the non-proliferation of nuclear weapons and environmental protection.

Under these circumstances, Japan, along with the US, the UK, Germany, France, Italy and Canada decided at the Munich Summit held in 1992 to assist with the safe disposal of nuclear weapons and the solving of related environmental problems in countries of the former Soviet Union. In 1993, the Governments of Japan and the Russian Federation concluded an "Agreement concerning Cooperation to Assist the Destruction of Nuclear Weapons Reduced in the Russian Federation" under a cooperation programme for the elimination of nuclear weapons.

Japan is currently promoting this cooperation, such as with the provision of the "Suzuran" ("Landysh"), a floating facility for processing of low-level liquid radioactive waste, the dismantlement of decommissioned nuclear submarines, etc., through the Committee on Cooperation to Assist the Destruction of Nuclear Weapons Reduced in the Russian Federation (hereafter referred to as the "Japan-Russia Committee") that was established on the basis of the above Agreement.

## History of Japanese Assistance

**July 1992** - The G7 countries, including Japan, decided to assist with the disposal of nuclear weapons and the solving of environmental problems in the countries of the former Soviet Union at the Munich Summit.

**April 1993** - Japan announces grant aid assistance (\$100 million) to the countries of the former Soviet Union at the G7 Joint Ministerial Meeting.

**October 1993** - Japan and Russia conclude an agreement concerning cooperation to assist the destruction of nuclear weapons reduced in the Russian Federation, and establish the "Committee on Japan-Russia Cooperation to Assist the Destruction of Nuclear Weapons".

**January 1996** - Work begins on the construction of the low-level radioactive liquid waste processing facility, "Suzuran".

**June 1999** - Japan announces additional grant aid assistance (bringing the total to \$ 200 million) at the Cologne Summit.

**November 2001** - The Handover Ceremony for the low-level radioactive liquid waste processing facility, "Suzuran" is held.

**June 2002** - "G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction" was adopted at the Kananaskis Summit.

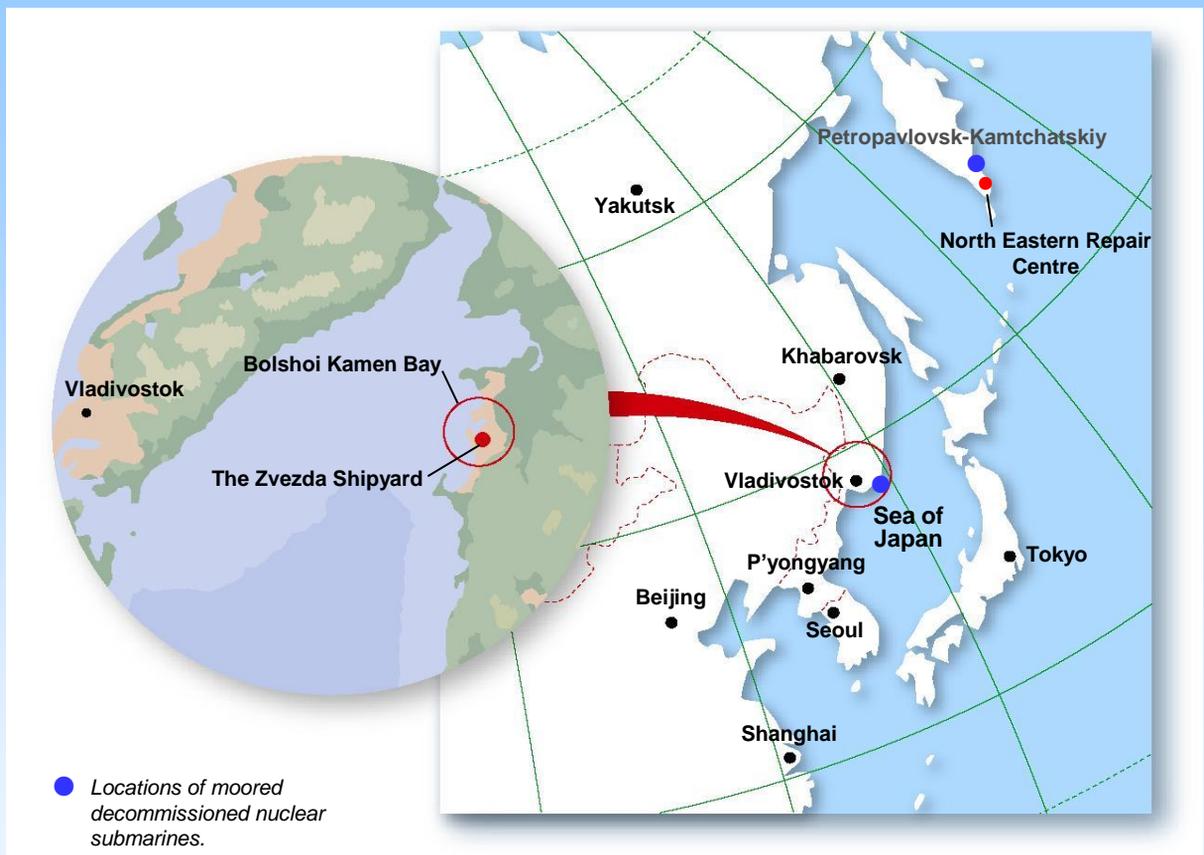
**January 2003** - Japanese Prime Minister Junichiro Koizumi visits Russia. The cooperative programme for nuclear submarine dismantlement is named "Star of Hope" and incorporated into the "Japan-Russia Action Plan".

