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Transient Hydrodynamic Experiments in a Two-Dimensional Axisymmetric Geometry AYA DIAB, MICHAEL CORRADINI, UW-Madison, UW-MADISON TEAM — Two dimensional experiments have been undertaken to study the phenomenon of liquid entrainment associated with interfacial hydrodynamic instabilities, specifically the Rayleigh Taylor instability. The current work is part of an effort to understand the phenomenon of Rayleigh Taylor instability associated with a rapid superheated steam bubble expansion that may occur in a CANDU reactor. The experiments aim at quantifying the liquid entrainment in a two dimensional axisymmetric geometry for a range of operating pressures. This experimental work is similar to that undertaken three decades ago at MIT, but the geometry has been modified to decrease the blowdown chute volume in order to reduce the experimental uncertainties. The goal of this work is to characterize the entrainment phenomenon by two parameters that can be used to verify a semi-empirical model that is being developed in a parallel modeling effort. Specifically, the first parameter quantifies the width of the mixing zone and the second parameter quantifies the volumetric ratio between the entrained liquid and the mixing zone.

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