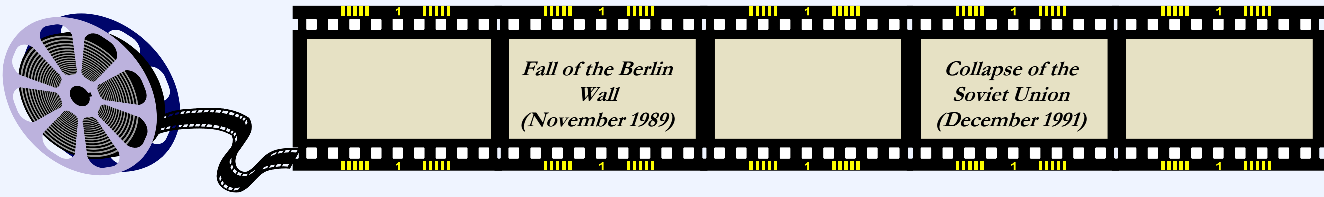
Japan’s Cooperation
for Nuclear Legacy Problems in Former Soviet Union Countries

Technical Secretariat
on Cooperation for the Elimination of Nuclear Weapons
Reduced in the Former Soviet Union

October 2023

Nuclear Legacy Problems in the Former Soviet Union Countries



Collapse of the Soviet Union (1991)

«Nuclear Problems After the Collapse of the Soviet Union»

In July 1991, after the end of the Cold War, the United States (US) and the Soviet Union signed the Strategic Arms Reduction Treaty I (START I). The Soviet Union, however, collapsed in December 1991 and the promised reduction in strategic nuclear arms was not implemented; the nuclear stockpile remained in the four former Soviet Union (FSU) countries, namely Russia, Ukraine, Kazakhstan and Belarus. The weapon disposal stalled due to the unstable political situations in the FSU countries.

The management and protection of nuclear materials and radioactive waste in these newly independent countries did not fulfill the international standard, which became a serious concern to the international community in terms of non-proliferation of nuclear weapons.

«Establishment of Bilateral Committees»

Under these circumstances, at the Munich Summit in 1992, the Group of Seven (G7), including Japan, decided to assist with the safe disposal and non-proliferation of nuclear weapons deployed in the FSU and solving of environmental problems. From 1993 through 1994, Japan concluded bilateral agreements and established committees with Russia, Ukraine, Kazakhstan and Belarus to implement cooperation in this field (*see Figure 1*).

Bilateral Agreements

Japan-Russia Committee
(Agreement signed on October 13, 1993, with immediate effect)

Japan-Ukraine Committee
(Agreement signed on March 2, 1994,
and became effective on March 11, 1994. Closed in July 2018)

Japan-Kazakhstan Committee
(Agreement signed on March 11, 1994 , with immediate effect)

Japan-Belarus Committee
(Agreement signed on November 5, 1993, with immediate effect.
Closed in January 2015)

Figure 1 : Bilateral committees established between Japan and four countries of the former Soviet Union

«Japan's Cooperation in the

"Suzuran"

On its initial cooperation project for Russia, Japan provided "Suzuran", a floating facility to process low-level radioactive liquid waste, to prevent sea dumping of liquid radioactive waste derived from dismantling nuclear submarines in the Russian Far East.

After transferring remaining nuclear arsenals in their territory to Russia, Ukraine, Kazakhstan and Belarus acceded to the Treaty on the Non-proliferation of Nuclear Weapons (NPT) and accepted the IAEA Safeguards*1. For these three countries, Japan, in collaboration with the IAEA and other donors, provided assistance in establishing the state's system of accounting for and control*2 and physical protection system*3 of nuclear material as well as in supplying medical equipment for military personnel engaged in eliminating nuclear weapons.

*1 A set of activities, including inspections, by which the IAEA verifies all nuclear materials and facilities for peaceful purposes are not diverted to military use.

*2 Activities carried out to establish the quantities of nuclear material present within the facility and the changes in those quantities over a certain period. Japan provided material accounting software and non-destructive measuring devices.

*3 Protection of nuclear material and facilities against theft and sabotage. Japan installed facility fences, surveillance cameras, intrusion sensors, and access control gates.

Terrorist Attacks in the US (2001)

«Threat of Weapons of Mass Destruction (WMD) »

The 9/11, 2001 terrorist attacks in the US indicated that terrorists could use any possible means to achieve their goals. Since then, terrorism using weapons of mass destruction (nuclear, chemical and biological weapons[*4]) has been recognized as a genuine threat and countermeasures have become an urgent issue.

