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**Updates on the MIT Research Reactor (MITR) Conversion from Highly  
Enriched Uranium to Low Enriched Uranium**

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**ABSTRACT**

The Massachusetts Institute of Technology Reactor (MITR) is a 6 MW research reactor operating with highly-enriched uranium (HEU) finned plate-type fuel. It is designed as a multi-purpose research reactor using neutron beam ports and in-core irradiation facilities. It delivers a neutron flux comparable to light water reactors in the compact core, and has demonstrated track record in performing advanced materials, fuel, and instrumentation irradiation tests in light water reactors or high temperature reactors conditions. The conversion objective is to design a low-enriched uranium (LEU) fuel element that could safely replace the current 15-plate HEU fuel element and maintain performance while requiring minimal changes to the reactor structures and systems. Selected monolithic U-10Mo LEU fuel design is a 19-plate unfinned fuel element with increased cladding thickness and thinner fuel meat thickness on the outer plates and it has been shown to deliver 7 MW safely to maintain the neutron flux performance of the 6 MW HEU core. This paper provides an overview of the preliminary safety analysis report (PSAR) including steady-state and accident analyses. The PSAR is scheduled to be submitted to the U.S. NRC in 2017.