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Workshop on potential release scenarios from flight testing of nuclear-powered flying vehicles

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Abstract

In recent years, there have been claims that a nuclear-reactor-powered cruise missile is under development in Russia. There is a need to consider the radiological implications, if any, for the Nordic countries. The NUPFLIGHT workshop was held in Solna (Stockholm) on June 15, 2022, to discuss and collate the current state of knowledge about nuclear reactors used to power flying vehicles, or knowledge that can be extrapolated into this area. The focus was on the possible consequences of accidents during flight testing, and potential release scenarios. While there has been some work on risks related to maritime nuclear propulsion, it was expected that a nuclear reactor used to power a flying vehicle such as a cruise missile would have distinct features impacting the assessment of potential releases in case of an accident or even during planned operations. Little is known about engineering details relating to such reactors, but it was hoped that considerations of general principles such as power requirements, flight times, temperatures, weight and the properties of conceivable fuel materials and designs could be used to bound the problem and assist in improving the confidence in risk assessments.

This report summarizes the NUPFLIGHT workshop and also reflects post-workshop comments and refinements.

Key words

Nuclear reactors, nuclear-powered missiles, accident scenarios

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