

**RERTR 2018 – 39<sup>TH</sup> International Meeting on  
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**Continuing LEU Conversion Activities  
at the High Flux Isotope Reactor**

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**ABSTRACT**

ORNL has collaborated with the US reactor conversion program since 2005 to convert HFIR to LEU fuel. During 2018, an optimization study was performed on both UMo monolithic and U<sub>3</sub>Si<sub>2</sub>-Al dispersion LEU fuel designs using state-of-the-art neutronics codes and models and a legacy thermal-hydraulics code tailored for LEU fuel safety analysis to evaluate key performance metrics and thermal safety margins pre- and post-conversion to ensure that HFIR's world-class performance will be preserved for neutron scattering, isotope production, and materials irradiation. HFIR operating conditions were calculated and provided for fuel qualification testing. Fuel design options were provided for feedback on manufacturing yield/cost and U utilization. ORNL continued to coordinate with the reactor conversion program to develop a plan and schedule to ensure that a converted HFIR is safe, reliable, cost-effective, and meets regulatory requirements. Plans for 2019 and beyond will be discussed and key issues will be highlighted.