

February 24, 1997

Tennessee Valley Authority
ATTN: Mr. Oliver D. Kingsley, Jr.
President, TVA Nuclear and
Chief Nuclear Officer
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: MEETING SUMMARY - SEQUOYAH NUCLEAR PLANT, DOCKET NOS. 50-327 AND
50-328

Dear Mr. Kingsley:

On February 21, 1997, the NRC staff met at the Region II office with representatives of the Tennessee Valley Authority's Sequoyah Nuclear Plant staff. The purpose of this meeting was to discuss unresolved items documented in NRC Inspection Report 50-327,328/96-16, regarding environmental qualification. Enclosure 1 is a list of the individuals who attended the meeting, and Enclosure 2 contains a copy of the material supplied by the licensee at the meeting.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10 Code of Federal Regulations, a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

(Original signed by P. K. VanDoorn)

Mark S. Lesser, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos. 50-327, 50-328
License Nos. DPR-77, DPR-79

Enclosures: 1. List of Attendees
2. Handout Material

cc w/encls: (See page 2)

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PDR ADOCK 05000327
G PDR



cc w/ encls:

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Site Vice President
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Chattanooga, TN 37402-2801

Distribution w/encls: (See page 3)

Distribution w/encls:

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DATE	02 / 24 / 97	02 / / 97	02 / / 97	02 / / 97	02 / / 97	02 / / 97
COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY

DOCUMENT NAME: G:\BR6.SQ\MM0221.SUM

LIST OF ATTENDEES

NRC

J. P. Jaudon, Director, Division of Reactor Safety (DRS), Region II (RII)
H. O. Christensen, Branch Chief, Engineering Branch, DRS, RII
G. A. Belis, Branch Chief, Branch 5, Division of Reactor Projects (DRP), RII
M. Shannon, Senior Resident Inspector, DRP, RII
S. E. Sparks, Project Engineer, DRP, RII
N. Merriweather, Reactor Inspector, Engineering Branch, DRS, RII
C. F. Smith, Reactor Inspector, Engineering Branch, DRS, RII
R. W. Hernan, Senior Licensing Project Manager, Office of Nuclear Reactor Regulation

Licensee Attendees:

M. Burzynski, Engineering and Materials Manager
M. Lorek, Mechanical/Nuclear Engineering Manager
R. Ryan, Manager, Nuclear Engineering
M. Fetch, Nuclear Assessment and Licensing Manager
J. Smith, Site Licensing Supervisor
P. Salas, Licensing and Industry Affairs Manager
K. Whittenburg, Manager, Nuclear Communications

Other Attendees:

Jim Riccio, Staff Attorney, Public Citizen

Sequoyah Nuclear Plant
TVA/NRC Technical Meeting
February 21, 1997
Environmental Qualification Unresolved Items
NRC Inspection Report 96-16

Sequoyah Nuclear Plant
TVA/NRC Technical Meeting
February 21, 1997
Agenda

Opening Remarks	M. J. Burzynski
Sequence of Events	M. J. Lorek
Discussion of Unresolved Items	M. J. Lorek/R. H. Bryan
Regulatory Perspective	J. D. Smith
Closing Remarks	M. J. Burzynski

Sequoyah Nuclear Plant

Opening Remarks

Sequoyah Nuclear Plant

Sequence of Events

Sequoyah Nuclear Plant Sequence of Events

- TVA licensed with source terms established in accordance with TID-14844
- March 19, 1987
 - TVA (corporate fuels engineer) identified and initiated a corrective action document that the FSAR did not reflect the change in dose calculations based on an increase in core life. EQ was not addressed in the corrective action document
- December 30, 1988 U2C3 core exceeded 650 EFPD
- December 29, 1989 U1C4 core exceeded 650 EFPD

Sequoyah Nuclear Plant Sequence of Events

- July 30, 1990
 - Dose calculation TI-RPS-48, Revision 3 issued to reflect the results from the increase in core life
- September 12, 1990
 - SQN design engineer identified and initiated a corrective action document that the effects in the increase in core life was not addressed relative to EQ Program
- July 22, 1991
 - TVA requested Westinghouse to provide a justification for continued operation (JCO) for the EQ issue
- September 4, 1991
 - Westinghouse provided a JCO to TVA for the EQ issue

