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**U.S. Contributions to Manufacturing of the EMPIrE UMo Irradiation
Experiment**

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ABSTRACT

The European Mini Plate Irradiation Experiment (EMPIrE) is a US irradiation experiment that is aimed at supporting the HERACLES European conversion program. The experiment consists of 48 miniplates to be irradiated at the ATR, where groups of plates have different fabrication and operating parameters. The variations in parameters were intended to provide answers to specific questions posed by the HERACLES comprehension phase and to evaluate the fuel performance in relation to those parameters as part of the UMo fuel qualification for use in high power research reactors.

While the majority of EMPIrE plates were fabricated by AREVA-NP (U-7Mo dispersion and C2TWP monolithic plates), the US team has contributed to the plate fabrication and evaluation efforts. Those contributions include UMo powder coating (using atomic layer deposition – ALD), fabrication of U-10Mo plates, and comprehensive plate inspection and qualification efforts prior to plate acceptance for irradiation at the ATR. Those efforts are summarized here.