INTERIM REPORT

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Prepared for
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

INTERIM REPORT

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NUCLEAR ENERGY

ENGINEERING

DIVISION
Mail Code 583

October 13, 1980

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SUBJECT: BWR Refill-Reflood Program
Contract No. NRC-04-79-184
Informal Monthly Progress Report for September 1980

Gentlemen:

The following summarizes the subject matter covered in the attached report:

The BWR/4&5 Core Spray Final Report draft has been reviewed internally and will be submitted to the PMG for review in October. Spray heat transfer testing is in progress. Comparison of the last set of heated and adiabatic bundle test results was completed. All comparisons meet the criteria set for similar performance. Modification work on the 30° Sector Facility continued, including completion of the blowdown sparger and assembly of the instrumented bundles. A draft report documenting the basic model and correlation work was completed. An updated version of TRAC has been assembled; this update will be used for the initial developmental assessment.

Distribution of this report is being made in accordance with the "Monthly Distribution List" provided with W.D. Beckner's letter of September 6, 1979.

Very truly yours,

G.W. Burnette

G.W. Burnette, Manager
External Programs (408) 925-5375

cc: R.G. Bock M.C. 110

/fs: attachment

BWR REFILL REFLOOD PROGRAM

FOURTEENTH MONTHLY PROGRESS REPORT

SEPTEMBER 1980

Prepared for:

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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
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EPRI Project No. RP-1377-1

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General Electric Company

Under:

Contract No. NRC-04-79-184

BWR Refill-Reflood Program

FOURTEENTH MONTHLY PROGRESS REPORT

September 1980

Summary

The BWR/4&5 Core Spray Final Report draft has been reviewed internally and will be submitted to the PMG for review in October. Spray heat transfer testing is in progress. Comparison of the last set of heated and adiabatic bundle test results was completed. All comparisons meet the criteria set for similar performance. Modification work on the 30° Sector Facility continued, including completion of the blowdown sparger and assembly of the instrumented bundles. A draft report documenting the basic model and correlation work was completed. An updated version of TRAC has been assembled; this update will be used for the initial developmental assessment.

Significant Decisions/Upcoming Events

The next PMG meeting has been tentatively scheduled for November 5th and 6th, 1980. Concurrence is needed on the technique used for simulating fuel bundles in the 30° Sector using steam injection.

Core Spray Distribution (Task 4.2)

The draft of the final test report for the BWR/4&5-218 30° Sector core spray task has been reviewed internally and will be submitted to the PMG for review in October.

Single Heated Bundle (Task 4.3)

The Stage 3 Separate Effects Bundle testing is proceeding on schedule. The first set of Bypass Heat Transfer Tests was completed. Both adiabatic and heated tests were run with LPCI flows ranging from 8 to 24 gpm (representing one to three LPCI pumps). Additional Refill/Reflood tests were also completed during the month. Evaluation of these data has been started.

Evaluation of the last set of heated and adiabatic bundle comparisons (simulating the peak power, low ECC flow TLTA test) has been completed. The comparisons for all sets of tests meet the criteria set for similar performance. These results were summarized in preparation for the next PMG meeting and reviewed with representatives from EPRI and EG&G.

CCFL/Refill System Effects [30° Sector] (Task 4.4)

Modification of the 30° Sector facility continued through September. Fabrication of the blowdown sparger is complete and blowdown tank construction is nearing completion. Fabrication of the blowdown flash tank and support structure was initiated. The six instrumented fuel bundles were assembled and installed in the core. Mounting fixtures have been added to the upper plenum for attachment of the excess volume bellows. All lower plenum

differential pressure measurement lines have been installed and bench calibration of pressure transducers is about 60% complete.

Facility evaluation calculations in support of test operation planning continued in September and data reduction software development was initiated. Detailed planning for year-end 1980 shakedown/startup activities at the SSTF was initiated with primary emphasis placed on the development of the shakedown strategy and activity flow diagram to coordinate shakedown with the remaining construction activities.

Basic Models and Correlations (Task 4.7.1)

The basic models and correlations for the interfacial shear and heat transfer have been documented and a draft report is now under review at GE.

Single Channel Code (Task 4.7.2)

No effort this month.

TRAC BWR Support (Task 4.7.3)

A new update of the TRAC-BWR code has been created at GE and is being tested. This update includes all GE models and corrections to date and is based on GE&G's version 3 program. This update will be used for the bulk of the developmental assessment. Some models being incorporated at EG&G (generalized pipe-vessel heat transfer and multiple sources to a vessel cell) will be added later.

A test case library is being created for developmental assessment/preliminary assessment. This library includes some basic test cases for checking individual models, component performance and overall system performance. Discussions continued regarding the classification of available data, particularly system performance data, as to their use for either developmental assessment, preliminary assessment or final (independent) qualification (see Task 4.8 below).

Model Qualification (Task 4.8)

A meeting was held at INEL near the end of August to discuss data utilization and classification with EG&G. Some recommendations have been made, but complete agreement has not yet been achieved.

TLTA and Single Heated Bundle data have been cataloged for application to model qualification. A draft report recommending the role of FIX-1 data in the TRAC qualification effort has been received from Creare. This report is now being reviewed.

A TRAC deck, developed previously for the Single Heated Bundle was exercised using a preliminary version of TRAC and found to produce reasonable results.

This deck will be used later for qualification of the updated TRAC version (see Task 4.7.3).

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