

IAF SPACE PROPULSION SYMPOSIUM (C4)  
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Author: Dr. Daniel Clayton  
United States

A METHODOLOGY AND DEMONSTRATION FOR PRELIMINARY TIER DETERMINATION  
ANALYSES

**Abstract**

National Security Presidential Memorandum-20 (NSPM-20) defines three tier levels for launch approval of space nuclear systems. The two main factors determining the tier level are the total quantity of radioactive sources and the probability of any member of the public receiving doses above certain thresholds. The total quantity of radioactive sources is compared with IAEA transportation regulations. The dose probability is determined by the product of three terms: 1) the probability of a launch accident occurring; 2) the probability of a release of radioactive material given an accident; and 3) the probability of exceeding the dose threshold to any member of the public given a release. This paper provides a methodology for evaluating these values and applies this methodology to an example mission as a demonstration.