

INTERIM REPORT

Accession No. _____

Contract Program or Project Title: Thermal Hydraulic LMFBR Safety Experiments

Subject of this Document: Monthly Highlight Letter for November 1978

Type of Document: Monthly Highlight Letter

Author(s): Owen C. Jones, Jr.
Department of Nuclear Energy
Brookhaven National Laboratory
Upton, New York 11973

Date of Document: November 1978

Responsible NRC Individual and NRC Office or Division: Mr. Melvin Silberberg
Division of Reactor Safety Research
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

This document was prepared primarily for preliminary or internal use. It has not received full review and approval. Since there may be substantive changes, this document should not be considered final.

Brookhaven National Laboratory
Upton, NY 11973
Associated Universities, Inc.
for the
U.S. Department of Energy

Prepared for
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555
Under Interagency Agreement EY-76-C-02-0016
NRC FIN No. A-3024

INTERIM REPORT

7812270442

Monthly Highlights

for

November 1978^{*}

Thermal Hydraulic LMFBR Safety Experiments

Budget Activity 60-19-20-01

Owen C. Jones, Jr., Head
Thermal Hydraulic Development Division
Department of Nuclear Energy
Brookhaven National Laboratory
Upton, New York 11973

NRC Research and Technical
Assistance Report

* Work carried out under the auspices of the United States Nuclear
Regulatory Commission.

Thermal Hydraulic LMFBR Safety Experiments

1.1 SIMMER (T. Ginsberg)

Execution of the sample problem was initiated with the SIMMER II computer code.

1.2 Hydrodynamic Dispersion (T. Ginsberg and J. J. Barry)

Work continued in assembly of the test apparatus. Pressure and gas purge lines are being installed. Upon completion of this task, we will be able to begin our pressure drop measurements.

We have received Thulium Oxide for our x-ray sources from the Rare Earth Research Center at Iowa State University. This material was ordered with 0.1 ppm of Scandium impurity. Scandium has been identified as the source of the 1.12 Mev energy radiation which has been causing us difficulty in the source development efforts. The source material is now being encapsulated in preparation for irradiation in the High Flux Beam Reactor. (This work is being carried out by N. Abuaf and W. Leonhardt in conjunction with our Light Water Reactor Program).

1.3 Dispersion in Boiling Pools (T. Ginsberg, C. E. Schwarz, and J. Chen, Lehigh University)

Microwave oven tests continued in our evaluations of the degree of coupling of the microwave field to liquid droplets. A report describing this work is in preparation.