Sequoyah Nuclear Plant

Sequence of Events

- December 6, 1991
 - Dose calculation TI-RPS-48, Revision 5 issued to remove the results from the increase in core life
- October 21, 1993
 - Conference call with the NRC (NRR and Region II) pertaining to the EQ JCO and the methodology being used for the dose calculations. The JCO was faxed to NRC
- November 30, 1993
 - NRC evaluation of the JCO provided to TVA. The evaluation concluded that the RegGuide 1.77 methodology was not appropriate and that the dose calculation needed to be based on TID 14844

Sequoyah Nuclear Plant

Sequence of Events

- March 4, 1994
 - Revised JCO using TID 14844 methodology provided to NRC. The JCO was based on 1000 EFPD and a U-235 enrichment of 4.5 percent
 - Evaluated impact of JCO on EQ binders and determined that the results remained bounded. No hardware changes were needed
- April 8, 1994
 - NRC evaluation of revised JCO provided to TVA. The JCO was determined to be acceptable
- June 3, 1994
 - EQ drawings revised to include a note that the source term information was under review and to consult Mechanical Engineering before making a design change using the information
- August 26, 1994
 - Received new source term from Oak Ridge National Laboratory

Sequoyah Nuclear Plant

Sequence of Events

- October 11, 1994
 - Dose calculation revised to reflect 1000 EFPD and U-235 enrichment of 5.0 percent
 - Evaluated impact of revised dose calculation on EQ binders and determined that results remained bounded
 - Qualified life within NUREG 0588 requirements
 - Started EQ binder revisions
- November 6, 1996
 - Design criteria issued for the EQ Program superseding the EQ drawings
- February 20, 1997
 - EQ binders revised to reflect revised dose calculations

Sequoyah Nuclear Plant

Discussion of Unresolved Items (URI)

Sequoyah Nuclear Plant

Discussion of Unresolved Items

URI 96-16-01

- Inadequate Safety Evaluation Resulted in Unreviewed Safety Question
 - TVA identified and initiated corrective action document that the effects in the increase in core life was not addressed relative to the EQ Program
 - A proposed change, test, or experiment shall be deemed to involve an Unreviewed Safety Question
 - If the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or
 - If a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or
 - If the margin of safety as defined in the basis for any technical specification is reduced

Sequoyah Nuclear Plant

Discussion of Unresolved Items

URI 96-16-01 (cont.)

- No unreviewed safety question existed
 - Offsite dose remains well within 10 CFR 100 limits
 - Components remained within their environmental qualification requirements
- Issue communicated to NRC three years ago
 - NRC had no immediate safety concern
 - Radiation environment margins adequate for reassessment for extended reactor core burnup
- No hardware changes needed
- Corrective actions are complete

Sequoyah Nuclear Plant

Discussion of Unresolved Items

URI 96-16-02

Untimely Corrective Action for Nonconforming Plant Conditions

Licensee had continued plant operations under the JCO without revising the EQ binders and EEB calculations

- Timeliness was consistent with safety significance
 - Containment dose calculation (TI-RPS-48) issued October 1994
 - EQ binders qualification verified to remain bounded
 - Significant amount of work required to incorporate corrected numbers in design documents (cascading documents) and EQ binders
 - Consistent work effort focused on resolution during this period
 - EQ binder work coordinated with other activities that were ongoing concurrently
- Resolution involved interface with NRC
 - NRC requested TVA to revise JCO in November 1993
 - NRC accepted revised JCO in April 1994

Sequoyah Nuclear Plant

Discussion of Unresolved Items

URI 96-16-03

- Inadequate Design Control for Nonconforming Plant Conditions

Three examples

- Calculation TI-RPS-48, Revision 3 documented 100-day integrated accident dose with 1000 EFPD was not incorporated into design output documents
- Calculation TI-RPS-48, Revision 5 documented 100-day integrated accident dose with 650 EFPD and does not accurately depict actual plant conditions
- A formal calculation was not prepared, reviewed and approved to support the JCO for the increase in the 100-day integrated accident dose inside containment and the annulus

Sequoyah Nuclear Plant

Discussion of Unresolved Items

URI 96-16-03 (cont.)

Example One

- TI-RPS-48, Revision 2, was the design basis calculation
- TI-RPS-48, Revision 3, was issued to resolve the 100-day integrated accident dose with 1000 EFPD
- TI-RPS-48, Revision 3, not incorporated into design output documents because of problems identified with TID-14844 source term for extended core burnups and inappropriate results from beta dose
- TI-RPS-48, Revision 4, was issued to address the inappropriate beta dose results
- TI-RPS-48, Revision 5, was issued to return source term to Revision 2 level while source term problem was resolved

Sequoyah Nuclear Plant

Discussion of Unresolved Items

URI 96-16-03 (cont.)