**June 2003** - At the time of the visit of Foreign Minister Yoriko Kawaguchi to Vladivostok, the Implementing Arrangement of the "Project for the Dismantling of a Victor-III Class Nuclear Submarine" is signed.

**December 2004** - Pilot project for the "Dismantling of a Victor-III Class Nuclear Submarine" was completed.

**November 2005** - Implementing Arrangement for dismantling five more nuclear submarines is signed when Russian President Vladimir Putin visited Japan.

1 In order to advance the Japanese cooperation programme for the dismantling of nuclear weapons and other related projects in Russia, the "Committee on Japan-Russia Cooperation to Assist the Destruction of Nuclear Weapons Reduced in the Russian Federation" was established as a bilateral organisation in accordance with an agreement between Japan and Russia in 1993. The Japanese Ambassador Extraordinary and Plenipotentiary to Russia, and the Deputy Director General of the State Atomic Energy Corporation of the Russian Federation "ROSATOM", represent their respective countries on the Committee. The Technical Secretariat of the Committee is based in Tokyo.



## “Suzuran”- Floating Facility to Process Low-Level Radioactive Liquid Waste.

### Outline of the Project

“Suzuran” is a floating facility for processing low-level radioactive liquid waste derived from the dismantling of nuclear submarines.

In 1993, it was discovered that the Russian Navy had dumped radioactive waste derived predominantly from nuclear submarines into the Sea of Japan. In response to this, the Committee decided to provide a facility named “Suzuran” primarily with a view to protecting the environment in the Sea of Japan. Construction commenced in 1996, and the facility was handed over to Russia in 2001 (total costs for the “Suzuran” were about ¥4.15 billion).

At present, “Suzuran” is in operation at the Zvezda Shipyard, in Bolshoi Kamen (near Vladivostok). It has sufficient capacity to process the liquid radioactive waste derived from all decommissioned nuclear submarines to be dismantled in the Far East region for the foreseeable future.

### Implementation of Ex-post Evaluation

In June 2008, Japanese experts visited the Zvezda Shipyard and other related organizations in Russia to implement the ex-post evaluation for the project. As a result of the survey, they confirmed that “Suzuran” has been a great contributor not only in protecting the Sea of Japan through the treatment of liquid radioactive waste, but also in bringing relevant Russian domestic laws and regulations in conformity with international standards.



The Low-Level Radioactive Liquid Waste Processing Facility, “Suzuran”

## Cooperation Programme for Dismantling of Decommissioned Russian Nuclear Submarines “Star of Hope”

The decommissioned Russian nuclear submarines are now moored both in the Northwest of Russia and the Russian Far East.

In the Russian Far East, the submarines are multi-purpose nuclear submarines and other types of submarines decommissioned from the Russian Pacific Fleet.

Most of these still have the spent fuel in their reactors and hull corrosion is now conspicuous due to the extended period of mooring. If these submarines remain undismantled, this creates a dangerous situation that may lead to serious radioactive contamination.

Thus, the prompt and safe dismantlement of these decommissioned nuclear submarines is now of the utmost importance for both regions.

