German support for utilization of nuclear submarines in Russia
Progress in the Sayda Bay project implementation

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History of the Project

The project on construction of the coastal storage facility for reactor compartments (RC) of decommissioned submarines is based on the Agreement between the German Federal Ministry of Economics and Labour and the Russian Ministry for Atomic Energy, dated 9 October 2003. In particular the Agreement stipulates:

1. Erection of an onshore long-term interim storage facility for reactor compartments in the Sayda Bay, including respective infrastructure;
2. Optimization of the material and technical situation and of the equipment of Russian companies, in order to accelerate disposal of nuclear submarines;
3. Establishing of conditions for a safe handling of waste products, generated in the disposal of nuclear submarines in the northern region of the Russian Federation;
4. Creation of an ecologically sound status of the environment in the Sayda Bay.

More than 300 million Euros has been allocated for the Sayda Project by the German Government. The project covers:

- construction of the RC storage platform for 120 RC with rails and controlled drains,
- equipment of the facility with the physical protection system,
- building a pier for floating dock,
- erection of the indoor reactor compartments repair hall,
- construction of the necessary auxiliary buildings,
- establishing a radiation protection system,
- building roads and external infrastructure.

Early in 2003 German Government assigned company Energiewerke Nord GmbH (EWN) to be a general contractor for the project and to lead the project. Form the Russian side Russian Research Centre "Kurchatov Institute" plaid a role of the Russian integrating company and a main subcontractor. Some work was done directly with the Russian Nerpa shipyard.

Figure 1. General view of the RC storage facility

The project began in summer of 2004: the cornerstone was laid on 10 July 2004. By 25 September 2004 construction site facilities was completed.

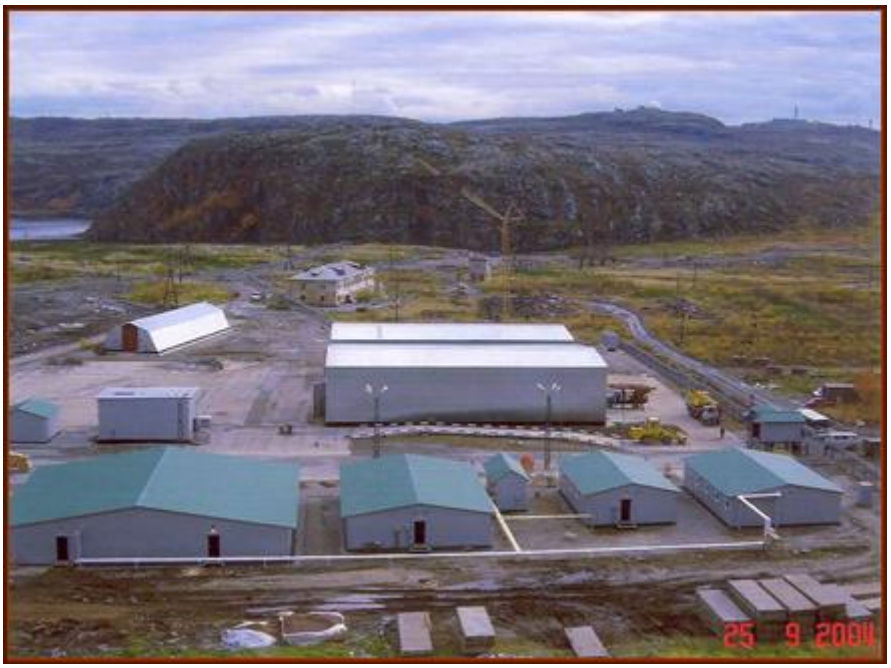

Figure 2. Construction site facilities

Then actual activities started from excavation, rock explosion and removal of ground in order to prepare a foundation for the concrete RC storage platform. In total 300,000 m^3 of soil has been removed and 200,000 m^3 of rock was exploded and removed. In total more than 1 million m^3 of materials was transferred. A lot of efforts were devoted to construction of the loading pier for the floating dock that transports the reactor compartments. This also included some underwater excavations and preparation of the landing bed for the dock.

Figure 3. Preparation of grounds – explosions, rock and soil removal. Construction site in February 2005

Extensive upgrading work has been done at the Nerpa shipyard that is located not far from the Sayda Bay. This shipyard prepares reactor compartments for the long term storage in Sayda Bay. A number of nuclear submarines were dismantled there too. Special accumulation pad for about 8-10 RC has been built there and equipped with necessary transportation system, similar to the one supplied by Germany to the Sayda Bay site.