«G8 Global Partnership»

Under such growing international tension, the G8 leaders launched the "G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction" (G8GP) at the G8 summit in Kananaskis, Canada in June 2002. In this framework, the G8 countries agreed that GP's initial priorities lay in Russia because it possessed what was by far the largest inventory of weapons and materials, and determined its priority areas for the disposal of chemical weapons, dismantling of decommissioned nuclear submarines, disposal of fissile materials, and redirection of former weapon scientists.

The G8 countries were encouraged to raise up to 20 billion dollars to address the WMD challenge by 2012 and Japan committed 200 million dollars.

Then Prime Minister Koizumi attending the G8 Kananaskis Summit
(Image provided by Cabinet Public Relations Office)

[*4] WMD terrorism is also referred to as CBRN (Chemical, Biological, Radiological and Nuclear) terrorism.

In May 2011, the G8GP activity since its launch was reviewed at the G8 summit in Deauville, France, and concrete achievements in dismantling decommissioned Russian nuclear submarines were highly appreciated. In recognition of the valuable role of the G8GP and remaining challenges in the WMD non-proliferation, the G8 decided to extend the initiative beyond the initially agreed period, encouraging expansion of membership.

Since 2014, the G8 has become the G7 without Russia, and the G8GP was renamed the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (with up to 30 partners and the EU as of January 2021).

«Japan's Cooperation in the G8GP»

In terms of nuclear disarmament and non-proliferation and the environmental protection of the Sea of Japan, Japan implemented its cooperation programme for dismantling decommissioned nuclear submarines in the Russian Far East. From 2003 through 2009, a total of 6 decommissioned submarines were dismantled in cooperation with other countries (*see pages 3-4*). Japan has also provided the equipment (floating dock, cranes, and tugboat) necessary for safe storage of the Reactor Compartment units of the nuclear submarines, which remain highly radioactive even after dismantling (*see pages 5-6*). In Ukraine, Kazakhstan and Belarus, Japan's cooperation had been focused on strengthening nuclear security and preventing illicit trafficking in nuclear and other radioactive materials across borders (*see pages 7-10*).

Cooperation Programme for Dismantling Decommissioned Russian Nuclear Submarines "Star of Hope"

«Background»

The Soviet Union built over 250 nuclear submarines (NSs) during the Cold War, after which most of the obsolete NSs were to be decommissioned from the Northern Fleet in northwestern Russia and the Pacific Fleet in the Far East. However, socioeconomic turmoil following the collapse of the Soviet Union, along with a lack of the required technologies and infrastructure, forced Russia to suspend dismantling these decommissioned NSs.

In the Russian Far East in particular, more than 70 NSs were decommissioned*5, many of which, however, have been simply moored at military ports near Vladivostok and in the Kamchatka Region.

These decommissioned NSs, with spent nuclear fuel (SNF) on board have been moored for many years and posed a radiation contamination threat to the adjacent sea environment. In particular, after 9/11 terrorist attacks, such NSs were recognized as alluring targets for terrorist attacks and theft of nuclear materials*6. Dismantling these NSs therefore became a matter of urgent concern.

Russia has primary responsibility for dismantling such NSs. However, it was clear that Russia alone would not be able to dismantle such NSs in a timely and safe manner. Against this background, the international community, including G8, decided to assist the Russian effort.

Figure 2 : Geographical relation of the Russian Far East

Decommissioned nuclear submarine onshore after many year's waterborne storage

«Dismantling Procedure»

The NS dismantling process generally flows as shown in Figure 3, although slight variation applies depending on the site infrastructure and the conditions of the NS to be dismantled.

The dismantling work should be carried out swiftly, but needless to say, the utmost attention on safety measures*7 and proper waste management are preconditions to the operation.

