Andreeva Bay – Moving Forward Together

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Management of spent nuclear fuel (SNF) and radioactive waste (RW) accumulated during decades of operation of the Russian nuclear fleet is one of the major challenges of the Cold War legacy in the Russian Federation. Naval SNF and wastes are stored at different locations in the North West Russia and at the Pacific, but the main storage is located in the Andreeva Bay on Kola Peninsula 50 km east from the Norwegian border. About 22000 spent fuel assemblies (SFA) equivalent to ~100 reactor cores are stored there in conditions that do not meet current Russian and international regulations and cause gradual degradation of the fuel.

Operation of this former naval coastal base was stopped in early 90th and ten years later when the base was transferred under the Rosatom jurisdiction all facilities and infrastructure were inoperable.

After the CEG workshop on the Andreeva Bay problems held in October 2001 in Idaho Falls, USA, international assistance to remediation of this facility and SNF and RW management there has got a significant momentum. CEG members' involvement has been both proactive and positive in addressing the challenges faced at Andreeva Bay. In partnership with the Russian Federation under the leadership of Rosatom, CEG members undertook to provide the lead in three key areas:

- Site Infrastructure, led by Norway,
- SRW & LRW management, led by Sweden,
- SNF management, led by UK.

By now all parties reached substantial progress in solving the Andreeva Bay problems, but this challenge will remain for a considerable period beyond the end date of the G8 Global Partnership in 2012. In conjunction with the RF, this has resulted in an ongoing development of Andreeva Bay to prepare for the most significant challenge of all, the safe and secure management of the SNF.

Overall, cooperation between the various parties, both outside and inside the RF has been considered to be good, (from a UK perspective). As work has progressed at the Site, effort has been required to ensure an ever closer level of coordination. Improvements have been seen through:

- Establishing a dedicated Coordination Group,
- Enhanced cooperation and co-funding of work,
- Establishing a Project Management Group for the Site.

Improvements have also been seen through:

- Better application of the planning process and longer-term programmes.
- Knowledge transfer between the participating countries, and also cross project (remediation of the similar base in Gremikha).

These have all helped smooth the introduction of new active participants to work at Andreeva Bay, such as, Italy and EBRD. Improvements need to continue.

A key stage in the process of undertaking major works at Andreeva Bay is the production of a suite of documents in the Russian project system, for approval by Rosatom and the Russian regulatory authorities. Approval of these documents leads on to the start of detailed design, then to approval for construction.

One of the most important milestones in this work is development a so called Justification of Investments (OBIN – Russian acronym). Since activities on SNF future management at the site are closely related to management of radioactive waste there, it was decided to produce one OBIN that covers both areas.

Work under the OBIN development started in March 2005. It is co-funded by UK and Sweden, with knowledge transfer to other active participants. Some preliminary activities like radiation and engineering surveys, collection of initial data and information were funded by the Norwegian side; some work was done under the Russian funding. OBIN Documents published in full by August 2006.

The OBIN consists of volumes including:

- Development of a concept solution, the Nuclear Safety Case, Environmental Impact Assessment, Radiation Monitoring, Account & Control systems, Decommissioning strategy,
- Account & Control system, Security measures, Quality Assurance, and so forth,
- Projected costs for the project.

The OBIN satisfies Russian regulatory process and allows donors to understand and form a view on the proposed solution. It consists of:

- 22 Volumes,
- Some Volumes have up to 4 Books,
- Every Volume has an English translation for the Donors to make their comments,
- All comments are processed and those that are not purely editorial are recorded with the relevant Book together with the formal response.

The following approval stages are to be completed before proceeding to the next design development phase:

- Preliminary Stage – Independent Expert and Donor Country reviews,
- Stage 1 – In house approvals by Rosatom Boards,
- Stage 2 – Specialised Expert Reviews,
- Stage 3 – State Expert Examinations,
- Stage 4 – Rosatom Approval.

Currently Preliminary Stage approvals on point of completion. Estimated date for approval at Stage 4 is currently mid – late 2007.

At the preliminary some issues have been defined that need to be addressed further, including:

- How to avoid criticality during the SNF recovery process,
- Over-conservative concept design,
- Safety Case robustness and consistency,
- Cost Estimating methodology.

Need for further improvements of coordinated management has been defined during the OBIN development. This could be done through:

- Use and development of the Project Management Group and provision of required level of appropriate resource for its operation,
- Exploring ways of speeding up information transfer,
- Continued development and implementation of long-term programme for the Site,
- Continued leadership from Rosatom to facilitate direct engagement between donors and designers throughout the implementation process.

Further finance of the Andreeva Bay project should also address the following:

- Identify a Fit-for-Purpose solution to the challenges that provides an appropriate level of safety and durability, whilst providing value for money,
- Recognising the need for true partnership, which includes multi-donor contributions married to Russian Federation funding.

This complex of measures will allow producing a Fit-for-Purpose and value for money design, develop in detail the long-term programme and obtain agreement across the active participants. Plan for the future needs to be elaborated, identifying and developing resource and skills requirements to meet the changing needs.

Future multilateral cooperation on the Andreeva Bay projects should be built on the existing levels of coordination and develop a greater working level interaction. It should recognise and plan for full partnership in financing the implementation stages.