UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D.C. 20555-0001

October 27, 2003

MEMORANDUM TO: ACRS Members

FROM: BhagwatJain, Senior Staff Engineer
Technical Support Staff

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL, SEPTEMBER 30, 2003, ROCKVILLE, MARYLAND

The minutes of the subject meeting, issued on October 17, 2003, have been certified as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc via e-mail:
ACRS Members
J. Larkins
S. Bahadur
R. Savio
H. Larson
S. Duraiswamy
ACRS Staff Engineers

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D.C. 20555-0001

October 22, 2003

MEMORANDUM TO: Bhagwat P. Jain, Senior Staff Engineer
Technical Support Staff

FROM: Graham M. Leitch, Chairman
Plant License Renewal Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL, SEPTEMBER 30, 2003, ROCKVILLE, MARYLAND

I hereby certify that, to the best of my knowledge and belief, the Minutes of the subject meeting issued October 17, 2003, are an accurate record of the proceedings for that meeting.

Graham M. Leitch

Graham M. Leitch, Chairman

10/23/03

Date

CERTIFIED
10/23/2003
By Graham M. Leitch
Issued: 10/17/2003

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
PLANT LICENSE RENEWAL SUBCOMMITTEE MEETING MINUTES
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2
OCTOBER 17, 2003
ROCKVILLE, MARYLAND

Introduction

The ACRS Subcommittee on Plant License Renewal held a meeting on September 30, 2003, with representatives of the Carolina Power and Light Company (CP&L) and the NRC staff. The purpose of this meeting was to discuss the license renewal application for Unit 2 of the H. B. Robinson Steam Electric Plant, known as Robinson Nuclear Plant (RNP), and the NRC Staff's Safety Evaluation Report (SER) with open items. Mr. Bhagwat Jain was the cognizant ACRS staff engineer and Designated Federal Official (DFO) for this meeting. The meeting was convened at 12:30 p.m., September 30, 2003, and adjourned at 4:03 p.m. that day.

Attendees

ACRS Members/Staff	NRC Staff	Carolina Power & Light Company
Graham Leitch (Chairman)	Stewart Bailey (NRR)	T. Clements
Mario V. Bonaca (Member)	William Burton (NRR)	Robert M. Reynolds
Stephen L. Rosen (Member)	Sam Miranda (NRR)	Michael Heath
John Sieber (Member)	John Fair (NRR)	Joseph W. Donohue
John Barton (Consultant)	Hans Ashar (NRR)	Charles T. Baucon
Bhagwat Jain (DFO)	David Jeng (NRR)	Roger Stewart
	John Ma (NRR)	
	David Shum (NRR)	
	PT Kuo (NRR)	
	Sam Lee (NRR)	
	Jim Medoff, NRR	
	Mark Hartzman (NRR)	
	Raj Goel (NRR)	
	Ken Chang (NRR)	
	Amar Pal (NRR)	

A complete list of all attendees is attached to the Office Copy of these Minutes

The presentation slides and handouts used during the meeting are attached to the Office Copy of these Minutes. The presentations to the Subcommittee are summarized below. No request from the public was received to make an oral presentation.

Opening Remarks (G. Leitch, ARCS)

Mr. Leitch convened the meeting. He commented that in the past, Subcommittee review meetings had been scheduled for a full day. However, to improve the efficiency and effectiveness of the license renewal process, this Subcommittee meeting is scheduled for half a day.

Staff Introduction (P.T. Kuo, NRR)

Mr. Kuo introduced the staff member who would be leading the staff presentation, Mr. S.K. Mitra and Mario Cora, and remarked that this review had proceeded smoothly, and it represented the second application of the new license renewal review process.

Carolina Power & Light (CP&L) Company Presentations (R. Stewart, T. Clements, CP&L)

Background

By letter dated June 14, 2002, CP&L submitted its application to the NRC for renewal of the RNP operating license for up to an additional 20 years. This is the second application prepared in accordance with the Generic Aging Lessons Learned (GALL) report. The current operating licenses for RNP expires on July 31, 2010.

