

Title	Inventory and Source Term Evaluation of Russian Nuclear Power Plants for Marine Applications
Author(s)	Ole Reistad ¹ and Povl L. Ølgaard ²
Affiliation(s)	¹ Norwegian Radiation Protection Authority, Norway, ² Risø National Laboratory, Denmark
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Abstract	<p>This report discusses inventory and source term properties in regard to operation and possible releases due to accidents from Russian marine reactor systems. The first part of the report discusses relevant accidents on the basis of both Russian and western sources. The overview shows that certain vessels were much more accident prone compared to others, in addition, there have been a noteworthy reduction in accidents the last two decades. However, during the last years new types of incidents, such as collisions, has occurred more frequently. The second part of the study considers in detail the most important factors for the source term; reactor operational characteristics and the radionuclide inventory. While Russian icebreakers has been operated on a similar basis as commercial power plants, the submarines has different power cyclograms which results in considerable lower values for fission product inventory. Theoretical values for radionuclide inventory are compared with computed results using the modelling tool HELIOS. Regarding inventory of transuranic elements, the results of the calculations are discussed in detail for selected vessels. Criticality accidents, loss-of-cooling accidents and sinking accidents are considered, bases on actual experiences with these types of accident and on theoretical considerations, and source terms for these accidents are discussed in the last chapter.</p>
Key words	accidents, inventory, source term, Russia, marine reactor, Helios, release fractions