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**Comparison of Moritz, Fabrega, Saha-Zuber, and
Whittle-Forgan Criteria for OFI with 75 Experiments**

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ABSTRACT

The onset of flow instability (OFI) in a research reactor causes burnout of the fuel. Therefore, a safe margin to the OFI must be maintained in reactor design and operation. Five criteria for the onset of flow instability, i.e., the Moritz (1987 and 2011), the Whittle-Forgan, the Saha-Zuber, and the French Fabrega OFI criteria, are compared with measured data for 75 experiments published by Whittle and Forgan. The ratios of measured-to-calculated OFI heat flux for all 75 experiments, for these five correlations, are plotted and compared. The measured/calculated OFI heat flux ratios for all five correlations are mostly scattered between 1.0 and 1.2, and this shows that all five correlations are suitable for safety analysis. Both Moritz correlations perform better than the other three in the sense that the measured/calculated ratios for the Moritz correlations are greater than one (are conservative) for all 75 experiments.