

CEG Newsletter # 5 on Members' activities in 2009

Canada

Canada's twin nuclear power submarines (NPS) initiatives in both North West (NW) and Far-East Russia are proceeding on schedule. In NW Russia two Yankee Class NPS have been de-fuelled and one fully dismantled. The second will be dismantled by year end 2009.

Canada will also be funding the de-fuelling of two strategic missile submarines in NW Russia during the next 12 months bringing its six year relationship with the Zyozdochaka shipyard to a close.

In Far-East Russia the railway upgrades between Bolshoi Kamen and Smolyaninovo have been completed and the rail line is now operational for spent nuclear fuel (SNF) transportation. One special train has already left the Zvezda shipyard with a full load of SNF. It is anticipated that all SNF will be removed by early 2011. In July 2009 the operation to transfer two Victor Class NPS 2.500 km from Petropavlovsk in Kamchatka to Bolshoi Kamen in Primorsky as dry deck cargo on the work deck of a Dutch heavy lift ship was completed successfully. Work has now commenced on preparing both the transported NPS for de-fuelling.

Finland

The Radiation and Nuclear Safety Authority (STUK) and Rostekhnadzor held a joint seminar at STUK in August 2009. The main purpose of the meeting was to discuss inspection practices at radioactive waste management facilities in Finland and Russia.

Finland participates in the in efforts to remove RTG lighthouses from the Baltic Sea, together with Norway. Finland has pledged €1.5 million for the project. The actual work in the project is expected to start next year.

France

France has funded the unloading of a fast reactor core n°910 from an "Alpha" class submarine, including all preparations and post-unloading actions. The core was safely unloaded on 22 September by SevRao at the Gremikha site. Earlier the decontamination of the control rods mechanisms and the upper part of the core n°910 was successfully conducted under the French financing. The dose rate has been reduced to the level sufficient for the reactor core unloading. In 1989 this submarine with a fast reactor and liquid metal coolant suffered an accident with radiation contamination of the reactor compartment.



France has agreed to help the Rosatom in reprocessing the legacy SNF and take part in rebuilding of a hot cell at PA Mayak for handling damaged SNF assemblies that will be removed from former navy bases (North-West and Far-East of Russia). The existing hot cell for damaged canisters will be decontaminated and

refitted for handling of damaged SNF assemblies in order to make them suitable for further reprocessing. The first step will be carrying out a design project. The cell is expected to be commissioned in 2011.

France funds a new incinerator for the Low Level Radioactive Waste to be installed at the Zvyozdochka shipyard. The furnace was manufactured in France and together with necessary equipment was imported to Russia, and has recently passed through the customs clearance. The furnace and all related equipment are now being mounted at Zvyozdochka. The incinerator will be commissioned before the end of 2009.

Germany

The German project for the safe disposal of nuclear submarines and other nuclear surface vessels of Russia's Northern Fleet runs from 2003 to 2014 and can draw on a budget of € 600 m from the Federal Republic of Germany. Approx. € 320 m have been spent on the work done so far. Contracts for work worth another € 63m up to 2014 have been signed.

The first phase of a long-term storage facility in Sayda Bay for 120 submarine reactor compartments, including infrastructure was completed. The assembly of equipment in the repair shop remains to be completed soon.

The second construction phase for 58 reactor compartments from submarines and surface vessels including infrastructure has been recently finished. Its handover is scheduled for October 2009.

The third construction phase: establishment of a Regional Disposal Centre for solid radioactive waste. The planning for the authorisation has been completed by a Russian project institute and submitted for expert review. Work has begun on the foundations.

Dismantling of submarine reactor compartments suitable for long-term storage, and transportation to the long-term storage facility. To date 33 reactor compartments have been transported to the facility and placed for long-term storage. 20 of them were funded by Germany.

Heavy-duty transport systems for reactor compartments and other parts of vessels (hydraulically operated keel unit bearer systems, elevating platforms and a power station) have been designed, manufactured and delivered to Nerpa Shipyard, SevRAO and DalRAO (Russian long-term storage facility operators). Modernisation and completion of the infrastructure of the Nerpa Shipyard, including the ship transportation technology (a floating dock to transport submarine compartments and a docking tug) has been completed in 2009.

A computer-based residual matter movement tracing and control system for radioactive waste, RAMMSIS, has been developed and handed over for operation.

Italy

In three years 20 contracts have been signed for a total value of more than € 110m.

The design and construction of a ship for SNF and RW transportation is underway and on schedule. In July 2009 was performed the cutting of the first steel plate - the starting point of the actual construction. The main features of the ship are: length 77 m; width 14 m; height 17 m; speed 12 knots; range 3000 nautical miles; crew 23 people; 2 x 1300 kW diesel motors. The cost is € 71m.