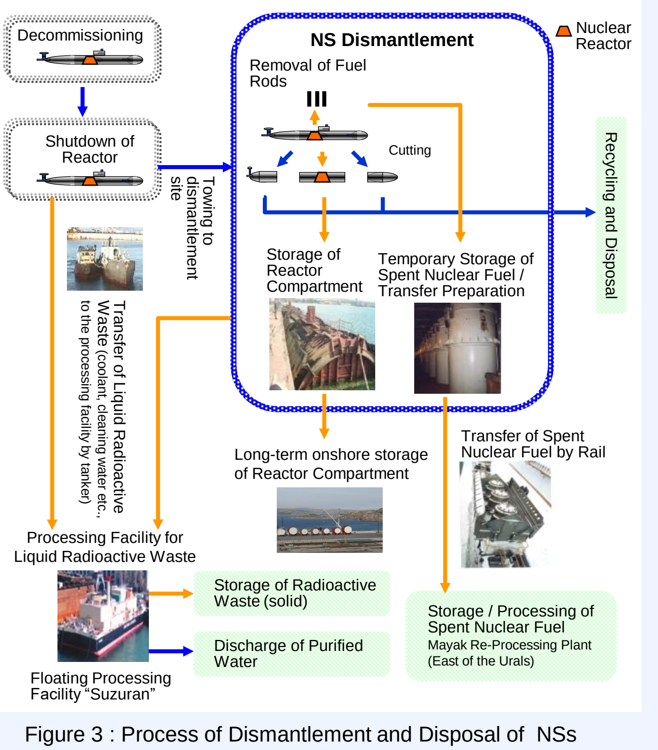


Figure 3 : Process of Dismantlement and Disposal of NSs

*5 Some 120 NSs have been decommissioned in the Russian North West.

*6 In 2000, near Vladivostok and in Kamchatka, several attempts at unauthorized entry into the decommissioned nuclear submarines were reported.

*7 In 1985, an accident occurred at Chazhma Bay during the refueling of an NS. In 2003, a decommissioned NS sank while being towed in the Barents Sea.

«Japan's Assistance»

In January 2003, when the Japanese Prime Minister Koizumi visited Russia, the "Japan-Russian Action Plan" was agreed, which included steady implementation of the programme to dismantle nuclear submarines in the Russian Far East. The programme was named the "Star of Hope" by the Prime Minister.

From December 2003 through December 2004, one NS was dismantled as a pilot project under the "Star of Hope" programme. Subsequently, in November 2005, the Implementing Arrangement for dismantling five more NSs was signed during Russian President Putin's visit to Japan. By the end of 2009, a total of six NSs were dismantled at the Zvezda Shipyard in Bolshoi Kamen City and the North East Repair Centre in the Kamchatka Region under the Programme (total cost : approx. 5.8 billion yen).

While the Russian shipyards performed the actual dismantling work, Japan dispatched shipbuilding and nuclear safety experts at each stage to confirm that dismantling was being carried out safely and securely in the project site.

On March 20, 2010, the closing ceremony of the "Star of Hope" programme was held at the Zvezda Shipyard, attended by Parliamentary Vice-Minister for Foreign Affairs Nishimura and other officials. During the ceremony, gratitude for Japanese cooperation was expressed by Russian stakeholders, and a stone monument was unveiled to commemorate the completion of the Programme.

«Coordination with G8GP Countries»

The "Star of Hope" programme has been recognized as one of the key G8GP contributions to solving the nuclear legacy issues in the Russian Far East. Through the Global Partnership framework, Australia, South Korea and New Zealand supporting the Japanese effort provided financial assistance to the "Star of Hope" programme in dismantling decommissioned nuclear submarines in the Asia-Pacific region (*see Table 1*). The programme was also carried out in close coordination with other G8GP member states; Russia financed the towing and defueling of nuclear submarines, while the US and Canada renovated the defueling facilities and the railroads for SNF transport, respectively. Assistance from Japan and other countries in synergy with Russia's own efforts made significant progress in the dismantling of NSs in the Far East (*see Table 2*).

	2003	2004	2005	2006	2007	2008	2009
Victor III Class <Hull No. 304> (Approx. total cost : 794 mil. yen)	Dec.	Japan; Dec.					
Victor I Class <Hull No. 614> (Approx. total cost : 870 mil. yen)				Japan (97 mil. yen); Sep.	Australia (742 mil. yen)	South Korea (29 mil. yen); Nov.	
Victor III Class <Hull No. 271> (Approx. total cost : 1,064 mil. yen)					Aug.	Japan	Dec.
Victor III Class <Hull No. 308> (Approx. total cost : 1,064 mil. yen)					Japan (1,042 mil. yen); Aug.		South Korea (22 mil. yen); Dec.
Victor III Class <Hull No. 333> (Approx. total cost : 1,064 mil. yen)					Japan (980 mil. yen); Aug.	New Zealand (55 mil. yen); Sep.	South Korea (28 mil. yen)
Charlie I Class <Hull No. 714> (Approx. total cost : 944 mil. yen)						Jan.	Japan; Apr.

