

IAF SPACE SYSTEMS SYMPOSIUM (D1)

Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards. (5)

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LESSONS FROM THE HISTORY OF SPACE NUCLEAR DEVELOPMENT PROJECTS

Abstract

Since the beginning of the nuclear and space ages, the United States government has devoted considerable resources to develop technologies that would enable American technological and military superiority over the Soviets in space. The United States began developing nuclear systems for space applications in the years following the World War II. Efforts ranged from the successfully-deployed radioisotope power systems (RPS) enabling missions currently in the outer solar system to fission power systems with yet unrealized potential to unlock new levels of power in space to several failed development efforts of fission systems for space power and propulsion. As the United States government initiates new efforts to develop space nuclear power and propulsion (SNPP) systems for space, it can and should learn from these past efforts.

This paper introduces previous SNPP development efforts, with the goal of understanding how those experiences can benefit future development efforts. The first objective is a simple understanding of what we have attempted before, including what has been accomplished and can be built upon. This paper further attempts to describe why these projects failed in an effort to create a more sustainable space technology development environment.