



Feasibility Study of Jupiter Icy Moons Orbiter Permanent Magnet Alternator Start Sequence

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 28 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The Jupiter Icy Moons Orbiter (JIMO) mission was a proposed, (recently cancelled) long duration science mission to study three moons of Jupiter: Callisto, Ganymede, and Europa. One design of the JIMO spacecraft used a nuclear heat source in conjunction with a Brayton rotating machine to generate electrical power for the electric thrusters and the spacecraft bus. The basic operation of the closed cycle Brayton system was as follows. The working fluid, a helium-xenon gas mixture, first entered a compressor, then went through a recuperator and hot-side heat exchanger, then expanded across a turbine that drove an alternator, then entered the cold-side of the recuperator and heat exchanger and finally returned to the compressor. The spacecraft was to be launched with the Brayton system off-line and the nuclear reactor shut down. Once the system was started, the helium-xenon gas would be circulated into the heat exchangers as the nuclear reactors were activated. Initially, the alternator unit would operate as a motor so as to drive the turbine and compressor to get the cycle started. This report investigated the feasibility of the start...



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