Table 1 : Progress of "Star of Hope" Projects

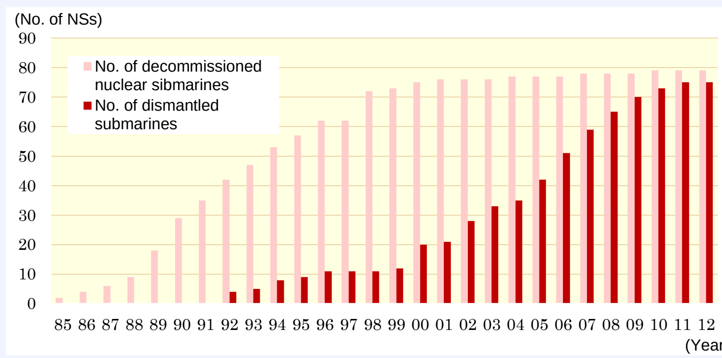


Table 2 : Nos. of Decommissioned and Dismantled NSs in the Russian Far East

Note : Russia had dismantled 195 of a total 200 decommissioned NSs as of October 2013, 67 of which were dismantled with the assistance of G8GP donors, including Japan.

Column

IAEA Contact Expert Group and Russia's Nuclear Legacy Issues

Japan had been active in drawing the attention of the Governments of Russia and other countries to the nuclear legacy problems in the Russian Far East at various international conferences and forums, including the IAEA Contact Expert Group (CEG) .

The CEG was established in 1996 at the request of Scandinavian countries under the auspices of IAEA (11 countries and 2 agencies participated) to discuss Russia's nuclear legacy, including issues related to SNF and radioactive waste. But the CEG finished its activities in the summer of 2015.

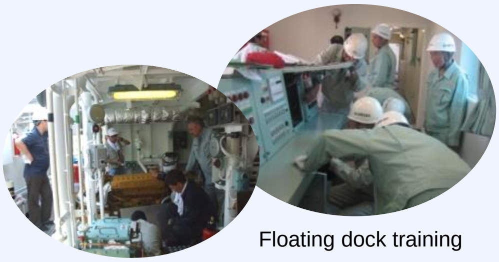
Nuclear legacy problems handled by CEG covered various issues over extensive geographical areas in northwestern Russia and the Russian Far East. Japan had been actively assisting the latter area, which was lagging behind the northwestern region in solving the issues, including financial contributions to the workshops Held in Vladivostok in May 2007 And May 2010.

Construction of a Long-Term Storage Facility for the Reactor Compartment Units of Dismantled NSs in the Russian Far East

Reactor Compartment (circle represents size of a person)

"3-RCU" under waterborne storage

Onshore storage facility at Saida Bay started into operation in 2006 (top left) and that at Razboynik Bay at around the same time (bottom right) .



Floating dock training

Tug boat training

Completion ceremony (May 2012)

«Reactor Compartment»

During the dismantling process, the bow and stern section of an NS are disposed of as scrap metal and non-radioactive waste. The middle section, which contains nuclear reactors (Reactor Compartment), cannot be dismantled immediately due to residual radioactivity, which remains high even after removing SNF. The Reactor Compartments must therefore be stored for a quite long time (about 70 years) until the radioactivity decays to a safe level for disposal (*see Fig. 3 on page 3*).

The size of a Reactor Compartment varies depending on the type of NS. For Victor-class submarines, the dismantling of which was mainly assisted by Japan, the Reactor Compartment is about 10 meters in diameter, 10 meters long, and about 900 tons in weight.

«From Waterborne Storage to Onshore Storage»

Conventionally, the Reactor Compartment of the NS has been kept in the temporary waterborne storage as a 3-Reactor Compartment unit (hereinafter "3-RCU") (about three times the length and 1.5 to twice the weight of a single compartment) after being water-sealed along with the adjacent compartments retained to provide buoyancy.

However, long-term waterborne storage is susceptible to sea water corrosion and maritime weather conditions. To ensure the safe and stable storage of the Reactor Compartments, the Russian government started studying the construction of onshore storage facilities in North West Russia and the Far East since 2000.

In North West Russia, the nuclear legacy issues were a matter of serious concern for western European nations. The construction of the onshore storage facility at Saida Bay, the North West Russia, began in 2003 with the assistance of Germany and started its operation in 2006. On the other hand, the construction of a similar facility in the Russian Far East was delayed for various reasons.

«Japan's Cooperation»

In the onshore storage facility, safely lifting the "3-RCU" from the sea to the shore pad of the facility is crucial. Moreover, very careful works are also required to form a single compartment unit after cutting off the buoyancy compartments. Due to the importance of the onshore storage facility being constructed at Razboynik Bay, the Government of Japan decided in January 2007 to provide three types of key equipment, namely a floating dock, a tug boat, and two jib cranes.

