

**Selected Facilities Involved in Submarine Defueling and Dismantlement[18]**

<b>Dismantlement Facilities</b>	
<p>Nepra Shipyard, Kola Peninsula, Murmansk region</p>	<ul style="list-style-type: none"> <li>• Can dismantle four multi-purpose submarines per year. Has completed all CTR contracts. Upon completion of pilot Victor-class submarine dismantlement at Zvezdochka Shipyard, will begin dismantling one Victor-class vessel with Norwegian funds.</li> <li>• Needs include: Improved and enlarged SRW storage facility, new LRW storage tank and repairs to existing tanks, new hull cutting equipment, radiation monitoring equipment and physical protection measures for shipyard and nearby Sayda Bay, interim reactor storage at shipyard and long-term reactor storage at Sayda Bay, new service vessel for SNF and RW container removal.</li> <li>• Decommissioned vessels on site: more than 8.</li> <li>• Northern Fleet Victor II, Charlie II, and Echo I-class submarines are assigned to Nepra Shipyard for dismantlement.</li> </ul>
<p>Polyarninskiy Shipyard #10, Kola Peninsula</p>	<ul style="list-style-type: none"> <li>• A Ministry of Defense facility, Polyarninskiy Shipyard has benefited from some AMEC assistance. The author was unable to determine current facility needs.</li> <li>• Decommissioned vessels on site: more than 8.</li> </ul>
<p>Sevmorput Shipyard #35 Kola Peninsula</p>	<ul style="list-style-type: none"> <li>• A Ministry of Defense facility. The author was unable to determine current facility needs.</li> <li>• Decommissioned vessels on site: 3 as of 2000.</li> </ul>
<p>Zvezdochka Shipyard, Severodvinsk, Arkhangelsk region</p>	<ul style="list-style-type: none"> <li>• Can dismantle four multi-purpose submarines per year (3-3.5 months per boat). Currently dismantling SSBNs under CTR and has begun the pilot dismantlement of a Victor-class submarine with Norwegian funding. Has RW and SNF management/storage and SNF unloading equipment.</li> <li>• Needs include: Physical protection updates, rehabilitation of SRW infrastructure, new cranes, radiation monitoring and fire warning and extinguishing equipment.</li> <li>• Unknown number of decommissioned vessels on site.</li> <li>• Northern Fleet Sierra, Victor II, Victor III, and November-class submarines are assigned to this yard for dismantlement.</li> </ul>
<p>Sevmash Shipyard, Severodvinsk, Arkhangelsk region</p>	<ul style="list-style-type: none"> <li>• Can dismantle two multi-purpose submarines per year at present. Currently dismantling SSBNs under CTR. RW and SNF management/storage and SNF unloading handled by Zvezdochka.</li> <li>• Needs include: Completion of quays for SNF unloading and hull cutting; new cranes; improved interim SRW collection and SRW storage facilities; toxic waste collection, storage and disposal equipment; updated radiation monitoring equipment.</li> <li>• Unknown number of decommissioned vessels on site.</li> <li>• Northern Fleet Oscar, Papa, Victor I, Alfa, and Hotel I-class submarines are assigned to Sevmash Shipyard for dismantlement.</li> </ul>
<p>Zvezda Shipyard, Primorskiy territory</p>	<ul style="list-style-type: none"> <li>• Currently dismantling SSBNs under CTR.</li> <li>• Upon completion of pilot Victor-class submarine dismantlement at Zvezdochka Shipyard, will begin dismantling Victor-class vessels. The contract for a pilot project to dismantle a Victor with Japanese funds was scheduled to be signed on November 14.</li> <li>• Unknown number of decommissioned vessels on site.</li> </ul>
<p>Chazhma Shipyard, Primorskiy territory</p>	<ul style="list-style-type: none"> <li>• The fresh nuclear fuel storage facility for the Pacific Fleet is located at Chazhma, which has therefore received security upgrades under the U.S. DOE MPC&amp;A program.</li> <li>• The author was unable to determine the current status of yard infrastructure; Minatom lists it as a dismantlement facility.</li> <li>• Unknown number of decommissioned vessels on site.</li> </ul>
