

DEC 17 1982

Dr. T. W. Schnatz
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Dear Dr. Schnatz:

Subject: Request Number 3 for Additional Information on EPRI NP-1850-CCM

We are currently reviewing the Utility Group for Reactor Applications' (UGRA) licensing topical report EPRI-NR-1850-CCM entitled "RETRAN 02-A Program for Transient Thermal-Hydraulic Analysis of Complex Fluid Flow Systems."

As a continuing effort, our consultants at Argonne National Laboratory have identified the need for the additional information indicated in the enclosure. These questions are the result of the review of revisions to the RETRAN-02 code and manual that document the differences between RETRAN-02/MOD001 and RETRAN-02/MOD002 that were reported in the letter from UGRA to J. R. Miller (NRC), June 21, 1982. This is the third request for additional information. As agreed in our January 13, 1982 meeting, we will continue to forward requests for additional information as they are developed.

This information is necessary to complete the review - its expeditious submittal will, therefore, be to the advantage of UGRA.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Cecil O. Thomas, Chief
Standardization & Special
Projects Branch
Division of Licensing

Enclosures:
As stated

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*SEE PREVIOUS PAGE FOR CONCURRENCES

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DATE	12/15/82	12/15/82	12/16/82				

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RETRAN02/MODO2 REVIEW

RETRAN02/MODO2 ROUND 1 QUESTIONS

Chapter VI

- (1) Are the quantities C_u and C_o used in the separator model defined to be flowing qualities or static qualities?
- (2) In the discussion on the bottom of Page VI-43, eq. (VI.3-4) is related to the "vapor" region while eq. (VI.3-3) is related to the "liquid" region. Should not the roles be reversed?
- (3)
 - a) Why do the internal energy equations (VI.3-7) and (VI.3-8) include the transport of kinetic and potential energy whereas the corresponding pressurizer equations (VI.6-3) and (VI.6-4) do not?
 - b) Why do these equations, (VI.3-7) and (VI.3-8) not include kinetic and potential energy temporal derivative terms on the left hand side?
 - c) Why are there no terms for the energy of the rotating metal?
 - d) Why is there no slip term for the kinetic energy in eq. (VI.3-7)?
- (4) Equations (VI.3-12a) and (VI.3-12b) should be corrected.
- (5) Define the range of validity of using the steady state approximation for the mass and energy transfer terms, \dot{m}_{LV} and \dot{E}_{LV} .
- (6) Discuss how the separator model mass and energy balance equations interface with the macroscopic volume balance equations derived in Chapter 2 (in particular when the algebraic and dynamic slip options are chosen) and also the bubble rise model of Chapter 3.
- (7) Even with the introduction of the nonequilibrium balance equations, equations (VI.3-5) - (VI.3-8), for the separator are not the

carryover and carryunder still determined by the steady state conditions, Figures (VI.3-2) - (VI.3-3) and therefore is it still not correct that only second order mass and energy effects on the separator performance are modelled?

- (8) Amplify on the separator models used for all reverse flow conditions.
- (9) List the "several other options" referred to on the bottom of Page VI-43.f.

Chapter IX

- (1)
 - a) In initializing the separator how and where is the steady state continuity equation used?
 - b) Discuss how the terms on the right hand side of eq. (IX.3-17a) are obtained.
- (2) Are equations (IX.3-17c) and (IX.3-17d) in error?
- (3)
 - a) How is Z_m , used in eq. (IX.3-17e), determined?
 - b) Define V used in eq. (IX.3-17e).