After the basic design on the equipment was completed, the Implementing Arrangement was signed with Russia's State Atomic Energy Corporation "Rosatom" during Prime Minister Putin's visit to Japan in May 2009, and the Project started.

Despite the difficulties in the procurement schedule caused by the Great East Japan Earthquake, all three types of equipment were handed over to the Federal State Unitary Enterprise "RosRAO" on time by May 2012 (total cost : approx. 4.5 billion yen).

«Placing “3-RCUs” Onshore»

On September 24, 2012, RosRAO placed the first “3-RCU” onshore safely, using the donated floating dock. Japan’s cooperation was highly appreciated at the CEG meeting held in October 2012 as a milestone achievement toward solving the nuclear legacy issues in the Russian Far East.

Since then, RosRAO (FEO since April, 2020) has continued steadily, with accumulating experiences and skills, to place onshore “3-RCUs” remained in waterborne storage in the Russian Far East, and about 70 units of “3-RCUs” had been landed by the end of 2020.

Placing an “3-RCU” on a slipway pad

Floating Dock “SAKURA”

Purpose :
Moving waterborne “3-RCU” to the shore pad of the storage facility

Construction Period / Place :
August 2010 – September 2011
Aioi city, Hyogo prefecture

Delivery : May 2012

Construction Cost :
approx. 2.53 billion yen

Specifications :
Length : 76m
Width : 34.1m
Depth max : 22.1m
Length (pontoon) : 60m
Width (pontoon) : 30.1m
Load capacity max : 3,500t
Draft max : 20.8m

Jib Cranes

(Lifting capacity : 10t and 32t)

Purpose :
- Transferring buoyancy compartments detached from “3-RCU” to the dismantlement yard
- Shipping pure metal scrap

Construction Period / Place :
August 2010 – September 2011
Kure city, Hiroshima prefecture

Delivery : November 2011

Construction Cost : approx. 1.27 billion yen

Specifications :
◆10t crane
Rated load × radius :
10t×8m (min.), 10t×30m (max.)
Hoist speed : 0 - 21m/min

◆ 32t crane
Rated load × radius :
32t × (8 - 17)m, (32 - 16)t × (17 - 30)m
Hoist speed :
0 - 7m/min (5t hoist : 8m/min)

Tugboat “SUMIRE”

Purpose:
- Managing waterborne “3-RCU” safely
- Assisting in navigating a “3-RCU” into the floating dock

Construction Period / Place :
September 2010 – June 2011
Aomori City, Aomori Prefecture

Delivery : July 2011

Construction Cost :
approx. 350 million yen

Specifications :
Length : 21m
Width : 6.6m
Gross tonnage : 92t
Towing capacity : 8.4t
Speed : 9.5kn
Major unit power :
386kw（524 hp）× 2 unit

«Assistance in Constructing a Blast and Paint Facility»

In response to a request from the Russian Government, the Japanese Government decided in April 2012 to extend additional assistance for the long-term storage facility to construct a Blast and Paint Facility for surface preparation and anti-corrosion painting of RCs, which are essential for long-term storage (total cost: 726 million yen).

Construction of the facility was completed in April 2014. In August of the same year, the first Reactor Compartment was blasted, painted and then placed in storage. Since then, work has progressed steadily, and by 2020 about 66 Reactor Compartments were blasted and painted.

These Reactor Compartments will be repainted every 10 years and will be stored for about 70 years until the radioactivity decreases.

Blast and Paint Facility

Cooperation on the Construction of the Regional Center (hereinafter the RC) for the Conditioning and Long-term Storage of Radioactive Wastes in Primorsky Region, Russia

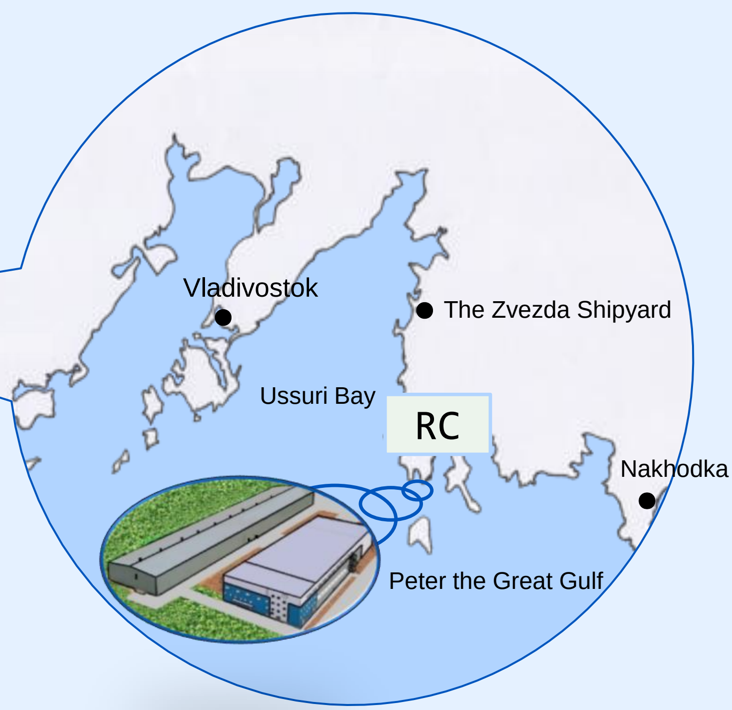
The objective of the RC construction project is the safe treatment and long-term storage of a large amount of radioactive waste generated mainly by the dismantling of decommissioned nuclear submarines in the Russian Far East, with the assumption of future storage in a radioactive waste repository. The RC has been under construction since 2016 as a national project of the Russian government.