1.4 Heat Transfer in Boiling Pools (G. A. Greene and C. E. Schwarz)

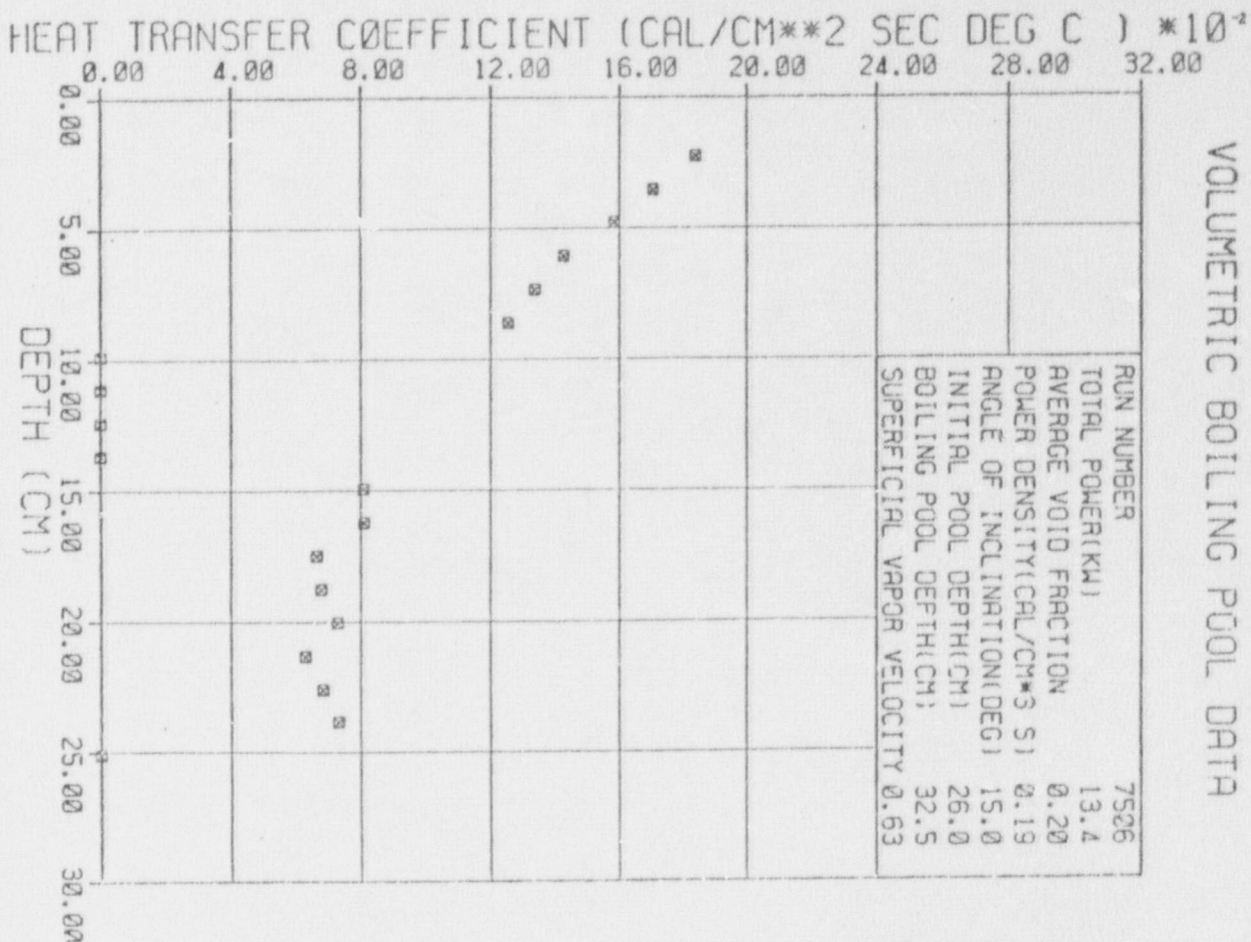
Experiments have begun investigating boundary heat transfer from volume-heated boiling pools. Initial tests have been for 90° and 75° wall

angles. A total of 28 runs have been performed to date. Data is repeatable, and local heat transfer coefficient data behaves similar to predicted laminar boundary layer behavior. Sample data at similar conditions for both 90° and 75° wall angles are indicated in Figure 1.

Two Phase Solidification (G. A. Greene)

Preparation of a final report continued.

