



## Design and Test Plans for a Non-Nuclear Fission Power System Technology Demonstration Unit

By Lee Mason

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 22 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. A joint National Aeronautics and Space Administration (NASA) and Department of Energy (DOE) team is developing concepts and technologies for affordable nuclear Fission Power Systems (FPSs) to support future exploration missions. A key deliverable is the Technology Demonstration Unit (TDU). The TDU will assemble the major elements of a notional FPS with a non-nuclear reactor simulator (Rx Sim) and demonstrate system-level performance in thermal vacuum. The Rx Sim includes an electrical resistance heat source and a liquid metal heat transport loop that simulates the reactor thermal interface and expected dynamic response. A power conversion unit (PCU) generates electric power utilizing the liquid metal heat source and rejects waste heat to a heat rejection system (HRS). The HRS includes a pumped water heat removal loop coupled to radiator panels suspended in the thermal-vacuum facility. The basic test plan is to subject the system to realistic operating conditions and gather data to evaluate performance sensitivity, control stability, and response characteristics. Upon completion of the testing, the technology is expected to satisfy the requirements for Technology Readiness Level 6 (System Demonstration in an Operational...



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