In June 2009 a new contract was signed with the Nerpa shipyard for dismantling of a fourth NPS (Echo II). The dismantling is currently in process. A Yankee Notch and the two Victors have already been dismantled on schedule, and their reactor compartments delivered to Sayda Bay. The total value of the four contracts is about € 20 m.

The dismantlement of the Cruiser 090. The first contract on preparation of a complete set of safety documents for defueling activities has been completed by the Onega company in July 2009. In June 2009 a €

4.5m contract for defueling and safe storage afloat of the cruiser has been signed. The duration is 2 years. The first step of dismantling will be the extraction and sealing of the two reactors from the ship structure, while floating, and their transfer, by means of a pontoon, to a storage location. The scope of financial contribution for cruiser dismantling, consistent with the remaining resources, will be considered only after the completion of the preliminary design.

Two contracts (€ 3.5m) have been signed to deliver to the Nerpa and Zvyozdochka shipyards special equipment from different European countries (forklifts, welding, cutting, cleaning and painting machines, trailer trucks, compressors, special scaffoldings, individual protection means, etc.).

Modernization of physical protection at the Nerpa and Zvyozdochka shipyards. That includes replacement of obsolete physical protection systems, installation of control systems for personnel and vehicle access, supply of new systems for the physical protection of the water area. In June 2009 a contract for detailed design for Zvyozdochka was signed, while in August 2009 was signed a similar contract for Nerpa. For both shipyards the design work is progressing as planned.

A project for protection of open RW storage pads at Andreyeva bay (construction of buildings 201 and 202). As the cost estimation for buildings construction largely exceeded the available budget, a revision is now under way of the work based on an optimized design. Measures have been implemented to reduce an average radiation dose at RW pads by the factor of 100.

A project for RW management and storage facilities at Andreyeva bay (buildings 1, 203 and 205). The solution defined in OBIN for the LRW and SRW treatment and conditioning facility has been analyzed and critically reviewed, and integration of activities, including a storage facility, has been carried out. A technical specification for the design contract has been prepared on this basis, and negotiations with the selected supplier have started.

A contract with the Russian designer (VNIITF) for the design of 10 casks for SNF from Alpha NPS stored at the Gremikha site is to be signed in the near future. On completion of design a contract for manufacturing will be signed.

Japan

Japan funded, through the Japan-Russia Cooperation Committee, the dismantlement of a Charlie I class nuclear submarine in Kamchatka. This project was completed in April 2009.

The project of the dismantling of two Victor III class submarines has been steadily proceeding.

An implementing arrangement was signed in May for the cooperation on the on-shore long-term storage facility for reactor compartment units in Razboynik Bay. Russia is currently building the first phase of the storage pad, but lacks funding for necessary transport equipment for the pad. Japan will provide a floating dock, a tug boat and two cranes to support commissioning of the storage facility.

Norway

The last remaining RTGs in North-West Russia were removed on 1st September from the Island of Vaigach. All 180 RTGs have now been removed from Murmansk, Arkhangelsk and Nenetsk regions, including Novaya Zemlya, in North-West Russia. Norway will proceed with the work in the Baltic Sea together with Russia and Finland. 71 RTGs will be removed from lighthouses in the Gulf of Finland and the coast of Kaliningrad during the period 2009-2012.

The project with dismantling of four Victor class submarines and one November class submarine are successfully completed and the reactor units are stored at the Sayda facility.

The upgrade of the quay facility at Andreyev bay has been completed.

An emergency training/exercise in Gremikha village was conducted in June 2009. The exercise was carried out under a Norwegian/Russian regulatory support project: "Preparation and conducting the emergency training on the radiological protection of the personnel of the Ostrovnoy Branch of SEVRAO and the population of Gremikha village".

Russia

The main activities funded by the Russian Federation in 2009 are:

