

Improved Physical Protection on icebreakers in Murmansk

The Norwegian Radiation Protection Authority in co-operation with the Swedish Nuclear Power Inspectorate (SKI) and the British Department of Trade and Industry's Office for Civil Nuclear Security (OCNS) recently completed a project to improve the physical protection of Russian nuclear icebreakers. The icebreakers *Yamal* and *Arktika* are operated by the Murmansk Shipping Company and have their home port at Atomflot in Murmansk. The project has resulted in a substantial improvement of the physical protection systems on the two icebreakers against unauthorised attempts to gain access to the control room, reactors and other vital areas on board the vessels. The new protection measures are also intended to ensure that nuclear material does not go astray.



The icebreaker *Arktika*



Control room on *Arktika*

photos: MSCo/ Atomflot.

Introduction

Atomflot is situated 7 km from the Murmansk city centre. It is the home port of the icebreakers where they anchor up for service and refuelling. Atomflot is essentially a transport junction for all of the nuclear facilities on the Kola peninsula. It is here that spent nuclear fuel from the Russian icebreakers and submarines is stored prior to further transport by rail to the reprocessing facility at Mayak. Atomflot is an area of 20 hectares in size, and it also houses facilities for the treatment and storage of radioactive waste, as well as several ships used to transport and store spent nuclear fuel and liquid waste. Through AMEC, Norway has financed a concrete pad at

the Atomflot site where containers of spent nuclear fuel will be stored.

The spent nuclear fuel generated in the dismantling of old submarines at the Nerpa Shipyard and Andreeva Bay as well as from the naval base at Gremikha must all pass through Atomflot. Norway finances several projects (in the area) and several other countries also have ongoing projects or plans to start up activities in the Kola area. Consequently good systems of physical protection at Atomflot will be extremely important. Accidents or attacks here will have consequences for people and the environment, while nuclear or radioactive material that goes

astray could have serious consequences, for example in the hands of terrorists.

International project for physical protection

Security on the icebreakers Yamal and Arktika has now been enhanced. This project established a "Design Basis Threat" (DBT) which was a systematic review of all aspects of likely threats to the nuclear icebreakers Yamal and Arktika. Implementation of different kinds of protection measures on the basis of the threat assessment has been performed.

A design for a system of physical protection of the icebreakers was developed. The icebreakers were divided into sections according to the degree of protection needed, and these sections were subsequently classified according to their importance. The reactor, control room and rooms containing systems vital to the operation of the reactor. Specially constructed doors and monitoring systems, systems for controlling access and a new communications system have been installed on the vessels.

The project was carried out as a co-operative effort between the Norwegian Radiation Protection Authority (NRPA), the Swedish Nuclear Power Inspectorate (SKI) and the British Department of Trade and Industry's Office for Civil Nuclear Security (OCNS) and was financed by the three countries 25%, 10% and 65% respectively. The Norwegian contribution was financed through the Royal Norwegian Ministry of Foreign Affairs by funds from the Plan of Action for Nuclear Issues.

Threat scenario

The threat scenario to Russian icebreakers and the ensuing DBT to which the analysis gave rise include the risk of the vessel being hijacked at sea and that terrorists might then sail the icebreaker to a large city and threaten to destroy the reactor with the subsequent release of radiation. Threats and the risk of unauthorised access to the reactor or other vital areas of the vessel when the ships are in harbour, both at their home port at Atomflot in Murmansk or at other ports at which they may moor, are also covered in the DBT. It is primarily assumed that it would be chiefly persons from the outside who might attempt to

gain unauthorised access to the vessels, but internal threats are also addressed.

International activities

Focus on the physical protection and security of nuclear and radioactive materials has been stepped up dramatically in the aftermath of September 11, 2001, not least in conjunction with co-operative projects with Russia. Norway and Sweden have prioritised non-proliferation efforts and nuclear safety and protection initiatives for many years, including co-operative programs and support to the Russian authorities. Nordic assistance takes adopts the same strategy as the G8 Global Partnership programme which began in June 2002 in which the G8 countries pledge to set aside 20 billion dollars over a ten year period. Preventing the spread of nuclear materials and protecting nuclear facilities against terrorist acts in the process of dismantling nuclear submarines are closely aligned with measures to prevent the spread of nuclear and radioactive materials in general.

Further plans

New initiatives are now being planned to improve the physical protection of the entire Atomflot compound. The nuclear icebreakers constitute an integral part of the nuclear activity here. Furthermore, it is important to consider the area as a whole, and to consider develop protective measures both for individual objects or for entire sectors within the area. The goal is for physical protection measures to comply with Russian standards and requirements of the Russian authorities, as well as being consistent with IAEA recommendations for physical protection of nuclear materials and facilities.

The NRPA considers non-proliferation and nuclear safety to be an area of high priority. Rewrite suggestion: "Norway can make an important contribution to this goal by assisting in making the conditions of nearby localities in Northwest Russia safer, and by helping to reduce the risk of nuclear material inadvertently going astray. Hence the support and undergirding of Russian authorities are also important to that end.