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DATE OF MEETING

12/16/1999

The attached document(s), which was/were handed out in this meeting, is/are to be placed in the public domain as soon as possible. The minutes of the meeting will be issued in the near future. Following are administrative details regarding this meeting:

Docket Number(s)	<u>PROJECT NO. 669</u>
Plant/Facility Name	<u>ELECTRIC POWER RESEARCH INSTITUTE (EPRI)</u>
TAC Number(s) (if available)	<u>MA4306,MA4307,MA4308,MA4309,MA4310,MA4311</u>
Reference Meeting Notice	<u>12/2/99</u>
Purpose of Meeting (copy from meeting notice)	<u>TO DISCUSS STATUS OF REVIEW OF RETRAN-3D, A PROGRAM FOR TRANSIENT THERMAL- HYDRAULIC ANALYSIS OF FLUID FLOW SYSTEMS</u>

NAME OF PERSON WHO ISSUED MEETING NOTICE

L.N. OLSHAN

TITLE

PROJECT MANAGER

OFFICE

NRR

DIVISION

DLPM

BRANCH

PD II-1

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NRC-/ EPRI Meeting On RETRAN-3D Review Status

December 16, 1999

Agenda

- Status of NRC review of responses to RAIs #1 and #2
- Overall NRC review status and plans for SER
- Status relative to EPRI SER objectives per 4/29/99 E-mail (attached)
 - Generic approval for use of RETRAN-3D in the “RETRAN-02 mode” for organizations with approved RETRAN-02 methods
 - Lifting restrictions in the RETRAN-02 SER (Vol. 4, III, 4.4)
 - Approval of new RETRAN-3D models and capabilities
 - General approval/restrictions on RETRAN-3D applications
- What can EPRI do to move the review forward?
 - EPRI requests an opportunity to address specific issues now
- Next actions / meetings

Timeline

- **September 1998 RETRAN-3D submitted for review**
- **December 1998 meeting with ACRS T/H Subcommittee on code**
- **December 1998 code accepted for review**
- **RAIs and draft responses exchanged informally**
- **Official RAI release April 27, 1999**
- **Official RAI response May 21, 1999**
- **Telecon with EPRI, et al, April 19, 1999 (RETRAN-02 limitations addressed by RETRAN-3D)**
- **April 1999 EPRI provided:**
 - ▶ **RETRAN Bibliography - June 10, 1999**
 - ▶ **Paper by Agee at RELAP5 Seminar - June 1989**
 - ▶ **Reactor Analysis Support Document, Vol 2 - 1986**
 - ▶ **Reactor Analysis Support Document, Vol 3 - 1986**
 - ▶ **Qualification of RETRAN for Simulator Applications - 1988**
- **May 26, 1999 ACRS T/H Subcommittee Mtg:**
 - ▶ **5-equation flow field model not adequate, new model coming**
 - ▶ **June 1998 9th International RETRAN Conf discussed model problems**

- **June 29, 1999 meeting with EPRI, et al**
 - ▶ **New development areas (new cross-section model, etc.)**
 - ▶ **5-equation model**
- **July 14, 1999 Graham Wallis presentation to ACRS on quality of RETRAN momentum equation, Staff presentation on status of review**
- **August 16-20, 1999 RETRAN-3D training in Idaho Falls**
- **August 19, 1999 CD-ROM RETRAN-3D, MOD003**
- **Week of August 16, 1999 telecom with EPRI, et al, discussing responses to Graham Wallis's concerns**
- **July-August 1999 Staff essentially assessed 3-D kinetics; instructed EPRI on what to do and provided data and cross-sections**

Code Version

- **Code version submitted for review differs from that being distributed**
 - ▶ **Different 3-D kinetics**
 - ▶ **Different flow field equations**
- **What is to be reviewed?**
- **SE will apply only to version reviewed**

Momentum Equation

- RAI answers are still under review
- The Porsching attachment has errors in the equations and inconsistently applies the mean value theorem, and does not state how S_0 is chosen. It does not apply for all volume shapes

3-D Kinetics

- **SPERT benchmarks coupled with other work in LTR provide good basis for acceptance of existing code**
- **Have not reviewed “new material” because we have not been provided with the documentation**
 - ▶ **New Material refers to new kinetics model and new cross section formulation**
- **Expect to be able to give approval for reactivity controlled events (PWR and BWR RIA) only**
- **Cannot approve events which require hydraulic feedback such as BWR stability, PWR MSLB, etc.**

Assessment

- **Pointed out in first round RAIs that assessment is inadequate**
- **Pointed out again during April 1999 telecon problems with assessment**
- **New models added (5-eqn) and assessments that had been done were not rerun**
- **Individual user will be required to fully assess code for each application**

User Guidelines

- Pointed out in first round RAIs that user guidelines are needed
- EPRI responded 2-5 years in the future, after more experience is gained
- August 1999 training reemphasized need for adequate user guidelines
- Each applicant will be required to provide and justify every assumption, option, model and correlation chosen
- Each applicant will be required to demonstrate code has been used within range of applicability of each model and correlation chosen

Conclusions

- **Staff has been reviewing a moving target**
- **Assessment is unacceptable**
- **If approval to use as RETRAN-02 replacement is granted:**
 - ▶ **Applicant must verify only those models and correlations in RETRAN-02 have been used**
 - ▶ **Applicant must verify results are identical with those obtained with RETRAN-02**
- **In absence of user guidelines, user must:**
 - ▶ **Justify each and every model and correlation option used**
 - ▶ **Verify each and every model and correlation is used within range of applicability**
 - ▶ **Verify adequate training and experience of user**