RNP, unit 2 is adjacent to unit 1, a coal-fired steam power plant. The plant is located on the edge of Lake Robinson, a manmade lake in Hartsville, South Carolina. The construction permit for RNP was issued by the NRC on April 13, 1967, and the operating license was issued September 23, 1970, pursuant to Section 104b of the Atomic Energy Act of 1954, as amended. The unit consists of a Westinghouse pressurized water reactor nuclear steam supply system designed to generate 2339 MW-thermal, or approximately 769 MW-electric.

Mr. Stewart began the CP&L presentation with an overview of the plant history and status, shared resources between unit 1 and unit 2, operating experience, scoping methodologies, and commitments and commitment tracking system. Mr. Stewart stated that all NRC performance indicators and inspection findings are green.

License Renewal Application Scoping and Screening Process

Mr. Stewart described the scoping criteria and screening process that CP&L used to develop the application. There are no major exception to GALL. The LRA was prepared in accordance with CP&L's quality assurance program (10 CFR 50, Appendix B) requirements. Several design features that are unique to RNP were identified, such as grouted tendons, containment liner insulation, shared site and some systems with older fossil unit, and dedicated shutdown diesel fuel oil tank. All systems which are shared with unit 1 are included in the scope of LRA.

Aging effects and Ageing Management (AM)

Mr. Stewart stated that there are 27 enhanced programs, and 10 new programs. CP&L committed to have 18 of these programs in place by mid 2004. Several of the programs depend upon yet to be developed positions which require approval by NRC (e.g., inspection program for Alloy 600, thermal shield, neutron instrumentation cable, etc). Ten existing AM programs were credited and Appendix B of the application describes the programs and their consistency with GALL. Plant-specific program descriptions include the 10-criteria evaluation described in the SRP.

Interim Staff Guidance, commitments, and open items

CP&L reported that it has addressed all issued Interim Staff Guidance Documents. All CP&L commitments are listed in the SER, and are tracked through the plant action tracking system, with annotations to the appropriate implementing procedures. All open items and 29 confirmatory items in the draft SER have been discussed with the NRC staff, and CP&L has provided acceptable responses to all of them. Mr. Stewart stated that all commitments will be identified in implementing documents and any change will be controlled by 10CFR 50.59 process. He further stated that the design configuration control process will incorporate guidance to ensure that requirements of 10 CFR 54.37 (b) are met.

Plant Operating Experience

Mr. Stewart noted that all of the NRC performance indicators for RNP are green. Audits and inspections conducted by the Region II staff with regard to the LRA during March 31-April 4, 2003, June 9-27, 2003, and September 9-10, 2003, did not have any findings.

Questions from Members

Dr. Bonaca noted that the pressurizer spray head was not "in-scope" He asked how this could be, given that pressurizer spray is the primary cooldown method. The licensee responded that the analysis basis for plant operation does not include pressurizer spray, even though that is the normal method of reducing pressure. Any degradation in the operation of the spray nozzle would be noted during normal operation, because the spray nozzles are used for normal pressure control. This item was excluded from the scope based on its non safety function.

Mr. Leitch asked if the testing interval of ten-years for neutron flux instrumentation cable was adequate. The staff responded that based on operating experience, the staff finds the ten years inspection interval acceptable. The first inspection will be performed before the start of the license renewal period and after that it will be performed at every ten years interval.

Mr. Bonaca asked what enhancements to the structural monitoring program will be made to monitor concrete degradation in underground concrete systems, structures, and components due to the effect of aggressive ground water. The applicant stated that the groundwater pH is about 4.4 and the concentrations of chloride and sulphate ions is of the order of 20 to 30 parts per million (ppm) and the concentration of phosphate is

also very low, of the order of 0.05 ppm. The staff added that the applicant has committed to inspect the dam spillway and intake structures every ten years. At any time they perform an inspection, opportunistic inspection of below grade inaccessible concrete will also be performed.

