

IAF SPACE PROPULSION SYMPOSIUM (C4)
Joint Session on Advanced and Nuclear Power and Propulsion Systems (10-C3.5)

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SUMMARY OF THE NUCLEAR RISK ASSESSMENT 2019 UPDATE FOR THE MARS 2020 MISSION
ENVIRONMENTAL IMPACT STATEMENT

Abstract

In the summer of 2020, the National Aeronautics and Space Administration (NASA) launched a spacecraft as part of the Mars 2020 mission. The rover on the spacecraft uses a Multi-Mission Radioisotope Thermoelectric Generator (MMRTG) to provide continuous electrical and thermal power for the mission. The MMRTG uses radioactive plutonium dioxide. NASA prepared a Supplemental Environmental Impact Statement (SEIS) for the mission in accordance with the National Environmental Policy Act. The SEIS provides information related to updates to the potential environmental impacts associated with the Mars 2020 mission as outlined in the Final Environmental Impact Statement (FEIS) for the Mars 2020 Mission issued in 2014 and associated Record of Decision (ROD) issued in January 2015. The Nuclear Risk Assessment (NRA) 2019 Update includes new and updated Mars 2020 mission information since the publication of the 2014 FEIS and the updates to the Launch Approval Process with the issuance of National Security Presidential Memorandum 20 (NSPM-20). The NRA 2019 Update addresses the responses of the MMRTG to potential accident and abort conditions during the launch opportunity for the Mars 2020 mission and the associated consequences. This information provides the technical basis for the radiological risks discussed in the SEIS. This paper provides a summary of the methods and results used in the NRA 2019 Update.