



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 9, 2000

LICENSEE: Tennessee Valley Authority

FACILITY: Browns Ferry Nuclear Plant Units 1, 2 and 3

SUBJECT: MEETING SUMMARY RELATING TO PLANS FOR SPENT POOL RERACKING
(TAC NOS. MA8399, MA8400 AND MA8401)

INTRODUCTION

A meeting was conducted on March 30, 2000, with the Tennessee Valley Authority (TVA), licensee for the Browns Ferry Nuclear Plant, and its contractor. Attachment 1 is the list of attendees. Attachment 2 is a copy of the licensee's handout.

SUMMARY

The purpose of the meeting was for TVA to present to the staff, its plans for reracking of the spent fuel storage pools. The meeting presented TVA with an opportunity to obtain early staff input regarding the scope of technical information needed in the future amendment application.

TVA presented its status of spent fuel storage and discussed opinions being considered for near-term needs (within next 6 years). TVA is proposing to rerack all three units' spent fuel pools beginning in the fall of 2002. TVA presented a proposed schedule for the license amendment request to support the rerack effort. This schedule calls for an application date of spring 2001 and NRC approval by summer 2002. The staff stated that this appeared to be achievable and would allow sufficient time for staff review.

The proposed content of the submittal was presented by TVA, as well as the proposed methodology for the analyses to support the amendment request. The staff stated that the proposed content appeared to be consistent with staff needs. TVA also discussed the details of preliminary structural analysis of the pool structure. The analysis uses finite element analysis techniques to determine local wall and slab stresses. The factors of safety are determined by ratioing the overall wall or slab load with the overall capacity of the structure. The factors of safety are all 1.38 or higher. The staff agreed that the method used is consistent with other similar analyses on elevated pools and the results appear appropriate.

TVA discussed its plans to review recent rerack amendment requests from other utilities and to consider the associated requests for additional information (RAI) questions in development of the Browns Ferry application. The staff gave several examples of information requested in previous RAIs on other utility submittals that may be helpful for the staff review. The staff noted that rerack submittals are typically reviewed by several different technical disciplines and it will be helpful if the Browns Ferry application is organized to facilitate a stand-alone review of each independent technical discipline. TVA agreed to provide it in a format to support this.

TVA proposed that a follow-up meeting be held when the submittal is close to completion. At that time the specific reviewers can be identified and all critical aspects of the forthcoming application can be discussed again.

A handwritten signature in cursive script, appearing to read "William O. Long".

William O. Long, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260 and 50-296