Mr. Leitch asked the applicant its response to containment debris sump clogging issue relative to ensuring long term recirculation cooling following a LOCA. In particular, whether the insulation between the containment liner and the stainless steel sheathing will be affected and could potentially contribute to additional debris in the containment sump. Mr. Stewart responded that the function of the insulation is to limit the heat-up rate on the concrete during LOCA. There is a large missile shield around the primary components that would prevent anything from potentially impacting and knocking off this insulation. He further added that they have responded to the recent NRC Bulletin on the PWR sump clogging issue. In response to the bulletin, they are making some enhancements to their plant operating procedures and these procedures will be implemented by the middle of November 2003. In addition, a design review of the containment sump is also planned.

Mr. Rosen asked whether it would be possible to better define a schedule for the implementation of many of the commitments that the license had made, rather than just state that they would be completed "before the start of the license renewal period". This is information that would be useful to the ACRS, the staff, and the Regional inspectors, for planning purposes. The licensee reported that it will be replacing the reactor vessel head in fall 2005, and was strongly inclined to complete the other actions as soon as possible, consistent with the availability of data and components.

NRC Staff Presentation (S.K. Mitra. Mario Cora. PT Kuo. NRR and C. Julian. Region II)

Overview and Status

The staff presented an overview of the SER, the subsequent resolution of the open items, and the findings of the associated onsite audit and inspections. Mr. S.K. Mitra opened his presentation with the observation that RNP is the second plant to fully implement the GALL process. All open items have been resolved.

Scoping and Screening Methodology

Mr. Julian of Region II then described the process that the staff used to perform the license renewal scoping and screening, aging management program(AMP), and commitment tracking system inspections. This process was carried out by a consistent team of five staff members who performed three audit and inspections for a total period of about four weeks at the plant site. The team looked at the functions of systems, structures, and components (SSCs) defined by the licensee, the interfaces between SSCs, and the plant design drawings. It verified the consistency of the licensee designations among several different drawings. When a discrepancy was identified, the scope of the review was expanded, up to a review of the entire system. The inspections also confirmed that material condition of the plant was being adequately maintained and the existing AMPs are working well. In response to a question from

Mr. Leitch on electrical AMP for cable inspection, Mr. Julian responded that the applicant's electrical AMP is in its infancy.

Ageing Management Programs and Review Results (AMP)

Mr. Mitra described the staff process for evaluating the Aging Management Program of the licensee, using the guidance contained in the GALL report and additional guidance provided by the staff. Mr. Leitch noted that the staff review effort and the number of RAIs had not dropped significantly from previous license renewal reviews. Mr. Kuo replied that the staff is re-considering the process, and will likely focus its future efforts on on-site verification work. The staff has developed, and is using, a training program to ensure that all of the staff and contractor participants in LRA activities understand the GALL process. The training program is expected to help reduce future staff review effort.

The staff discussed the One-Time Inspection(OTI) Program that the licensee has committed to develop, which will include a detailed description of the components that will be inspected to confirm that aging effects are not present before the start of the license renewal period. The items for which the OTI is credited are identified in the SER, Appendix A.

Time Limited Aging Analyses

Nine TLAAs were identified by the staff. Mr. Mitra described the Time Limited Aging Analyses that were performed by the licensee to evaluate reactor vessel neutron embrittlement and upper shelf energy, metal fatigue for certain components, environmental qualification issues over a longer plant lifetime than had originally been licensed, grouted concrete containment tendon prestress, and aging of boraflex and foundation pile corrosion. All of these issues have been resolved satisfactorily. In the case of reactor vessel neutron embrittlement and upper shelf energy, the staff performed its own independent calculations and found the applicant's analyses acceptable.

