

Title	Russian Nuclear Power Plants for Marine Applications
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ISBN	87-7893-200-9 <i>Electronic report</i>
Date	April 2006
Project/Sub Project	NKS-B / NucVess
No. of pages	92 (including annex)
No. of tables	10
No. of illustrations	12
No. of references	49
Abstract	<p>In order to establish a systematic approach for future proliferation and environmental analyses of Russia's marine nuclear reactor systems, this paper summarizes and analyzes the available open-source information on the design properties of reactor systems and nuclear fuels. The most distinctive features of Russian marine reactor development are pointed out, and similarities and differences between Russian military and civilian reactor systems and fuel are discussed. Relevant updated information on all Russian vessels using nuclear propulsion is presented in Annex I. The basic analytic division in this paper follows vessel generations – first to third generation; and reactor types – PWR and LMC technology. Most of the available information is related to nuclear icebreakers. This information is systematically analyzed in order to identify stages in the development of Russia's civilian naval nuclear reactors. Three different reactor models are discussed: OK-150, OK-900 and KLT-40, together with several versions of these. Concerning military reactors, it is not possible to identify characteristics for the individual reactor models, so the basic division follows vessel generations – first to third generation. From the information available, however, it is possible to identify the main lines along which the design of submarines of especially the first and the second generation has been made. The conclusions contain a discussion of possible implications of the results, in addition to suggestions for further work.</p>
Key words	submarines, icebreakers, Russia, design, marine reactors, naval reactors, OK-150, OK-900, KLT-40