Example Two

- TI-RPS-48, Revision 5 returned calculation to original design basis conditions
- JCO was developed to show acceptable conditions pending resolution of TID-14844 problem
- Deficiency in design basis calculation was identified and covered by existing PER
- Plant was bounded by JCO for actual plant conditions

Sequoyah Nuclear Plant

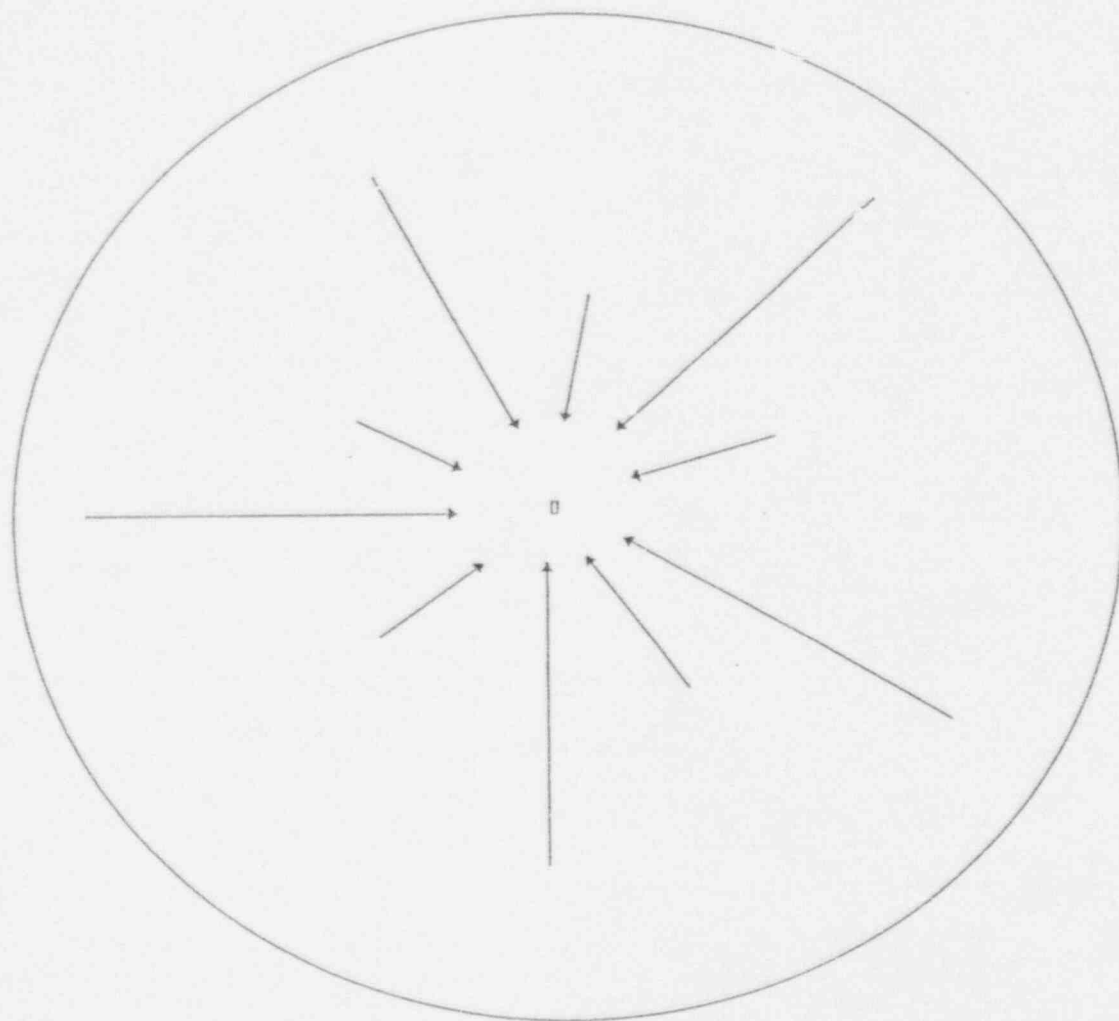
Discussion of Unresolved Items

URI 96-16-03 (cont.)