Subcommittee Comments, Concerns and Recommendations

The Subcommittee Members commented that the LRA and the staff's SER were of good quality. Dr. Bonaca and Mr. Rosen stated that as more and more LRAs become consistent with GALL, plant operating experience becomes a more important factor in the license renewal review process. They both also expressed concern that as more and more plants reach the beginning of their extended period of operation, the staff would have to plan and dedicate its resources to track and verify implementation of commitments made by the applicants during the license renewal review process. Dr. Kuo responded that the staff appreciates the Members concern and the staff will plan for the resources as required. He also added that the commitment verification is part of the staff's inspection procedures.

The Subcommittee asked the staff and the applicant to provide more details on the following topics during the full Committee meeting in March 2004.

- Operating history and experience
- Major equipment replaced

- Major repairs
- Boric acid inspection program
- Disposition of relief request for relaxation of the order for reactor vessel head inspection
- Commitment tracking system

Staff and Applicant Commitments

During the full Committee meeting in March 2004, the staff and the applicant will provide more details on the topics requested by the Subcommittee.

Subcommittee Decisions and Follow-up Actions

The Subcommittee will report its finding to the full Committee at the October 2, 2003 meeting.

Background Material Provided to the Subcommittee Prior to this meeting

1. Subcommittee status report
2. Proposed Schedule
3. Safety Evaluation Report with open items Related to the License Renewal of the H. B. Robinson Steam Electric Plant, Unit 2, August 2003
4. NRC-Region II Inspection Reports (# 50-261/03-08 and 50-261/03-09) dated May 8, 2003, and July 31, 2003, respectively

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Note: Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at "http://www.nrc.gov/ACRSACNW" or can be purchased from Neal R. Gross and Co., Inc., (Court Reporters and Transcribers), 1323 Rhode Island Avenue, NW, Washington, DC 20005 (202) 234-4433

Presentation Slides and Handouts Provided during the Subcommittee meeting

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

PLANT LICENSE RENEWAL

Date(s)

SEPTEMBER 30, 2003

Today's Date

ATTENDEES - PLEASE SIGN BELOW

PLEASE PRINT

NAME	AFFILIATION
TALMAGE CLEMENTS	PROGRESS ENERGY
ROBERT M. REYNOLDS	PROGRESS ENERGY
Michael Heath	Progress Energy
Joseph W Donahue	Progress Energy
CHARLES T. BAUCOM	PROGRESS ENERGY
Roger Stewart	Progress Energy
~~Brian Fehlee~~	
George Wrobel	Rochester Gas + Electric
[redacted]	
Debbie Gupta	NRR/DRIP/RLEP
Mark Lintz	NRR/DRIP/RLEP
Tida Liu	"
BUTCH BURTON	"
Ken Chang	NRR/RLEP
~~Shih-Liang~~ Chen	TECRO
MARK HARTZMAN	NRR/DE/EMEB
B-P-Jain	ACRS Staff

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

PLANT LICENSE RENEWAL

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NAME	NRC Employee
Stewart Bailey	NRR/DE/EMEB
Sam Miranda	NRR/DSSA/SRXB
DAVID SHUM	NRR/DSSA/SPLB
HAROLD WALKER	NRR/DSSA/SPSB
RAJ GOEL	NRR/DSSA/SPSB
Y.C. (Rene) Li	NRR DE/EMEB
Arnold Lee	NRR/DE/EMEB
Daniel Frumkin	NRR/DSSA/SPLB
JOHN MA	NRR/DE/EMEB
Chang-Yang Li	NRR/DSSA/SPLB
David C. Jeng	NRR/DE/EMEB
JIM STRNISHA	NRR/DE/EMEB
STEPHANIE COFFIN	NRR/DE/EMEB
Yong Kim	NRR/DE/EMEB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

PLANT LICENSE RENEWAL

Date(s)

