



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

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50-155
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December 14, 1978

Docket No. 50-155

Mr. David Bixel
Nuclear Licensing Administrator
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Dear Mr. Bixel:

We are reviewing Topical Report, "Big Rock Point LOCA Analysis Using the Exxon Nuclear Company Non-Jet Pump BWR Evaluation Model - Large Break Example Problem", XN-NF-78-25, Revision 1, dated September 1978 and transmitted by your letter dated September 29, 1978. Based on our preliminary review of the topical report which includes some Evaluation Model changes to reduce computational time, we find that additional information is required to assist our understanding of the application and the charges. Please provide the requested information described in the enclosure to this letter so that we may continue our review.

If you have additional questions concerning our review please contact S. Nowicki of my staff.

Sincerely,

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosure:
Request for Additional
Information on Topical
Report XN-NF-78-25

cc:
See next page

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cc
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Request for Additional Information
on Topical Report XN-NF-78-25

1. Page 5

Provide additional description on the operation and modeling of the emergency condenser. Discuss condenser cooling water, riser, and downcomer flow response as well as the heat transfer modeling used for LOCA transients.

2. Page 9, Figure 2.3

Provide justification for the following modeling features:

- a) Two volumes in the lower plenum.
- b) Two parallel volumes for the steam drum risers.
- c) The use of a bubble rise model in the recirculation loop downcomer.

3. Page 15, Table 2.5

Describe the method by which a reactor water level is determined during blowdown for use in actuating core spray valve opening when water level has been lowered to the 8.77 foot level given on this table.

4. Page 16, 2nd Sentence

Describe the modeling of the steam drum water level used for actuating the diesel driven spray pump.

5. Page 28, Figure 3.10

Discuss the emergency condenser response shown on this figure in the initial stage of blowdown, as well as the water loss and recovery shown for the terminal stage of blowdown.

6. Page 33, Items 1, 2, and 3

Provide further discussion on the change made to the way choked flow is implicitly related to a pressure change in a given time step.

Discuss the change in treatment of choked flow at junctions with the new procedure relative to the original process.

Discuss the procedure used for making flow estimates over a given time step. Describe the causes of estimates that are "drastically different" than the existing flow.

Provide a calculated comparison between the original and the changed method for a representative junction under choked flow conditions.

7. Page 34, Item 4

Discuss the manner by which energy balances are considered when setting a volume at saturation conditions as volume pressure enters the ± 10 psi deadband about the saturation valve. Provide a calculated comparison between ENC26A and ENC28B for a representative volume undergoing a given pressure transient approach to saturation.

8. Page 34, Item 6

Describe the method of interpolation employed between heat transfer

correlations to minimize discontinuities between correlations. Provide a comparison calculation between ENC models for a given slab transient.

9. Page 35, Item 9

Identify the criterion used for selecting the trip level at which switch-over from phase separation to homogeneous coolant modeling is used in a control volume as the liquid level approaches the bottom of the volume. Describe the influence on flows in connecting piping above the switch-over level, and describe any comparisons to experimental data for fluid behavior in a volume as liquid levels approach the bottom.

10. Page 35, Last Sentence

Describe the comparison tests performed between the two Exxon ECCS model versions, and provide a PCT transient comparison between the previous Big Rock fuel reload analysis using HUXY and GE blowdown calculations and the present calculations using the ENC 28B model with comparable linear power densities.

11. Figure 4.1

Describe the blowdown and hot channel configuration models used for the comparison shown on this figure.

12. General

Provide experimental verification of Exxon's Non-Jet Pump BWR Evaluation Model through modeling of the Two-Loop Test Apparatus (TLTA). Tests conducted recently to provide experimental data on blowdown dynamics without ECCS (Test 6007), and with ECCS (Text 6406), or comparable tests, should be used for such verification.