Attachments: 1. List of Meeting Attendees
2. Licensee's Handout

cc w/atts: See next page

Meeting With Tennessee Valley Authority

March 30, 2000

LIST OF ATTENDEES

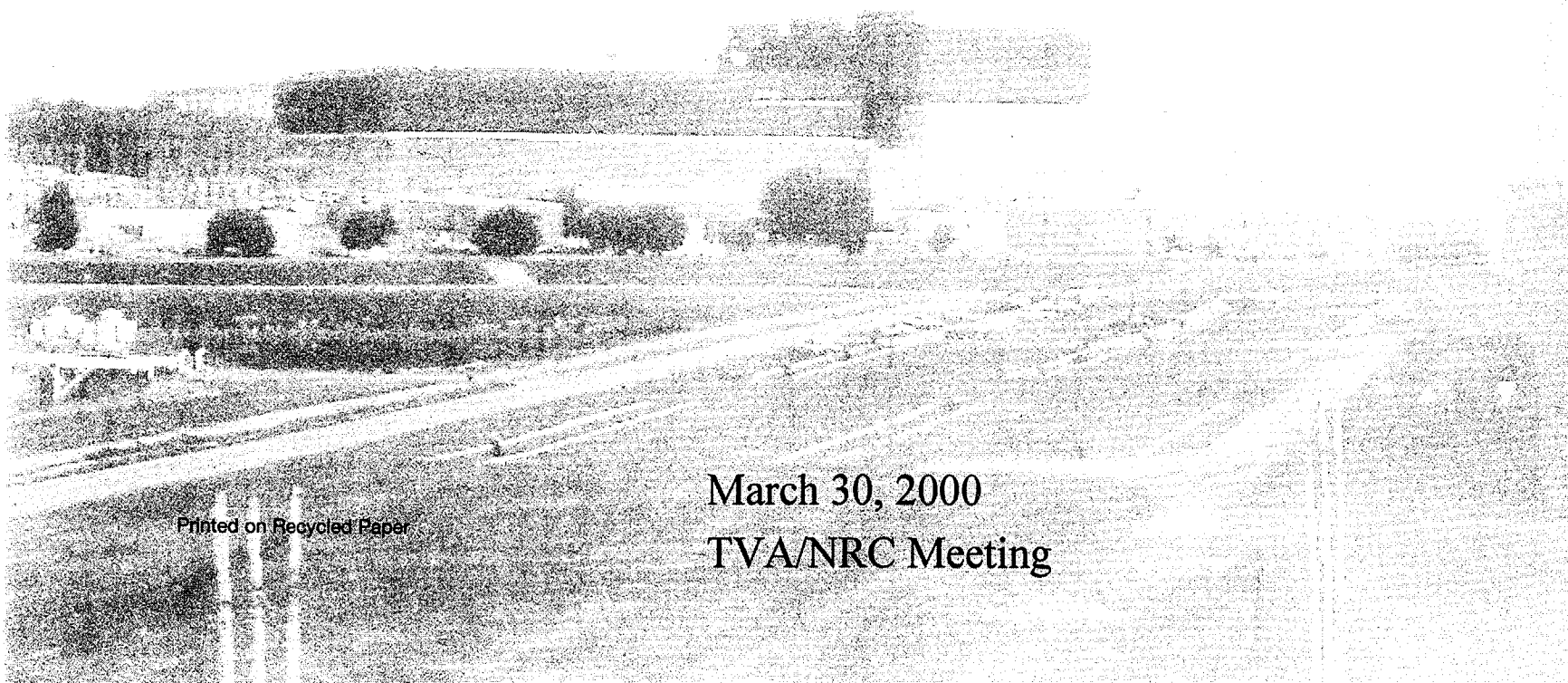
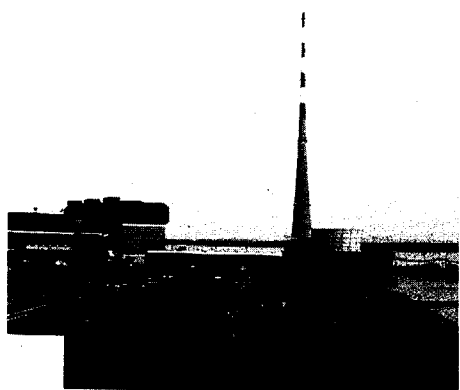
<u>NAME</u>	<u>AFFILIATION</u>
W. Long	NRR/PD2-2
Tim Abney	TVA/BFN/Licensing
Raman Pichumani	NRR/EMEB
K.P. Singh	Holtec
Larry Kopp	NRR/SRXB
Tony Attard	NRR/SRXB
George Hubbard	NRR/SPLB
David Shum	NRR/SPLB
Luben Todorovski	Holtec
Jack Symonds	TVA
H. Lee Williams	TVA

ATTACHMENT 2

Tennessee Valley Authority

Browns Ferry Nuclear Plant

Spent Fuel Storage



Printed on Recycled Paper

March 30, 2000

TVA/NRC Meeting



Agenda

- **Introduction/Meeting Objectives** T. E. Abney
- **BFN Fuel Storage** J. L. Symonds
- **Proposed Submittal Content** H. L. Williams
- **Key Evaluations** H. L. Williams
- **Comparason of Proposed Storage Density** H. L. Williams
- **Structural Factors of Safety** H. L. Williams
- **NRC Review Considerations** T. E. Abney
- **Summary and Closing Remarks** T. E. Abney

Introduction/Meeting Objectives

- **Introduction**
- **Meeting Objectives**
 - **Provide Status of Browns Ferry Nuclear Plant Spent Fuel Storage Situation**
 - **Discuss TVA'S Activities to Date, Anticipated Licensing Approach and Proposed Schedule**
 - **Discuss Key Evaluations and Structural Factors of Safety**
 - **Talk Over NRC Review Considerations**

BFN Fuel Storage

Current Status

- **Each of the 3 Units Is Currently Licensed For 3471 Fuel Assemblies (FAs) Per Spent Fuel Pool**
 - **Current License Issued September 21, 1978**
- **Unit 1 Fuel Pool Currently Contains 1864 FAs**
- **Unit 2 Fuel Pool Currently Contains 2416 FAs**
- **Unit 3 Fuel Pool Currently Contains 1588 FAs**
- **Unit 1 and Unit 2 Fuel Pools Are Connected by a Common Transfer Canal**

BFN Fuel Storage

Current Status

- **Unit 3 is Projected to Lose Full Core Discharge (FCD) Capability in January of 2006**
- **Unit 2 is Projected to Lose FCD January of 2013 (Assumes Transfer of Unit 2 Fuel to Unit 1 Pool and Unit 1 Not Operational)**