This dismantling work should be carried out by the Russian Federation, but it would take time if the work was to be completed only by the Russians themselves.

For the earliest possible solution to the issue, Japan and other leading countries decided to render assistance.

In 2000, with the agreement of the Government of the Russian Federation, Japan implemented a project study on the dismantlement of a Russian decommissioned multi-purpose nuclear submarine. In November 2002, Mr. Yoshitaka Shindo, Parliamentary Vice-Minister for Foreign Affairs at the time, visited Vladivostok and had direct discussions with Russian partners at the proposed dismantling site, propelling the project forward.

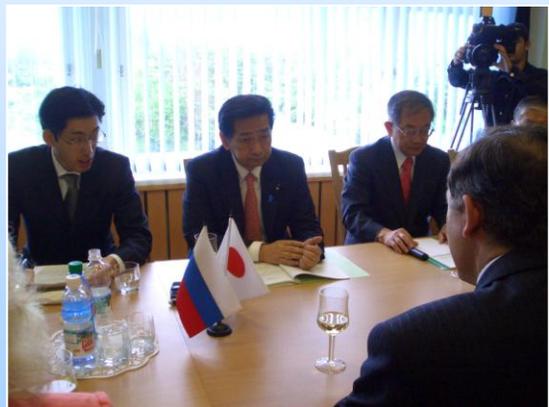
In January 2003, during the then Japanese Prime Minister Junichiro Koizumi’s visit to Russia, the “Japan-Russia Action Plan” was adopted with the programme to dismantle multi-purpose nuclear submarines in the Russian Far East included in the plan, thereby adding further impetus to cooperation. At that time, Mr. Koizumi dubbed the cooperative programme related to the dismantling of nuclear submarines the “Star of Hope”. Since then, Parliamentary Vice-Ministers for Foreign Affairs have visited the project sites at various milestones of the project to monitor the progress of the programme and to hold discussions on the further acceleration of the cooperation programme.



Then Parliamentary Vice-Minister for Foreign Affairs, Mr. Yoshitaka Shindo giving a speech at the Zvezda Shipyard

### The Origin of the Name “Star of Hope”

The programme for the dismantling of decommissioned nuclear submarines, “Star of Hope”, was named after the Zvezda Shipyard (“Zvezda” means “Star” in the Russian language) where the dismantling of nuclear submarines is carried out. This name evokes the hope that the success of this programme will shine as a symbol of the friendship and alliance between Japan and Russia. The activity of dismantling decommissioned nuclear submarines has major significance not only for cooperation on disarmament, but also for the prevention of the proliferation of nuclear materials and the environmental contamination of the Sea of Japan.



The then Parliamentary Vice-Minister for Foreign Affairs, Mr. Masakazu Sekiguchi, at the signing ceremony for the project for the dismantling of three Victor-III class decommissioned nuclear submarines

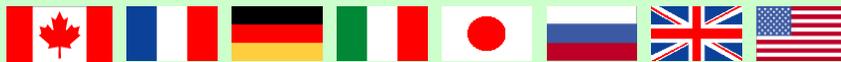
The dismantling of decommissioned nuclear submarines including the “Star of Hope” programme has been one of the top priorities in the “G8 Global Partnership (G8GP)” initiative, which was agreed to at the G8 Kananaskis Summit in 2002.

And the “Star of Hope” programme, which was initiated as bilateral cooperation between Japan and Russia, expanded its sphere of cooperation by receiving financial contributions from Australia, the Republic of Korea and New Zealand, which are new members to the G8GP.

Figure: Cooperation to the “Star of Hope” from other countries

Financial sponsors	Contributed amount
 Australia (contributed in June 2004)	Approx. <b>¥742 million</b>
 Republic of Korea (contributed in December 2006)	Approx. <b>¥29.5 million</b>
 Republic of Korea (contributed in December 2007)	Approx. <b>¥28.3 million</b>
 New Zealand (contributed in July 2008)	Approx. <b>¥55.1 million</b>