- Dismantlement of four nuclear submarines – the same number as in 2008 (forecast for 2010 – three nuclear submarines).
- Dismantlement of the first surface nuclear powered ship (Ural) at the Zvezda shipyard in the Far-East (to be completed in 2010).
- The reprocessing of LRW will increase to 250 m3 against 215 m3 in 2008 (forecast for 2010 – 216 m3).
- Improvement of storage of 1020 m3 of SRW (1180m3 in 2008); forecast for 2010 is 1020 m3.
- Removal of SNF from the North-West and Far-East to the Mayak Plant for reprocessing: 9 special trains (6 trains in 2008). This includes 588 SNF assemblies from WWR in two trains that have been removed from Gremikha to Mayak in 2009. The forecast for 2010 – 4 trains.
- The service ship Serebrianka has been refitted to ensure safe transportation of TUK 18 and TUK 108 casks from Gremikha and other sites.
- Two nuclear service ships have been repaired to enhance their buoyancy (three in 2008) and one is planned for 2010.
- Unreprocessable SNF from the service ship Lotta is being loaded into storage casks at the Atomflot storage facility. So far 14 casks (of 50) have been filled. By the end of the year the figure might increase to 19, and 12 more casks are expected to be filled in 2010.
- Russia has started construction of a storage facility in the Far-East at Razboynik Bay suitable for storing up to 100 reactor compartment units similar to that in Saida Bay. The first stage will receive up to 28 units and is due to be commissioned in 2012. Currently some 60 reactor units (in mainly three compartment configuration) have been accumulated in the Far-East of Russia.

Sweden

Two RF-Sweden co-operation projects concerning waste disposal strategies are underway: "Strategy, concept and activities for disposal of RW in the RF" together with IBRAE and "Technical and Economic Study of Options for the Management of Spent Nuclear Fuel in the RF" together with FCNRS. VLLW landfill repository projects are getting started at Andreyeva Bay, Gremikha and LNPP based on the recent IAEA decision on a new waste classification system and Sweden's twenty years of experience of operation of such landfills.

UK

As part of its wider existing portfolio of projects at Andreyeva Bay, the UK Global Threat Reduction Programme (GTRP) is funding the £5.5m cost of procuring and installing some 3,252 protective biological shielding units over the three Dry Storage Units. The biological shielding is intended to reduce the radiological dose to operators during future construction of building B153 over the DSU's and the eventual fuel retrieval. The recent successful installation of shielding over DSU 2B has seen a tenfold reduction in dose rate. Work continues on DSU 2A which is expected to be completed by end of 2009.

The joint UK/Norway £3.982m funded project to dismantle a November Class submarine (registered hull No 291) at Nerpa Shipyard has successfully been completed. The One-Reactor Compartment Unit now rests at Saida Bay for long term storage.

14 of the 50 TUK storage casks have been filled with SNF transferred from the ship 'Lotta' and placed into a physically secure storage facility at the Atomflot site near Murmansk. This work is funded by the Russian side. Both the interim SNF secure store and storage casks were funded by the UK GTRP at a cost of £21m.

In addition to work in North-West Russia, GTRP is doing work elsewhere in Russia:

The UK's GTRP Nuclear Security Programme is supporting work to improve and sustain the security of nuclear materials at Atomflot and six other sites in Russia. Assistance is provided both for upgrades to physical protective security, and for personnel training to strengthen security procedures and culture, in line with national and international standards as recognised by the IAEA.

The Closed Nuclear Cities Partnership Programme (CNCP) helps to create sustainable employment for former nuclear WMD scientists and engineers, whose expertise, knowledge and skills related to nuclear weapons production or access to nuclear materials could otherwise be misused. CNCP is focused on developing civil sector activities in manufacturing and services which provides the basis for sustainable employment and promotion of businesses in the closed nuclear cities/institutes of Russia and other FSU countries. For information see www.cncp.ru.

USA

The United States Department of Defense recently completed a contract with the Zvyozdochka Shipyard on the dismantlement of a Typhoon-class ballistic missile nuclear submarine (SSBN), and is currently funding ongoing dismantlement work on a Delta III-class SSBN including elimination of the ballistic missile launcher section and formation of its three-compartment reactor unit for storage. These efforts are in cooperation with Canada's DFAIT and Rosatom.

To date, the U.S. has spent \$345m in Cooperative Threat Reduction assistance to Russia for the joint efforts to dismantle 32 SSBNs and their associated ballistic missile launchers. DoD efforts have included the procurement and maintenance of dismantlement.

GTRI activities included:

- The recovery of all Navy RTGs in the Far East. Using joint-U.S./Canada funding 39 RTGs were recovered from Magadan, Kamchatka and Northern Kurilles and sent to DalRAO
- 20 RTGs have been recovered in the Northern Sea Route (NSR)
- 24 RTGs have been sent from Bilibino to Moscow where they were disassembled and the radiological heat sources (RHS) were sent to Mayak
- Contracted to install 30 Alternative Power Sources (NPS) in NSR for previous recoveries
- Contracted for the disassembly and disposal of 8 problematic Gorn RTGs and 10 problematic Beta M RTGs located at NIITFA
- Contracted for the procurement of 5 additional shipping containers