As a part of the cooperation projects for the dismantling of decommissioned nuclear submarines in the Russian Far East, Japan, at the request of Russia, decided (in July 2019) to provide financial assistance for the procurement of some of the equipment (such as an incinerator for radioactive waste, equipment for fragmentation and decontamination of intermediate-level metal waste) which will be installed in the RC building.

Based on this decision, the Technical Secretariat signed the Financing Contract (approximately 1.8 billion yen) with RosRAO (now FEO). After the construction of the RC building, all facilities and equipment, including equipment financed by Japan, will be installed in the building. Then the Financing Contract will be completed after the Japanese government and the Technical Secretariat confirm that all of the installed equipment operate without problems through a trial run.

However, due to the influence of the COVID-19 pandemic and various other circumstances on the Russian side, the construction of the RC building where the equipment will be installed has been significantly delayed from the original schedule. Because of that delay, the Financing Contract has expired at the end of 2022 and the cooperation with Japan has been suspended as a matter of fact.

It is expected that the RC, if it is constructed and operates well in the future, will contribute to the reduction of environmental risks in the Far East region and the Sea of Japan. In the northwestern part of Russia (Murmansk Oblast), a similar facility (The Northwest Center for Radioactive Waste Management) had already been constructed with the assistance of Germany. The Northwest Center started its operation in 2015 and has been at work since.



Project on Strengthening Nuclear Security in Ukraine

In January 2011, Japan decided to provide assistance to the Kharkiv Institute of Physics and Technology of the National Academy of Sciences to strengthen nuclear security in Ukraine (total cost : 173 million yen).

Nuclear materials in bulk-form*8 have been stored in the Kharkiv Institute, which were transported to the Institute to develop nuclear technology in the Soviet Union era. In light of the importance of the Institute in terms of non-proliferation, Japan decided to support the establishment of a state-of-the-art mass-spectrometry system to identify the content of the bulk-form materials as well as strengthening the perimeter protection system to cope with emerging threats such as terrorism.

This project is recognized as part of the G8GP activity and was introduced in the National Progress Reports of both Japan and Ukraine at the Nuclear Security Summit held in Seoul in March 2012.

*8 Physically loose forms such as liquid, gas and powder.

✍ *Column* ✍

Kharkiv Institute of Physics and Technology

The Ukrainian Institute of Physics and Technology, the predecessor to the Kharkiv Institute of Physics and Technology, was founded in Kharkiv, Ukraine, in 1928. In 1932, the Institute succeeded in splitting the atomic nucleus (lithium) for the first time in the Soviet Union and played a pivotal role in the nuclear development programme of the latter, together with the Kurchatov Institute in Moscow.

The Kharkiv Institute has accepted IAEA Safeguards since 1998. It is the largest nuclear and radiation research centre in Ukraine and implements various joint projects with Japan and Western countries.

What is Nuclear Security?

Since 9/11 terrorist attacks, terrorism using WMD by non-state actors such as terrorist organizations has become a real threat (*see page 2*). Among WMD terrorism, IAEA assumes the following four types to be feasible nuclear terrorism.

In a nutshell, “Nuclear Security” encompasses multifaceted countermeasures to prevent nuclear terrorism. It covers not only the physical protection of nuclear facilities and materials (*see note 3 on page 1*), but also the security of non-nuclear radioactive sources, import-export controls at national borders and so on.

Category of nuclear terrorism (source: Ministry of Foreign Affairs website)

Needless to say, each individual country has primary responsibility for its own nuclear security. However, the impact of nuclear security incidents could easily spread beyond national borders. Therefore, intensive cooperation at regional and international levels is of vital importance for robust nuclear security.