- 2 Russian nuclear submarines fall into 3 categories; ballistic missile nuclear submarines (strategic nuclear submarines), nuclear-powered cruise missile submarines and multi-purpose nuclear submarines. The role of multi-purpose nuclear submarines is as an anti-ship and/or patrol attack vessel. Multi-purpose nuclear submarines do not carry strategic nuclear weapons such as ballistic missiles, but can carry tactical nuclear missiles.
- 3 In 1985, an accident involving a nuclear submarine occurred at a Russian naval base near Vladivostok, and the surrounding area was contaminated with radiation. This damaged nuclear submarine has been moored to date without being dismantled.
- 4 In 1999, at a storage site for nuclear materials in the northwest of Russia, there was an attempted robbery of radioactive waste derived from nuclear submarines. In 2000, in Kamchatka, radioactive material from decommissioned nuclear submarines was stolen.
- 5 The dismantlement of decommissioned nuclear submarines in the northwest of Russia has been implemented through the cooperation of Western countries including the US, the UK, Germany and Norway and international organizations. In the Russian Far East, the US has assisted with the dismantling of strategic nuclear submarines, but the dismantlement of multi-purpose nuclear submarines has been delayed.



## G8 Global Partnership (G8GP)

1. At the Kananaskis Summit in 2002, the G8 announced the “G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction”, with the major aim of preventing the proliferation of weapons of mass destruction (nuclear, chemical and biological weapons) and the related materials. The concept is to implement cooperative programmes initially in Russia, related to non-proliferation, disarmament, counterterrorism and nuclear safety, including environmental protection. The G8 adopted four priority areas for these programmes, of which one is the disposal of chemical weapons and another is the dismantlement of nuclear submarines.
2. G8 established a target for implementing financial cooperation of up to \$20 billion in total for the following 10 years up until 2012. Within this framework, the Government of Japan is committed to contributing more than \$200 million, of which more than \$100 million is to be allocated for projects related to the dismantling of nuclear submarines in the Far East region.
3. G8 has called for other countries to participate in the Partnership. At the Evian Summit held in June 2003, Norway, Sweden, Finland, Switzerland, Poland and the Netherlands participated. Then, at the Sea Island Summit held in June 2004, Australia, Belgium, the Czech Republic, Denmark, Ireland, the Republic of Korea, New Zealand and Ukraine followed suit.
4. At the Hokkaido Toyako Summit held in July 2008, with the background that the risk of the spread of weapons and materials of mass destruction exists worldwide, the G8 reached agreement that the Partnership would address global challenges particularly in areas where the risks of terrorism and proliferation are greatest.

## Dismantling of a Victor-III Class Nuclear Submarine

As a pilot project under the “Star of Hope” programme, Japan, through the Japan-Russia Committee, cooperated in the implementation of the dismantling of a Victor-III class decommissioned nuclear submarine (hull No. 304), which had been decommissioned from the Russian Pacific Fleet.

In February 2003, the Japan-Russia Committee decided to implement the project. In June of the same year, an Implementing Arrangement was concluded with the then Russian Ministry of Atomic Energy. In December of the same year, the related contracts were concluded, leading to the commencement of the project with Japanese assistance (total project costs are about ¥790 million).

The dismantlement of Victor-III class nuclear submarine (hull No.304) decommissioned from Russian Pacific Fleet, was implemented at the Zvezda Shipyard, in Bolshoi Kamen, close to Vladivostok. Along with related facility upgrading and equipment purchases, the dismantlement process included the following steps. Spent nuclear fuel was removed from the submarine’s reactors and sent to storage (This part was funded by the Russian government). The hull was then cut into three sections. The bow and stern sections were dismantled. The middle section containing the defuelled reactor was sealed and transferred to a storage facility for the reactor units. The project was successfully completed in December 2004.



Dismantling of a Victor-III class nuclear submarine (hull No. 304) (at the Zvezda Shipyard)



Japanese experts conducting on-site inspection of completed work (at the Zvezda Shipyard)

### Tokyo Seminar on the G8 Global Partnership was held

In June 2005, the Committee on Japan-Russia Cooperation to Assist in the Destruction of Nuclear Weapons co-hosted, in cooperation with the Center for Strategic and International Studies (CSIS) of the US, the “Tokyo Seminar on G8 Global Partnership: Making the World More Secure”.

The seminar was attended by about 120 persons including officials from the G8 countries, Norway, Australia and Republic of Korea, as well as representatives of NGOs, the press and private companies. The participants actively exchanged views focusing on G8GP as well as on the project of dismantling decommissioned Russian nuclear submarines.

During discussions at the Seminar, it was pointed out that the dismantlement of nuclear submarines in the Russian Far East had been delayed compared with the situation in the northwest of Russia, which gave crucial momentum to bringing the Russian Far East situation to the attention of the related countries, organizations, etc.