BFN Fuel Storage Options

- **Undertake a Dry Cask Storage Program Without Additional Reracking**
- **Rerack Unit 3 to Accommodate Between 750 and 947 Additional FAs**
 - **Provides FCD for Unit 3 Until 2012**
 - **Using Unit 1 Pool for Unit 2 Discharge Extends Unit 2 FCD Through January of 2013**
 - **Licensing Amendment for Reracking Would Encompass 3 Units**

BFN Fuel Storage Projected Schedule

- **Begin Engineering/Design - October, 2000**
- **Submit Licensing Amendment to NRC - Spring, 2001**
- **Receive License Amendment From NRC - Summer, 2002**
- **Begin Unit 3 Rerack - Fall, 2002**
- **Complete Unit 3 Rerack - Summer, 2003**

Preliminary Submittal Content

- **Licensing Report For Reracking of the Spent Fuel Pools**
 - **Module Layout For Increased Storage**
 - **Rack Fabrication and Applicable Codes**
 - **Criticality Safety Analysis**
 - **Thermal-Hydraulic Considerations**
 - **Rack Structural Considerations**
 - **Accident Analysis and Thermal Stresses**
 - **Pool Structural Analysis**
 - **Inservice Surveillance Program**
- **No significant Hazards Determination**
- **Conclusion That the Change is Exempt From Environmental Review**

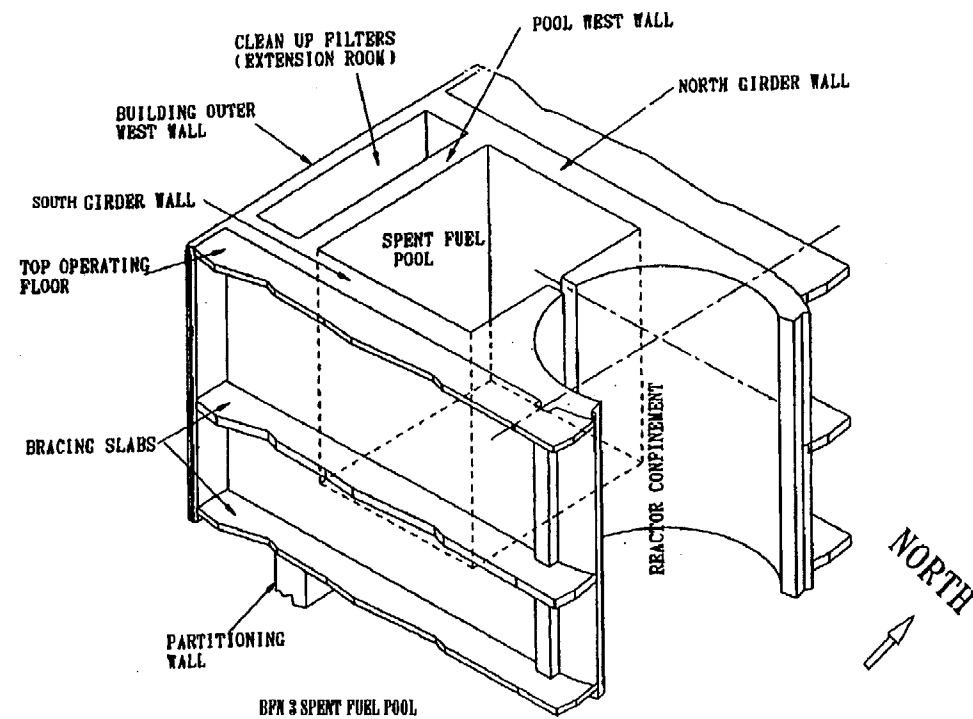
Key Evaluations

- **Seismic Integrity of the Reinforced Concrete Spent Fuel Pool Structure**
 - **Study Performed to Ensure Adequate Structural Margin Available for Additional Fuel**
 - **Determine Time-History Loads From Seismic Events**
 - **Quantify the Margins in the Reinforced Concrete Structure**
 - **Consider Loading**
 - **Consider Factors of Safety**

