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**Systems Engineering Application to U.S. High Performance Research
Reactor Conversion Program**

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ABSTRACT

The U.S. National Nuclear Security Administration Office of Reactor Conversion through the U.S. High Performance Research Reactor (USHPRR) Project is developing and qualifying a new Low Enriched Uranium (LEU) fuel to convert USHPRRs from the use of high enriched uranium fuel to LEU fuel. The Project has used the systems engineering approach to develop its strategy and plans for fuel development and qualification, development and demonstration of fabrication processes, and support of conversion. The application of the systems engineering approach began with the development of top level functions and requirements, then the management of the requirements down through the qualification and demonstration activities, the management of interfaces, and the application of risk management. This paper will detail the development of the functions and requirements, its key attributes and its utility to guide the fuel development and qualification process. It will highlight the effectiveness of a systems engineering approach in the conversion project.