«Nuclear Security Summit»

In Prague in April 2009, US President Obama emphasized the importance of strengthening international nuclear security to prevent nuclear terrorism in his speech on “a world without nuclear weapons”, and hosted the 1st Nuclear Security Summit in Washington DC(US) in April 2010.

The 2nd Nuclear Security Summit was held in Seoul (South Korea) in March 2012, the 3rd in The Hague (Netherlands) in March 2014, and the 4th and Final Summit in Washington, DC in March 2016, and subsequently, international conferences on nuclear security have been held by the IAEA.

Through a series of summits, awareness of the threat of nuclear terrorism has been raised and nuclear security measures have been strengthened not only at the national level but also at the regional and global levels.

Project on Strengthening Nuclear Security in Kazakhstan

Against the backdrop of growing momentum for cooperation between Japan and Republic of Kazakhstan for the peaceful use of atomic energy, triggered by Prime Minister Koizumi's visit to Kazakhstan in August 2006, Japan has decided to implement a project to strengthen nuclear security in Kazakhstan.

Under this project, the Ulba Metallurgical Plant (UMP) and the Institute of Nuclear Physics (INP) had been provided with materials and equipment to enhance protective measures of both facilities based on a threat assessment (UMP : 337 million yen, INP : 89 million yen).

In addition, a nuclear security training course was organized in collaboration with the IAEA in Almaty to enhance the security expertise of nuclear facility staff in Kazakhstan (total cost : approx. 6.3 million yen). Throughout the five days of lectures and practical exercises, participants could deepen their understanding of modern methodology and international experience of nuclear security.

This project has boosted global efforts to prevent nuclear terrorism. Its importance was emphasized in the national progress reports announced by Japan and Kazakhstan at the Seoul Nuclear Security Summit.

Completion ceremony at the INP
(May 2013)

IAEA Nuclear Security Training Course
(April 2012)

Column

Ulba Metallurgical Plant (UMP)

UMP is known as one of the world's largest nuclear fuel manufacturing plants, located in Ust-Kamenogorsk city in northeastern Kazakhstan. The existence of the Plant was confidential under the code name "Mailbox 10" until the end of the 1960s. Around half the fuel pellets for all reactors in the Communist bloc are said to have been manufactured in this plant in Soviet times.

Following the independence of Kazakhstan, the plant was affiliated with the National Atomic Company "KAZATOMPROM" in 1997 and currently supplies uranium, beryllium and tantalum products to Japan and other Western countries. It also contributes to national non-proliferation initiatives with technology to downblend highly enriched uranium.

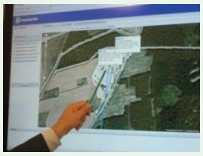
Institute of Nuclear Physics (INP)

The INP was constructed in a suburban area at Almaty city in the 1950s, following the decision of the Soviet authorities. The Institute has installed a research reactor (WWR-K), accelerators, environmental laboratory and other facilities, and currently conducts irradiation tests at the request of a Japanese research institute. It has also striven to produce isotopes for industrial and medical use in recent years.

Project to Deter the Illicit Trafficking of Nuclear and Radioactive Materials at the State Borders of Belarus

State border officer searching for radiation sources in the vehicle

Mobile operational response laboratories and a mobile radiometric laboratory



Geo-information radiation monitoring system

Specialized classroom for radiation security

Handover ceremony for equipment and specialized classroom for radiation security (April 2011)

Japan provided equipment to the State Border Committee of the Republic of Belarus under the Project "The Modernization of the System to Deter Illicit Trafficking of Nuclear and Radioactive Materials at the State Borders of the Republic of Belarus", which was implemented from July 2010 through August 2011 (total cost : approx. 76 million yen).

«Background of the Project»

The Republic of Belarus is a landlocked country located in Eastern Europe and on a trading route connecting the EU and Russia. In recent years, increasing cargo indicating high radiation has been discovered at border checkpoints, and speedy responses by the border guards to such incidents have become a matter of urgent attention. Moreover, in Belarus, one fifth of its territory was contaminated with radionuclides as a result of the Chernobyl catastrophe in 1986. Contaminated goods were continuously trafficked from the affected areas along the Belarus-Ukraine border, hence the urgent need to reinforce the ability to prevent illicit trafficking of nuclear and radioactive materials in the border area.