Zvezda Shipyard is the major site for dismantling nuclear submarines in the Russian Far East

## Dismantlement of Additional Five Submarines

On the occasion of the then Russian President Vladimir Putin's visit to Japan in November 2005, the Committee concluded an implementing arrangement with the Russian Federal Agency for Atomic Energy on dismantling five more decommissioned nuclear submarines (i.e. one Victor-I class, three Victor-III class and one Charlie-I class nuclear submarines).

Among these five submarines, dismantling work for the first one, a Victor-I class nuclear submarine, was completed at the Zvezda Shipyard in August 2007 (with project costs of about ¥870 million), after the related contracts had been signed in September 2006. Australia and the Republic of Korea jointly with Japan, made financial contributions to this project through the Committee.

Then in August 2007, contracts on the dismantlement of three Victor-III class nuclear submarines were concluded, and dismantling work have since been in progress at the Zvezda Shipyard (with project costs of about ¥3.19 billion). For the dismantlement of the first nuclear submarine of these three, financial assistance was provided by the Republic of Korea and New Zealand.

As for the Charlie-I class nuclear submarine, the related contracts were concluded in January 2008, and dismantling operations have since been underway at the North Eastern Repair Centre in Kamchatka (with project costs of about ¥940 million).

In the Far East, in addition to Committee's in dismantling a total of six decommissioned multi-purpose nuclear submarines, the US has assisted in the dismantlement of strategic nuclear submarines. In 2008, Canada also started its assistance to the Russian Far East operations. As a result of the international cooperation, the Government of Russia now forecasts that the dismantlement of decommissioned nuclear submarines in the Russian Far East, the number of which exceeded 60 at the end of the 1990s, will be completed by 2010.



Signing ceremony for the implementing arrangement for cooperation on dismantling five decommissioned nuclear submarines (in Tokyo)



Dismantling of a Charlie-I class nuclear submarine (at the North Eastern Repair Centre)



Joint on-site inspection of completed dismantling work by four countries: Japan, Russia, Republic of Korea and New Zealand (at the Zvezda Shipyard)

## Cooperation in the Construction of Onshore Storage Facility for Reactor Compartments

Reactor compartment units fabricated in the process of dismantlement of nuclear submarines are now in offshore waterborne storage after the necessary measures were taken, such as the sealing of both sides of the units, etc. The Russian Government is now constructing an onshore long-term storage facility for the safe and stable storage of the reactor compartments. In this connection, the Russian Government has requested Japanese cooperation.



Reactor compartment units stored offshore (at Chazhma Bay)

In August 2006, the Japan-Russia Committee dispatched a survey mission to study the adequacy of the construction the onshore storage and safety of the facility.

Considering the results of the mission, the Committee decided to cooperate with the construction for the safe management of the reactor compartments, environmental protection, etc.



Construction site of an onshore facility for storing reactor compartments (at Razboynik Bay)

In concrete terms, Japan decided to provide a floating dock, two jib cranes and a tug boat and is now in consultation with the Russian side on the Implementing Arrangements for the cooperation.

### Cooperation in the IAEA Contact Expert Group (CEG) Workshop

The Committee on Japan-Russia Cooperation to Assist in the Destruction of Nuclear Weapons provided financial assistance to the Workshop of the IAEA Contact Expert Group (CEG) on “Nuclear Legacy Problem in the Far East of Russia”, which was held in Vladivostok in May 2007.

