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Progress of Mini-plate Irradiation Testing for U-Mo Monolithic Fuel Qualification

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ABSTRACT

Historically, mini-plates have been used extensively for the development of U-Mo monolithic fuel to maximize the number of irradiation testing conditions achievable in a given test reactor volume. Two mini-plate irradiation campaigns will be used to qualify U-10Mo as a base fuel for U.S. High Performance Research Reactor (USHPRR) conversion. Mini-plate test 1 and 2 (MP-1 and MP-2) are irradiation campaigns in the Advance Test Reactor (ATR) at Idaho National Laboratory (INL). The purpose of the two campaigns is to first verify irradiation performance of fuel plates fabricated using a commercial-scale fabrication process and then to determine fuel performance across the envelope of irradiation conditions [1]. MP-1, which has already begun irradiation, will demonstrate fuel performance at low, medium and high powers for a thick and thin fuel meat geometry. MP-2 is being designed with prototypic fuel meat thicknesses at powers and burnups up-to limiting conditions for individual reactors.