«Enhancing the Ability to Detect and Respond to Radiological Incidents»

Under this Project, three mobile laboratories were provided for immediate response to radiological incidents. Once a high level of radiation is detected at a border checkpoint, the laboratory arrives on the scene and identifies the isotope contained in the goods or vehicles. The Project also established a geo-information radiation monitoring system, which enables the mobile laboratories to transmit measured data to the command center and external agencies to make swift and qualified decisions on a further response. Furthermore, modern radiation detectors were provided for a patrol of 34 simplified checkpoints and green borders (unattended border area) in Belarus.

The Japanese assistance has enabled the border officers to inspect more than 290 thousand vehicles and freight trains within eighteen months after the completion of the Project.

«Upgrading the Proficiency of Border Guard Specialists»

This Project also assisted the State Border Committee to establish a specialized classroom for radiation security in the Border Guard Institute to upgrade the proficiency of border guard specialists against illicit trafficking of nuclear and radioactive materials. The classroom is also used for various seminars held by domestic and overseas organizations in the nuclear field.

«Implementation of Ex-post Evaluation»

To verify the effect and sustainability of the Project, a field survey (ex-post evaluation) was conducted in November 2012. The survey team confirmed that the Project contributed significantly to strengthening detection and response capacities against radiological incidents in the state border of Belarus.

The European Commission and the IAEA highly evaluated this project as consistent with national efforts of Belarus to strengthen nuclear security.

What is the prevention of illicit trafficking of nuclear and radioactive materials?

"Nuclear security" is a broad term encompassing various activities to prevent nuclear terrorism (*see page 7*). If the protection of nuclear facilities is regarded as the first line of defense, "prevention of illicit trafficking of nuclear and radioactive materials" is, as it were, the second line of defense, which includes detection of and response to nuclear and other radioactive materials falling outside regulatory control. Given the growing movement of population and goods across international borders, prevention of illicit trafficking is one of the key areas in strengthening nuclear security.

According to the Incident and Trafficking Database (ITDB) of the IAEA, there were 2,331 cases of illicit trafficking of nuclear and radioactive materials from 1993 through 2012 (160 cases in 2012). Several attempts at illicit trafficking in highly enriched uranium were intercepted in the former Soviet and East European countries, and the region is therefore regarded as one of the most vulnerable in terms of nuclear smuggling.

«Effective Border Control»

More and more countries have been strengthening radiation monitoring systems at state border crossings, particularly since 9/11. Some have installed radiation detection portal monitors for freight, passengers, and vehicles at border checkpoints, while others have trained border guard officers to respond effectively to radiation incidents. Since officers stationed at the border frontline are usually not radiation specialists, detection devices should be simple and easy enough to use (specialized devices and technology for border monitoring are developed these days). It is also important to establish a coordination mechanism to provide timely expert support to frontline officers.

Detection at various border areas

Column

Mobile Radiometric Laboratory Travelling Chernobyl Contaminated Areas

Under this Project, a mobile radiometric laboratory equipped with a whole body counter and a food contamination monitor was also provided. The laboratory has been actively utilized to survey the incorporated radionuclides of border guard staff working in the contaminated areas and the local inhabitants living there.

The new mobile radiometric laboratory expanded the radiological surveying capacity and surveyed 8,747 persons, including 6,604 local residents over the last eighteen months. When a person's incorporated radioactivity exceeds the permissible level, the foodstuffs (mushrooms, berries, etc.) he/she usually eats are brought to the laboratory and the radionuclide contents are analyzed for immediate identification of the contamination source. At the same time, the patient is referred to a medical institution for further examination and treatment. The regular visits of the laboratory are greatly appreciated by local residents, including those living in remote locations where it is difficult to visit hospitals.

Since the TEPCO's Fukushima Daiichi Nuclear Power Plant accident, many Japanese delegations have visited the laboratory to learn more from the experience of Belarus.

A resident measured the internal radiation level in the mobile radiometric laboratory

Дороги мобильной лаборатории...

A local newspaper reporting activities of mobile radiometric laboratory

Technical Secretariat
on Cooperation for the Elimination of Nuclear Weapons
Reduced in the Former Soviet Union

- Technical Secretariat of the Committee on Cooperation to Assist the Destruction of Nuclear Weapons Reduced in the Russian Federation
- Technical Secretariat of the Committee on Cooperation for the Destruction of Nuclear Weapons Reduced in the Republic of Kazakhstan
- Technical Secretariat of the Committee on Cooperation for the Elimination of Nuclear Weapons Reduced in Ukraine (closed in July 2018)
- Technical Secretariat of the Committee on Cooperation for the Non-Proliferation of Nuclear Weapons in the Republic of Belarus (closed in January 2015)

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