Example Three

- JCO was supported by QA computer software
- Results were prepared and checked
- Hard copy calculations issued December 1996 supported JCO conclusions with no change

INFINITE CLOUD MODEL

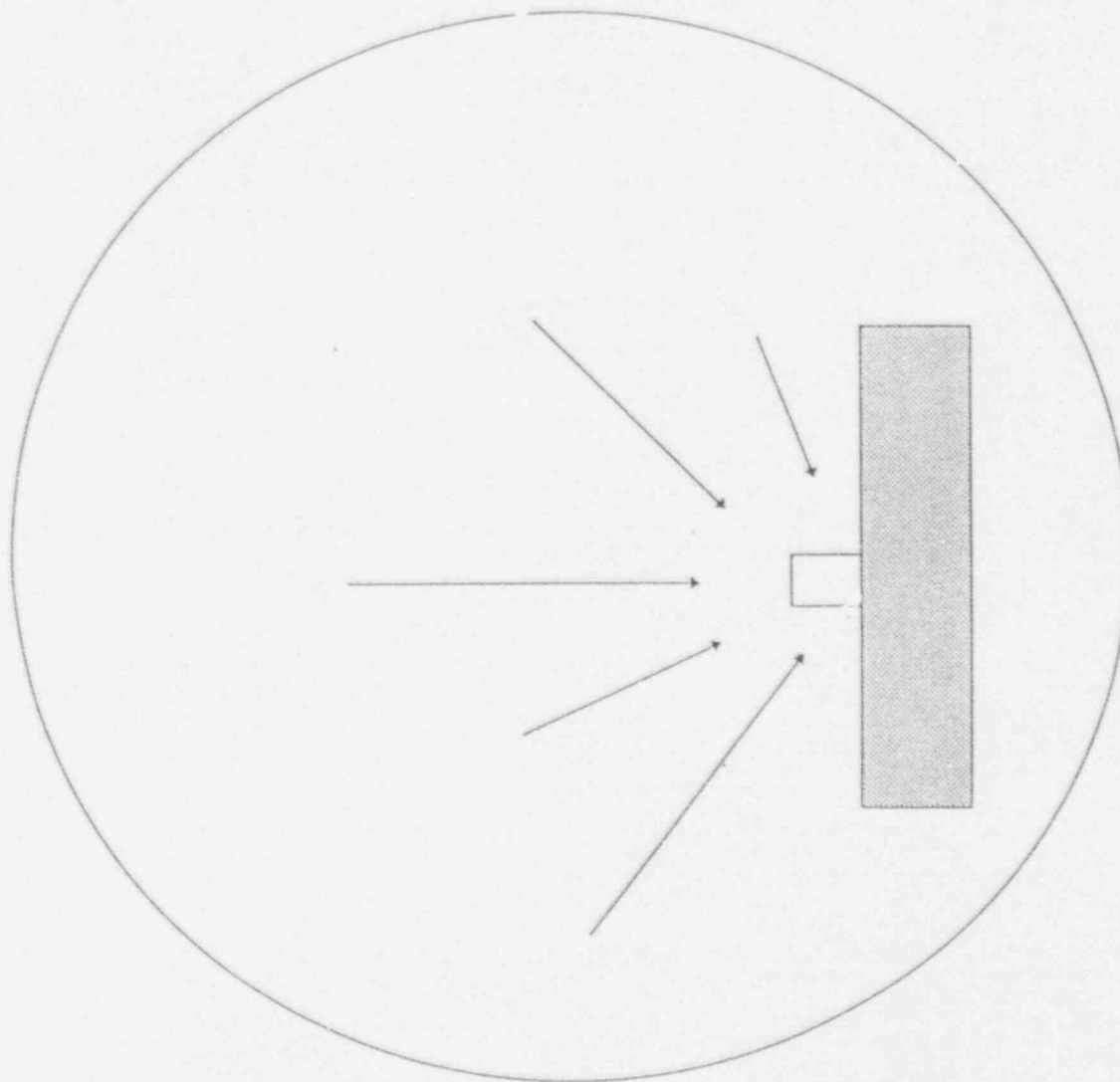


Massless Point

Hanging in the Middle of
Containment

All Betas Hit the Point

SEMI-INFINITE CLOUD MODEL



Component Mounted on Concrete or Steel

Component in a Metal Enclosure

Component Has Size & Mass - Self Shielding

Located In a Small Compartment

Sequoyah Nuclear Plant Regulatory Perspective

- Issue was identified by TVA
- No Unreviewed Safety Question existed
- No hardware changes needed
- Timely corrective actions were initiated and completed
- Issue communicated to NRC
 - No immediate concerns
 - Radiation environment margins recognized
 - Resolution path consistent with NRC expectations at that time
- No safety significance
 - Margins existed at time of issue discovery
 - Equipment remained environmentally qualified
- Long-term actions are complete

Sequoyah Nuclear Plant

Closing Remarks