UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Docket No. 50-219

LICENSEE: JERSEY CENTRAL POWER & LIGHT COMPANY

FACILITY: OYSTER CREEK NUCLEAR GENERATING STATION

SUMMARY OF MEETING HELD ON OCTOBER 15, 1975 TO DISCUSS EXXON NUCLEAR COMPANY'S ECCS EVALUATION MODEL FOR NON-JET PUMP BOILING WATER REACTORS

On October 15, 1975, a meeting was held in Bethesda, Maryland with representatives of General Public Utilities Service Corporation, (GPUSC) and Exxon Nuclear Company (ENC). The purpose of the meeting, which was requested by GPUSC, was to discuss ENC's proposed integrated emergency core cooling system evaluation model for boiling water reactor non-jet pump plants. A list of attendees is enclosed.

BACKGROUND

The evaluation model used by Jersey Central Power and Light Company (JCP&L) to evaluate emergency core cooling system (ECCS) performance for the Oyster Creek Nuclear Generating Station is a composite of (1) the General Electric (GE) ECCS evaluation model for GE fuel, and (2) a combination of the GE ECCS model and the ENC non-jet pump plant-BWR-fuel heatup model for the Exxon fuel. The current JCP&L evaluation model, although conservative, does not include an approved analytical technique for calculating extended nucleate boiling for postulated small breaks; hence, the large break model with characteristic short duration post-break heat transfer is used for all break sizes. The calculations using the current model are conservative; however, this conservatism results in a power penalty of about 15%. The proposed ENC integrated evaluation model for BWR non-jet pump plants includes consideration of flow coastdown and extended nucleate boiling after a small break. GPUSC stated that the model will be applicable to the Oyster Creek plant.

In addition to the power penalty resulting from use of a conservative ECCS evaluation model, the current minimum critical power ratio (MCPR) also limits reactor power to about 85% of rated power. To relieve both limiting conditions, JCP&L plans to (1) submit new ECCS calculations based on the ENC integrated model, when approved by the NRC, and (2) propose new MCPR limits referencing a topical report on the XN-2 critical power correlation to be submitted by ENC.

The purpose of this meeting was to discuss proposed ECCS evaluation model.

SUMMARY

The ENC non-jet pump BWR ECCS evaluation model is based on the ENC implementation of the RELAP 4 computer program and the ENC heatup model. It was stated that ENC has minimized the number of items that have been changed in their fuel heatup model. G. Sofer, ENC, stated that the RELAP 4 calculations give fluid velocities that can be used to calculate heat transfer based on data available in the open literature. L. Steves summarized a comparison of selected features in the RELAP 4 analytical model for PWR's and non-jet pump BWR's as follows:

Feature	PWR	Non-jet Pump BWR
Core Crossflow	Considered	N/A
Lower plenum	3 Homogeneous Volumes	1 volume, phase separation
Downcomer	Homogeneous	Phase separation
Steam Separators	N/A	Phase separation volume

Other topics were discussed including sensitivity of nodalization.

GPUSC also stated that they would justify use of a 1.0 multiplier instead of a 0.9 multiplier on the spray cooling heat transfer coefficients currently used for the 8x8 fuel assemblies. GPUSC stated that the justification would be based on Exxon's spray cooling test results.

JCP&L has proposed modifications to the Oyster Creek ECCS based on a single failure analysis. An evaluation of ECCS performance for the modified system will be required using the current JCP&L ECCS evaluation model. We stated that it is our position that the 0.9 multiplier should be applied to the core spray heat transfer coefficients for the 8x8 fuel assemblies in this forthcoming evaluation. GPUSC stated, subsequent to the meeting, that they will use the 0.9 multiplier for this evaluation.

In conclusion, GPUSC representatives stated that they need revisions to both the ECCS and MCPR limits in order to gain significant power level. GPUSC further stated that they will shut down in the near future to retube their condensers and that they would like to have the MCPR and ECCS related limits revised by mid-January 1976.

We stated that we plan to do a mini-review of the proposed Exxon integrated model. Based on the mini review, we would identify any major staff concerns regarding the model and provide an estimate of the time needed to complete a full review of the proposed model.

Walter A. Paulson

Walter A. Paulson
Operating Reactors Branch #3
Division of Reactor Licensing

ENCLOSURE

ATTENDANCE LIST

MEETING ON OCTOBER 15, 1975

EXXON NUCLEAR

G. Sofer
G. Owsley
W. Nechodon
T. Krysinski
L. H. Steves
T. A. Bjornard

GENERAL PUBLIC UTILITIES SERVICE CORPORATION

R. B. Lee
K. A. Greene
T. M. Crimmins, Jr.
N. G. Trikouros
G. R. Bond

PICKARD LOWE & ASSOCIATES

T. Robbins

NRC - STAFF

W. Paulson
R. Woods
H. Vander Molen
N. Lauben
F. Orr
P. Norian