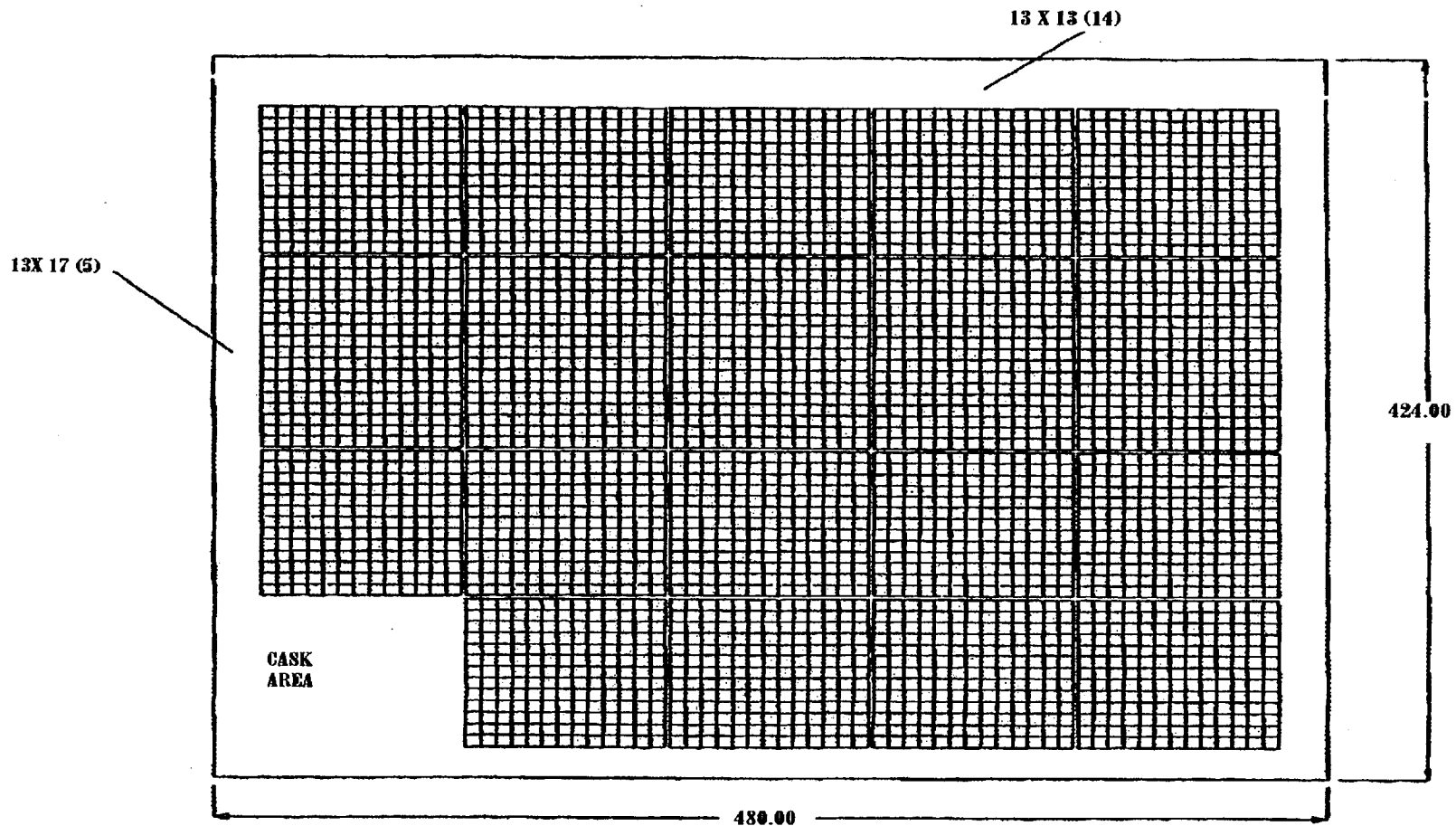
Key Evaluations

- **Nuclear Criticality**
- **Thermal-Hydraulics**
- **Mechanical Integrity Under Accident Drop Event**
- **Shielding and Radiological Compliance**
 - **Demonstration of Full Compliance With NRC's 1978 Office of Technology Position Paper**
- **Seismic Integrity of the Rack Structure**

