

# **General Status of Multi-Purpose Nuclear Submarine Dismantling Issue**

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Dear colleagues,  
Ladies and gentlemen,

I am grateful for opportunity to open the CEG workshop, and would like to say special thanks to the IAEA Contact Expert Group (CEG): Mr. T. Norendal, CEG Chairman and to Mr. S. Bocharov, CEG Executive Secretary for great support of Russian activities in dismantling of nuclear submarines (NS) and for their initiative in organization of this workshop.

Russian problems are much wider than just dismantling of NS. They represent major legacy of the previous operation of the Russian nuclear fleet and include remediation of coastal bases where substantial amount of spent nuclear fuel (SNF) and radioactive waste (RW) have been accumulated. As of today, 110 NS are to be dismantled in Russia, including 62 multi-purpose submarines in the North-West Region. Therefore, this is a great problem. Part of this NS is still poses a military threat in terms of proliferation of nuclear materials and terrorism, but more important is an environmental hazard posed by them.

Because of these factors, G8 included the NS dismantling issue in the Global Partnership Programme, thus, this high level summit confirms importance of this problem for the whole human being.

Currently 8 shipyards are participating in the NS dismantling activities, including 5 shipyards in the North-West Region. Level of their readiness for dismantling multi-purpose submarines is different. SRZ No 10, Nerpa and Zvezdochka shipyards are ready to do this work in the most extend. They have necessary infrastructure for safe NS dismantling, however some upgrades are to be implemented.

There are a number of specific issues to be solved in multi-purpose NS dismantling including:

## **1. Safe storage of NS waiting dismantling**

Major portion of retired submarines are stored at places of their former service. Many of them are in poor physical condition and require special assistance and technical means for maintenance of their buoyancy and safety. These call for substantial funding.

## **2. NS transportation to places of their dismantling**

Since technical condition of most of the subs is very bad, their towing to places where dismantling is to be conducted is a big problem and requires substantial money for provision of adequate safety.

## **3. Development of design documentation for dismantling of NS of specific classes**

Taking into account the number of multi-purposes submarines, which has to be dismantled, specific design documentation is to be developed for main classes of these subs.

## **4. NS defuelling**

Substantial progress is reached in solving this task. Coastal defuelling complex was commissioned at Zvezdochka shipyard and the similar one will become operational at Zvezda shipyard in two weeks time. Floating technical bases are being used for defuelling also. Additional casks for SNF transportation are to be manufactured and extensions of casks accumulation pads at the shipyards are required. Construction of the buffer storage at Mayak plant is planned. New rail cars will be constructed for SNF casks transportation as well. These tasks are being solved under the US-RF CTR Programme.

### **5. SNF reprocessing**

According to the Russian concept naval SNF is to be reprocessed at Mayak plant. After major upgrading its capacity provides possibility to reprocess 18-20 NS per year. Main problem now is lack of finance of this work.

### **6. Construction of three-compartment RC units**

The most important problem now in NS dismantling is management of reactor compartments (RC). Even SNF is discharged from the reactors, RC poses substantial radiation hazard. More than 50 RC are stored afloat at Sayda Bay, and this is a serious environmental hazard for Murmansk region. On-shore long-term storage facility for RC is to be constructed. This is very expensive task and it is included in the G8 Programme.

### **7. RW management**

RW management is a part of the NS dismantling. Main problems in management of liquid radioactive waste (LRW) in the region have been solved. Atomflot enterprise and Zvezdochka shipyard have LRW treatment plants in operation, and two small mobile treatment facilities are being used in Murmansk region also. Two more mobile plants for treatment of LRW with complex chemical composition are to be built at Poliarny and Nerpa sites.

Solid radioactive waste (SRW) generated during NS dismantling mainly placed inside the RC and stored there. Nevertheless, it is required to create Regional center for SRW management in the North-Western Region of Russia to deal with accumulated and new wastes.

### **8. Management of toxic waste**

Plenty of toxic waste is being produced during the NS dismantling. Currently they are temporarily stored without proper treatment and safe isolation. In order to improve the situation and reduce environmental risk regional centres for handling toxic waste are to be created in Murmansk and in Arkhangelsk regions, and the shipyards need to be equipped with necessary infrastructure to provide safety.

### **9. Physical protection**

All nuclear facilities have to be equipped with adequate physical protection systems. Currently these systems need to be upgraded.

### **10. Radiation monitoring**

Radiation monitoring is an important part of the NS dismantling process. Automated up-to-date systems are to be constructed at each site dealing with this programme. International assistance is required to solve this task.

## **Conclusion**

In principle major shipyards in the North-West Region of Russia are able to conduct large-scale dismantling of multi-purpose nuclear submarines. They are equipped with necessary infrastructure and have qualified personnel.

International assistance is required for some upgrading of the shipyards and for solution of other technical problems above. There is a major principle of the NS dismantling: we need to take into account all aspects of the problem in order to improve environmental situation, but not to make it worse. While conducting the dismantling, we must be sure that we are doing it safely. Many Western parties are ready to help us in this work and we expect to get practical assistance already this year.