<p>Vilyuchinskiy Shipyard #49, Kamchatka region</p>	<ul style="list-style-type: none"> <li>• A Ministry of Defense facility. The author was unable to determine the current status of dismantlement infrastructure at the yard, but learned that significant upgrades have occurred during the past 3 years. Some upgrades were funded by Russia, while DTRA also provided funds related to the dismantlement of one SSBN at the site.</li> <li>• Unknown number of decommissioned vessels on site.</li> </ul>
<b>Onshore Technical Bases with SNF, Radioactive Waste, Service Ships and Decommissioned Submarines</b>	
<p>Andreyeva Bay (subordinate to Minatom's SevRAO organization), Kola Peninsula</p>	<ul style="list-style-type: none"> <li>• SNF: about 100 submarine reactor cores, other radioactive waste.</li> <li>• Security measures are being undertaken by Russians, who are also removing SRW from open sites (1,500 metric tons in 2002) and removing as much LRW as possible.</li> <li>• Norway is active in improving physical protection of the site (with US and Swedish participation), as well as improving engineering infrastructure (administrative building, guardroom, access road, etc.)</li> <li>• Sweden is leading activities on SRW management.</li> <li>• The UK is leading SNF activities, beginning with a temporary roof over one SNF storage unit to protect it from rain and snow.</li> <li>• Norway, Sweden and Finland are improving radiation protection of personnel and upgrading radiation monitoring at the site. A radiation map of the site has been completed.</li> <li>• Needs include: general site remediation plan to facilitate coordination and make it possible for additional donors to participate.</li> </ul>
<p>Gremikha (SevRAO), Kola Peninsula</p>	<ul style="list-style-type: none"> <li>• 800 spent fuel assemblies containing 1.4 metric tons of spent nuclear fuel rods from first-generation submarines.</li> <li>• 6 reactor cores from LMC (liquid-metal cooled) Alfa-class submarines.</li> <li>• 2 first-generation submarines with spent fuel onboard.</li> <li>• SRW and LRW stored on site and generated from LMC reactor defueling.</li> <li>• Needs include: significant upgrading of LMC defueling infrastructure; comprehensive site radiation and engineering survey, particularly of the open SRW storage pad where several workers were irradiated last July; remediation of buildings and territory; radiation monitoring system; and general site remediation plan.</li> </ul>
<p>Sysoyeva Bay, (subordinate to Minatom's DalRAO organization), Primorskiy territory</p>	<ul style="list-style-type: none"> <li>• SNF from first-generation submarines; storage in poor condition.</li> <li>• SRW and LRW, storage in poor condition.</li> <li>• The U.S. DOE has completed security upgrades for SNF storage facilities at the site, and made some storage improvements.</li> <li>• Needs include: improved SNF storage; comprehensive site radiation and engineering survey; radiation monitoring system; and general site remediation plan.</li> </ul>
<p>Vilyuchinsk (DalRAO), Kamchatka region</p>	<ul style="list-style-type: none"> <li>• Decommissioned submarines, LRW, SRW storage.</li> <li>• Needs include: comprehensive site radiation and engineering survey; radiation monitoring system; general site remediation plan, and improved security.</li> </ul>

In addition to submarines at above locations, some submarines are still at Russian naval bases. As of 2000, these included Posyet, in Khabarovsk territory (on the Pacific), and Zapadnaya Litsa, Gadzhiiyev, Gremikha, and Vidyayev, in Murmansk region (on the Barents). Some of these facilities also have radioactive waste storage. The Northern Fleet also has several nuclear-powered battle cruisers, based in Severomorsk, that need to be dismantled. Amurskiy Shipyard, in Khabarovsk territory, builds and services nuclear submarines and may need physical protection upgrades.