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Author: Mr. Andrew Powis
Princeton University, United States, tpowis@gmail.com

INTERNATIONAL AND DOMESTIC LEGAL CONSTRAINTS FOR THE LAUNCH AND OPERATION OF A SPACE BORNE NUCLEAR REACTOR

Abstract

It could be argued that the greatest design constraint on the development of nuclear power technologies for outer space is of a political rather than technical nature. In this paper we explore the current state of international and US domestic policy regarding the development of space borne nuclear reactors, with a particular focus on launch and operations. Specific considerations are given to the Outer Space Treaty of 1966 and principles adopted by the General Assembly, the US Commercial Space Launch Act of 1984 and its amendments (USC Title 51, Chapter V, 50901-50923) and the FAA Commercial Space Transportation Regulations (CFR Title 14, Chapter III, parts 400 to 460). These legal instruments are analysed with respect to how they may influence design choices which minimise total cost for future reactors, with the aim being to facilitate a high level design trade between technical and political factors. In particular, high level trades considered include the choice of low versus highly enriched uranium as a reactor fuel.