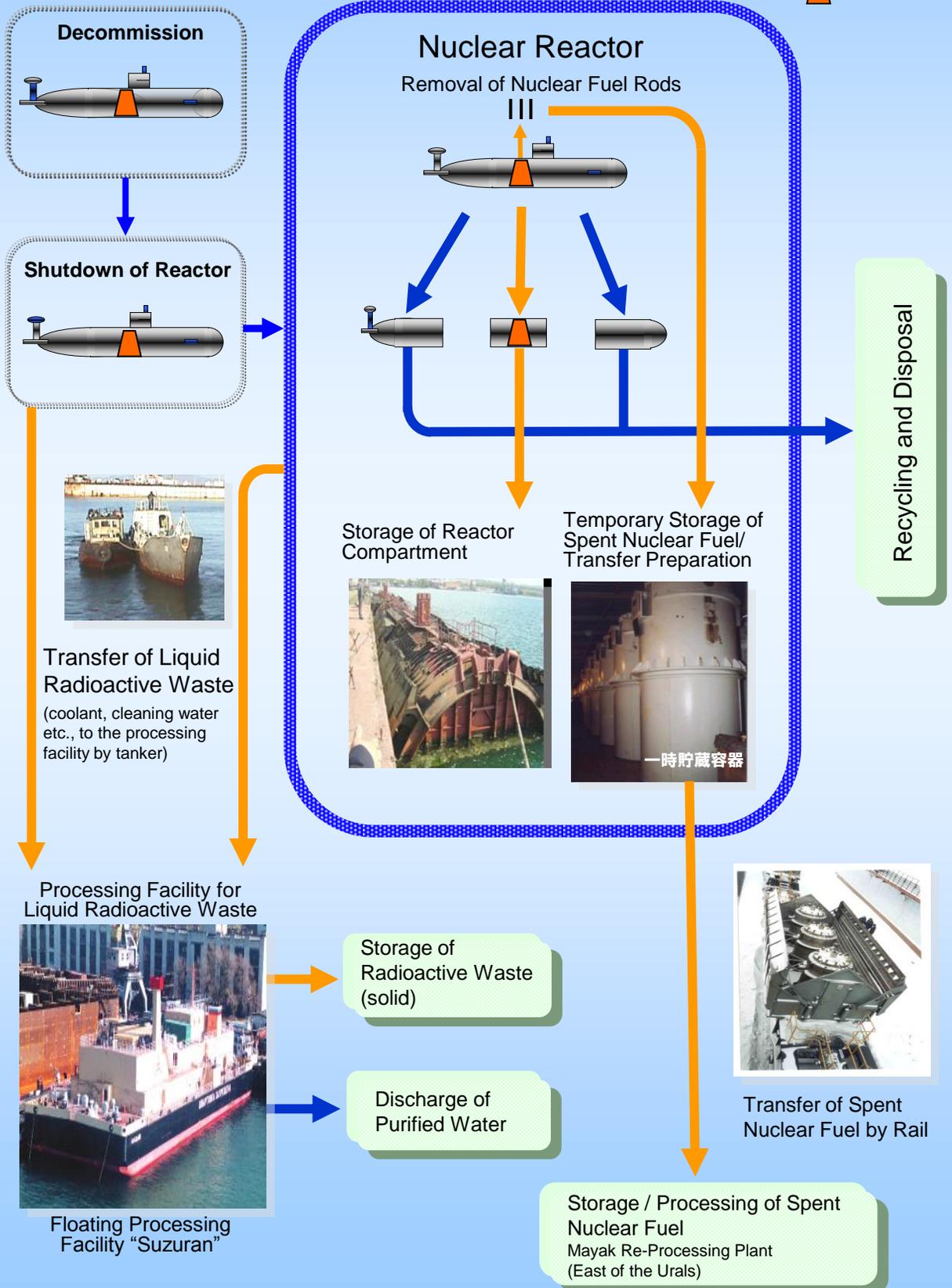
The workshop was attended by 50 participants including working-level personnel and experts from Russia and foreign donors. The participants exchanged opinions and information for two days over nuclear legacy issues in the Russian Far East. Thus the meeting, while helping the participants deepen their understanding of various problems and peculiarities in the Russian Far East, confirmed that the findings from the dismantlement of nuclear submarines in the northwest of Russia are also useful for the cases in the Russian Far East.

The CEG is a group of experts, established under the auspices of the IAEA (International Atomic Energy Agency) with the purpose of promoting international cooperation related to spent nuclear fuel and radioactive waste in Russia. The CEG, the activities of which are in the same direction as those of the G8 Global Partnership, is composed of 13 countries including Japan and four international organizations.



# Process of Dismantlement and Disposal of Nuclear Submarines

 Nuclear Reactor



**TECHINICAL SECRETARIAT  
OF THE COMMITTEE ON COOPERATION  
TO ASSIST THE DESTRUCTION OF  
NUCLEAR WEAPONS  
REDUCED IN THE RUSSIAN FEDERATION**

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(Cover pictures: Dismantling of a nuclear submarine and inspection of the quantity of the completed dismantling at the Zvezda Shipyard)