

NRPA Bulletin

The facility for treatment of low-level liquid waste in Murmansk, Russia – now in an active test period

The international co-operation project «Murmansk Initiative-RF» is now being finalised. It has been a Norwegian, Russian and US collaboration for upgrading and expanding (from 1200 to 5000 m³/year) the treatment facility for low-level liquid radioactive waste at the site of the company RTP Atomflot in Murmansk, Russia. The facility has been approved by the Russian State Commission and has received permission for one year of test operation. With this, the treatment capacity will be substantially improved in the Northwest of Russia and can be used in connection with clean up activities at the Kola Peninsula. The handing over will take place in Murmansk 20 June 2001.

This project is part of the Norwegian government's Plan of action. The project started in 1994/95. The goal was to give Russia the technical means necessary for them to fulfil the dumping prohibition of the London Convention.

RTP Atomflot operates the technical harbour works used by the nuclear icebreaker fleet and others. A small treatment plant already existed at the site. The intent was to place the new and upgraded facility in the existing buildings. It soon turned out that new construction was needed and some significant changes to the existing buildings had to be made in order to incorporate all needed equipment. The new facility is now a four-story building within the existing structure. Upgrading work has also been done in another building, the so-called laundry facility. Besides ordering and manufacturing equipment in 1997-1999, the Russian side also continued construction work during most of this period. Since the construction work was not anticipated in 1995, the project was delayed beyond the originally estimated completion date.

All three parties have contributed to the financing. Approximately 28 million NOK has been transferred to Russia from Norway and the US. The total cost for the project is about 47M NOK. In line with the Norwegian goal of "helping them to help themselves". Only Russian (partly innovative) technology has been used and all work has been done in Russia and by Russians.

The treatment facility at RTP Atomflot will play an important role for treatment of low-level liquid waste in the Northwest of Russia. This facility together with a similar one in Vladivostok, Russian Far East, has now given Russia enough treatment capacity for them to adhere fully to the dumping prohibition of the London Convention.



Stanislav N. Pitsjugin, Chief Engineer at RTP Atomflot (photo: NRPA).

Directly connected to the treatment facility, a cementation unit has been constructed. This unit will treat secondary waste generated during the liquid treatment process and transform it into a solid (cemented) waste form. This is a common procedure

for treating radioactive waste. In connection with the cementation unit project, the Russians have developed a concrete container for handling the cemented waste. This can also be used for other kinds of solid waste. The co-operation between Norway and Russia for finalisation of the cementation unit started in 1999. The Norwegian Radiation Protection Authority (NRPA) has been the project leader and used British Nuclear Fuel Limited (BNFL), UK, as a contractor.

Project Management

When the project started the Norwegian Royal Ministry of Foreign Affairs (NMFA) was the project leader and NRPA participated as the technical team from Norway. In autumn 1998, NRPA was asked by NMFA to take over also the project lead responsibility from the Norwegian side. From the USA, the Environmental Protection Agency (EPA) is the project leader and Brookhaven National Laboratory (BNL) is the technical leader. Other organisations have also been involved with the project.

In 1996, the Russian side established a Project Management Group consisting of members from Russian authorities and involved organizations. The leader of the group is Minatom (the Atomic Energy Ministry). The Russian company ICC Nuklid played the role as the project leader and the contact point between Norway/US and Russia. RTP Atomflot had the technical lead. The US/Norway had the opportunity to have an observer at the Russian project group meetings that were normally held once a month.

Financial Issues

All three parties shared the cost for the project. The original budget was a total of USD 1.7 million including USD 145 000 for the design phase. The original Russian contribution was equal to those of the US and Norway. The project became larger in scope and more complicated than first anticipated. It was therefore decided in November 1997 that the US and Norway would finance the project with an additional total of USD 750 000. The cost of the US and Norwegian experts was in addition to this.

The cementation unit was a part of the facility but was held outside of the trilateral project. Therefore, it was not included as a part of the financial contribution from Norway/USA. Because of a lack of financial resources in Russia, it was decided that

Norway would finance the cementation unit and that it would be a separate Norwegian-Russian project. The financial contribution from Norway to Russia was USD 212 800. The Russian side did not have enough money to finalise the construction and do the start-up testing. Based on the Russian budget proposal, an additional USD 313 700 was needed. Norway financed the full amount.

Lessons Learned

Collaborative construction projects at Russian nuclear sites were virtually nonexistent at the time when the Murmansk Initiative began. The costs for the project were held to a minimum mainly through the use of Russian subcontractors and suppliers. Foreign partners limited their efforts mainly to evaluation of construction progress, review of unit design, and verification of equipment orders and purchases.

The regulatory system of Russia is still evolving after the break up of the Soviet Union. The project was several times affected by new or changed Russian requirements. For example, the issuance of new radiation safety standards during the course of the project (twice) necessitated thicker walls in the facility and, consequently, higher costs for construction of new walls.

The Murmansk Initiative–RF was one of the first cooperative projects in the area of waste treatment that started in Russia with Western co-partners. The project has contributed to new and better cooperation between the Russian organisations and authorities and between the countries.

The treatment facility at RTP Atomflot is the first step. It takes care of the liquid waste. In connection with the treatment facility, a cementation unit has been constructed. It has also been developed a concrete container for handling the cemented waste that can also be used for other kinds of solid waste. The next step will be to build a storage facility.

It will now be important for us to utilise the experience gained and continue with new cooperation projects with Russia. There are many problems to solve in connection with the nuclear clean up at the Kola Peninsula and other parts of the Russian territory. The treatment facility at RTP Atomflot will be an important factor in these activities in many years to come.