Figure 4. Testing of German docking-block transport system at Nerpa shipyard

Transport of the reactor compartments to Sayda Bay is provided by the floating dock PD-42 which can accommodate about 7 RC.

Figure 5. Transportation of reactor compartments in the floating dock

The first stage of the facility in Sayda Bay was commissioned on 18 July 2006. Total cost of the work that has been accomplished by July 2006 is more than 150 million Euros.

Figure 6. First bunch of reactor compartments delivered to Sayda Bay

The facility was opened by Mr. Michael Gloss, Federal Minister for Economics and Technology of Germany and by Mr. Andrey Malyshev, Deputy Head of the Federal Atomic Energy Agency of the Russian Federation. First stage of the storage facility can accommodate up to 40 compartments. It is in operation now under the responsibility of SevRAO – the Russian Federal organisation for management of radioactive waste in the northern region.

Figure 7. Opening of the first stage of the Sayda Bay facility by Minister Gloss

During implementation of the project a number of important problems have been solved including documentation development and licensing, getting permissions for the work, access to the site, and exception from taxes and charges. All design documents have been developed by the Russian organisation according to the Russian standards, including Environmental Impact Assessment. Survey of the environmental situation was conducted before construction started and during further activities environmental monitoring was provided. Management of the project is performed at five levels:

1. Technical Committee (EWN- RRC Kurchatov Institute) – technical solutions, tender preparation and evaluation, selection of subcontractors, etc.
2. Steering committee – technical meetings with subcontractors at the construction site.
3. Inspections – work acceptance is performed by the Kurchatov Institute, and EWN checks actual work done by visiting the site every 15 days.
4. Audit of books of subcontractors – practically an accountant control.
5. Political level – Ministries of Germany and the Russian Federation.

During implementation of the project effective cooperative interface has been established and parties involved built mutual trust and partnership. Further plans include completion of the second stage of the facility which is building now. The facility when completed in 2008, will accommodate up to 120 RC and several sections of the dismantled nuclear service ships (e.g. Lepse ship).

As a continuation of the project it is also planned to build a Regional Centre for management and storage of radioactive waste (RW) in Sayda Bay. This centre will perform the following services:

- receiving, decontaminating, conditioning and packaging of radioactive waste,
- final measurement of radiation thresholds of radioactive waste,
- storage of conditioned radioactive waste.

The centre will have a possibility of definitive dismantling and disposal of reactor compartments and other radioactive waste after the term of the RC storage is over (about 70-80 years). This centre will play a crucial role for the Russian Federation, and German Government is ready to finance this project. Costs estimates for the construction of the RW management centre give about 300 million Euro. The centre will be similar to the RW management and storage facility located in Lubmin, Germany.

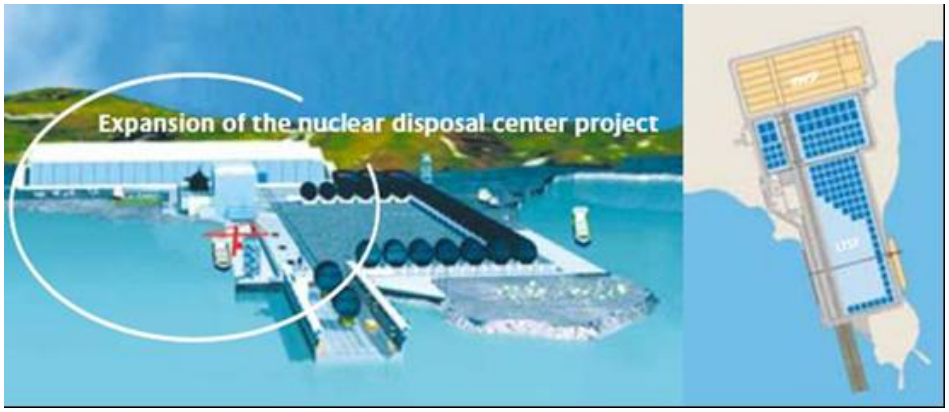

Figure 8. Location of the RW management and storage centre in Sayda Bay

Figure 9. RW management and storage facility „Zwischenlager Nord (ZLN)“, Energiewerke Nord GmbH, Lubmin, Germany

RC storage facility, similar to the Sayda Bay one, now is being built at the Russian Far East under the Russian funding for the reactor compartments produced during the submarine dismantlement at the Pacific. The experience and technology of the Sayda Bay project are shared and transferred to the Far East. Germany also supports this project and supplied some equipment to the Far East assisting Russia in resolution of the Nuclear Legacy problems in this region too.