VOLUMETRIC BOILING POOL DATA



VOLUMETRIC BOILING POOL DATA

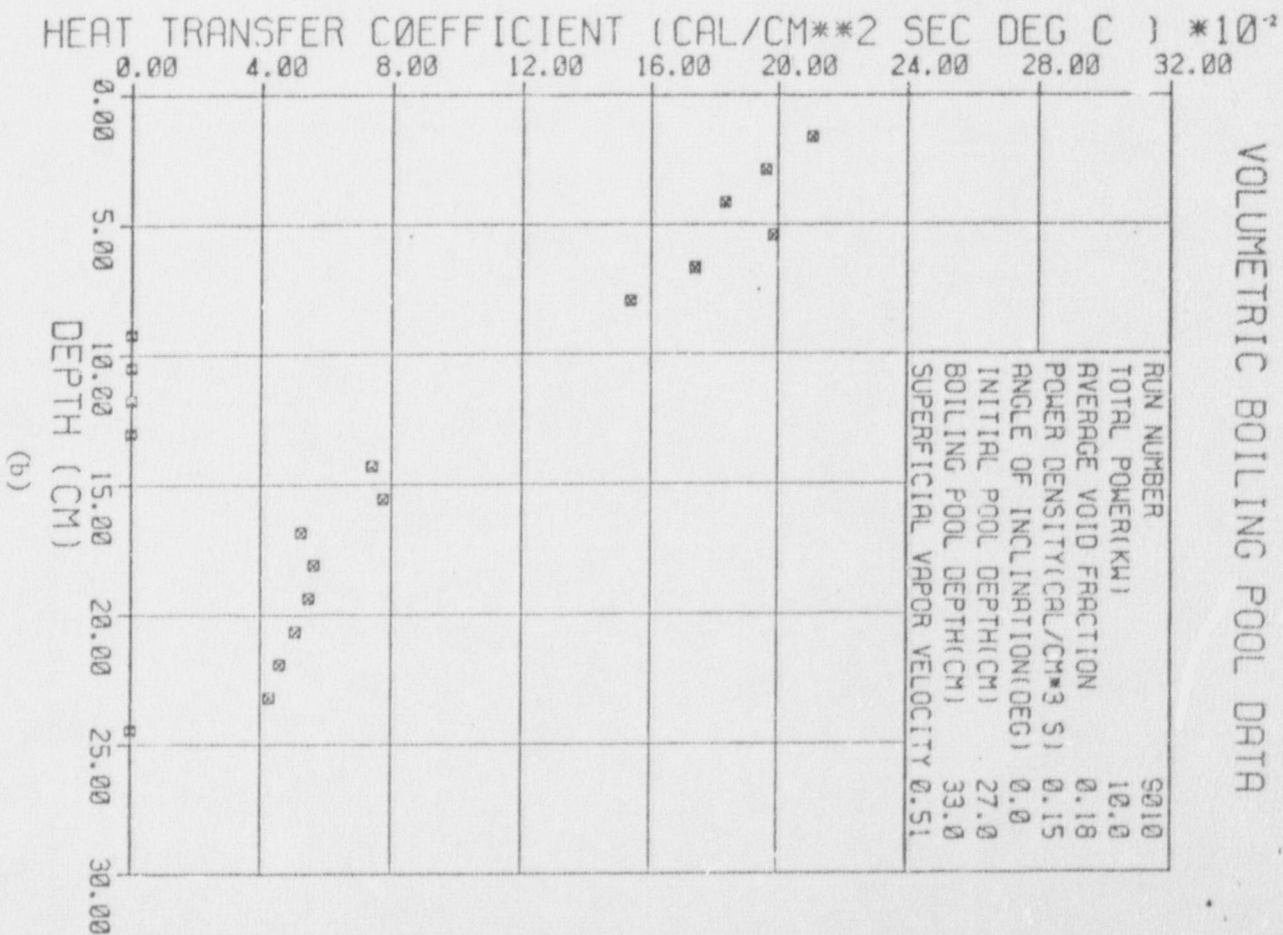


Figure 1. Local Heat Transfer Coefficient to Vertical and Inclined Boundary from Volume-Boiling Pools
 (a) Inclined 75° from Horizontal, (b) Vertical

Distribution Thermal Hydraulic LMFBR Development Program

BNL RSP Division Heads
BNL RSP Group Leaders
BNL RSE Personnel

P. Abramson, ANL
D. Basdekas, NRC
J. Boudreau, University of California
I. Catton, University of California
J. C. Chen, Lehigh University
R. T. Curtis, NRC
R. P. Denise, NRC
D. T. Eggen, Northwestern University
H. H. Hummel, ANL (2)
W. Y. Kato, BNL
M. S. Kazimi, MIT
H. J. Kouts, BNL
A. Reynolds, University of Virginia
M. Silberberg, NRC
R. G. Smith, NRC (3)
M. Stevenson, LASL
T. G. Theofanus, Purdue University
J. V. Walker, Sandia Laboratory (2)
R. W. Wright, NRC

Public Documents Room NRC (2)