Key Evaluations



Key Evaluations

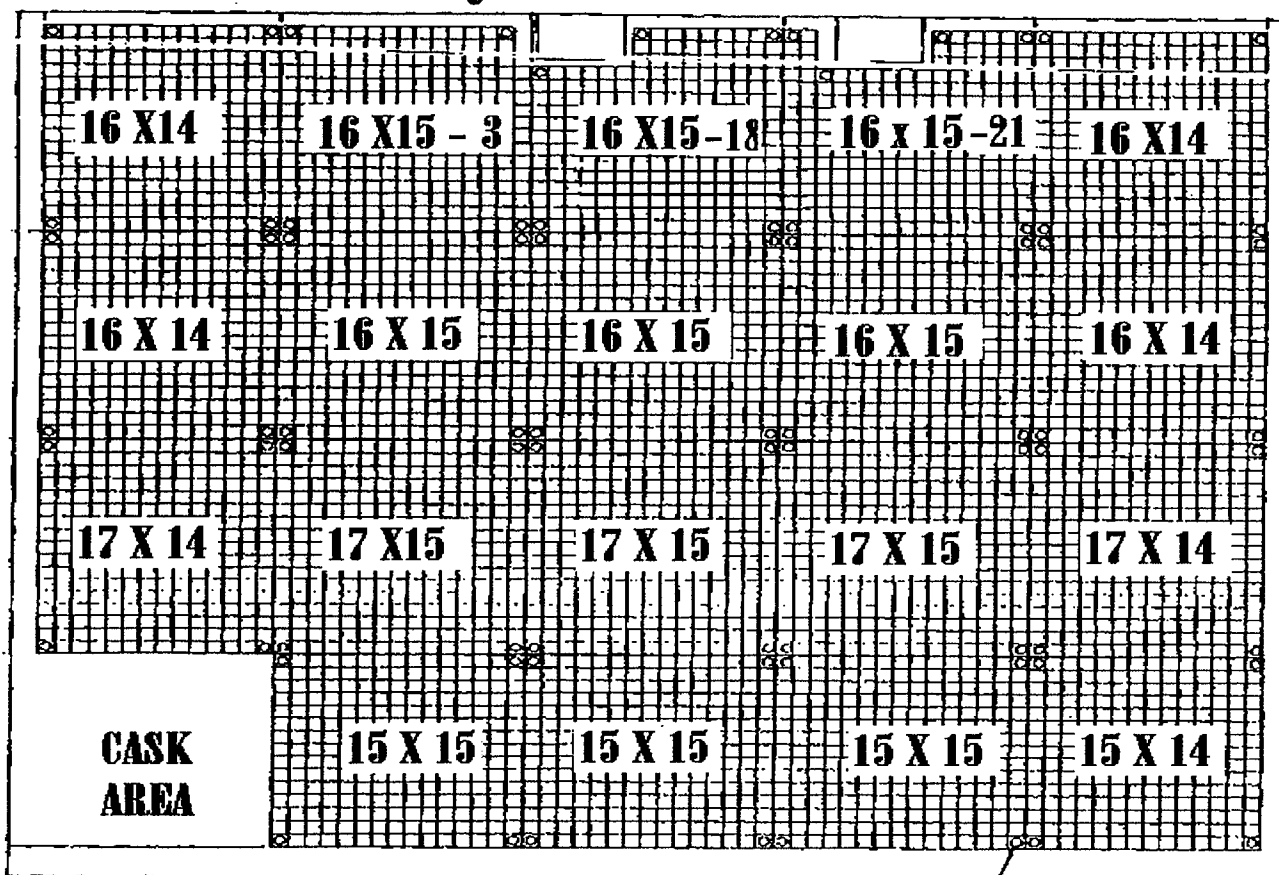


BROWNS FERRY UNIT 3 SPENT FUEL POOL

3471 Total Storage Locations

19 Total Storage Racks

Key Evaluations



NOTES:
 1, POOL CAPACITY: 4418
 2, 19 NEW RACKS

POOL LAYOUT FOR BROWNS FERRY UNIT 3

Lee Williams

Comparison of the Proposed Storage Density at BFN

Plant	Length (inch)	<u>Pool Dimension</u>		No. of Storage Locations	Storage Density (# of Assemblies/sq. ft.)
		Width (inch)	Area (sq. ft.)		
BFN-3 (Existing)	480	424	1413.3	3,471	2.456
BFN-3 (Proposed)	480	424	1413.3	4,418	3.126

Storage Density: Number of storage locations divided by area of pool floor (sq. inch)

Structural Factors of Safety

<u>Structural Member</u>	<u>Bending</u>	<u>Shear</u>
Slab	1.38	1.25
West Wall	2.73	1.89
North Wall	1.96	1.75
South Wall	2.12	2.09

NRC Review Considerations

- **Ability to Schedule Critical NRC Resources In Advance**

- **TVA's Desire to Avoid/Minimize Need For "Requests For Additional Information"**
 - **Review Recent Submittals With Inclusion of Lessons Learned and NRC Request for Additional Information**
 - **Completely and Adequately Addressing Key Technical Considerations For Rerack Submittal**
 - **BFN Submittal Will Model Previous NRC Approved Amendments**

Tennessee Valley Authority

BROWNS FERRY NUCLEAR PLANT

cc:

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May 9, 2000

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/RA/

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