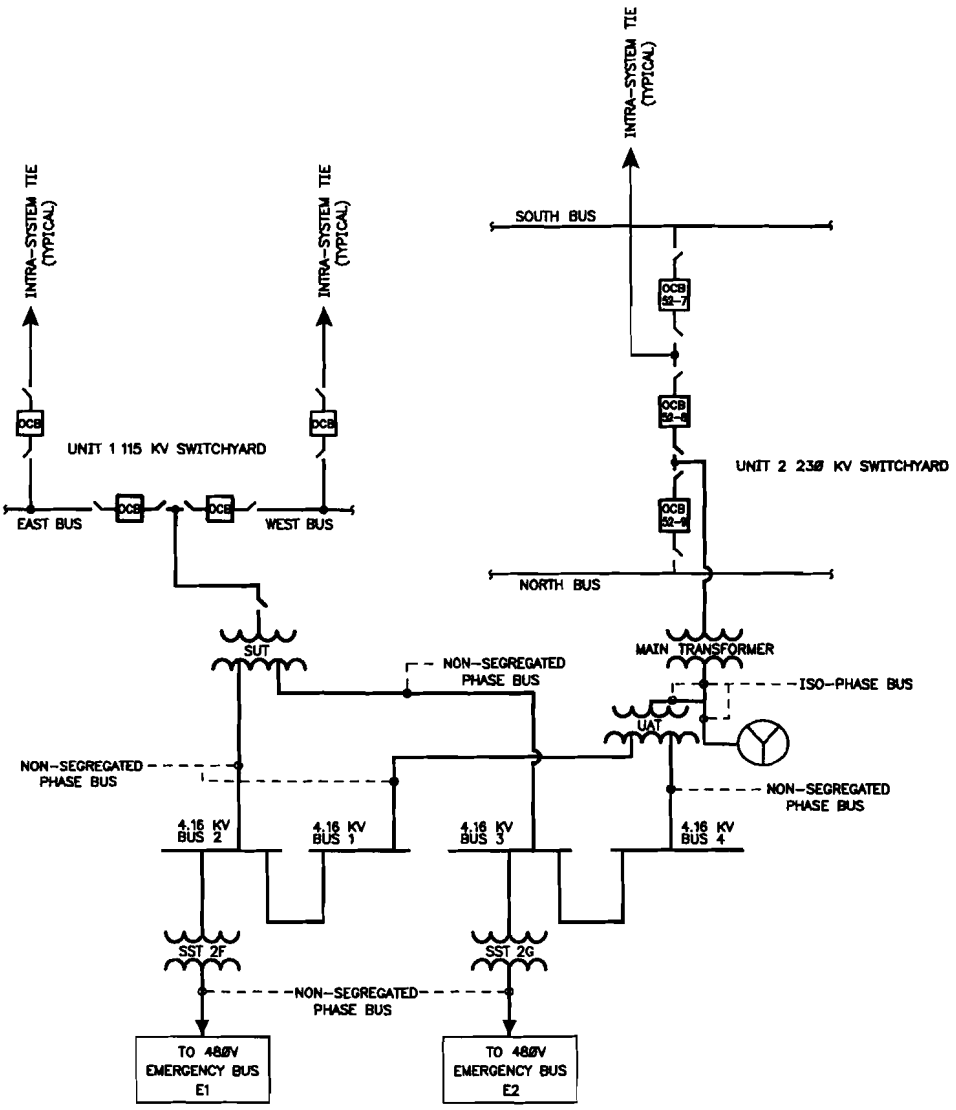
SEPTEMBER 30, 2003
Today's Date

ATTENDEES - PLEASE SIGN BELOW

PLEASE PRINT

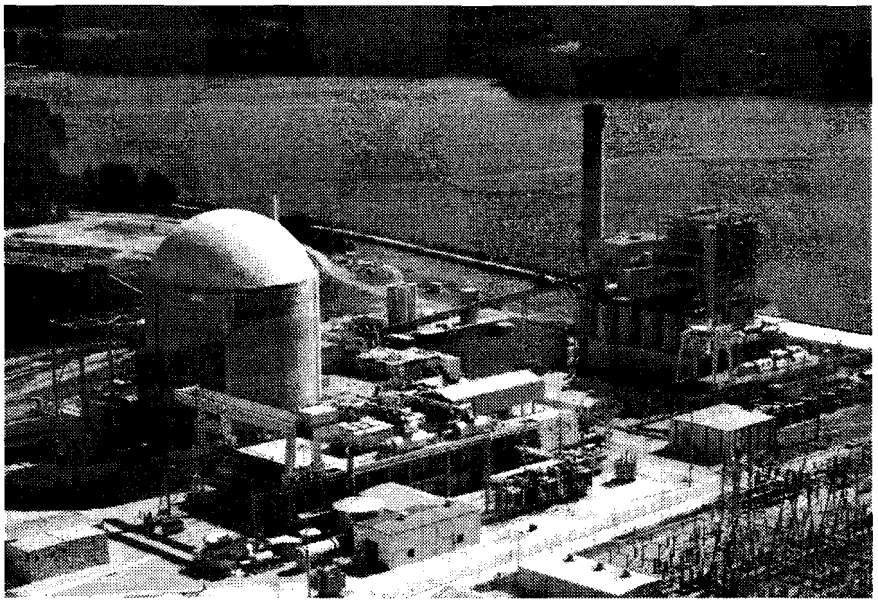
NAME	NRC Employee
MARIO G. COTA	NRR/DAIR/RLEP
CAUDLE JULIAN	NRC RII
Bill Rogers	NRC/NRR/DIPM
J. K. Mitton	NRR/DRIP/RLEP
PETER J. KANG	NRR/DRIP/RLEP.
P T Kuo	NRR/RLEP
Pei-Ying Chen	NRR/DE/EMEB
Brian E. Lee	NRR/DRIP/RLEP
Rani Franovich	NRR/DRIP/RLEP
AMAR PAL	NRR/DE/EEIB
NOEL DUDLEY	NRR/DRIP/RLEP
Ross Arrighi	NRR/DRIP/RLEP
SAM LEE	NRR/DRIP/RLEP
John Fair	NRR/DE/EMEB
AL PAGLIA	SCFAG
John TSAO	EMCB/NRR/DE
JAMES Medoff	EMCB/NRR/DE
Jonathan Rowley	NRR/DSSA/RLEP

RNP–SBO Offsite Power Recovery



RED = First Source of Offsite Power

BLUE = Second Source of Offsite Power



ROBINSON NUCLEAR PLANT

Progress Energy
Presentation to ACRS
Roger Stewart
September 30, 2003

Progress Energy

CONTENTS

- Background
  - Unit 1/Unit 2 Shared Resources
- Operating experience
  - RV Head Penetrations
- Scoping and Screening Methodologies/ Exceptions to GALL
- Commitments/Tracking

Background - RNP

- Initial License granted July 31, 1970
- Westinghouse 3 loop 2339 MWT PWR
  - "Sister" plant to Turkey Point
  - All NRC Performance Indicators Green
  - All NRC Inspection Findings Green

Operating Experience

	1999	2000	2001	2002	2003
Capacity	95.01	103.96	92.18	93.70	(9/22) 103.32 (proj.) 103.39
Refuel	**9/24 to 10/24**		**4/7 to 5/12**	**10/12 to 11/14**	

Breaker to Breaker operation between spring 2001 and fall 2002 refueling. Other offline, minimal:

- 1/8/99 to 1/10/99 Maintenance Outage to repair WD-1728
- 6/21/00 to 6/22/00 Manual Trip due to Turbine EH oil leak
- 11/24/02 Turbine taken offline to repair steam leak

Progress Energy

RV Head Penetrations - Upper

- RO-20 Inspection
  - "Bare Head" Inspection performed as the result of evidence of leakage (CRDM canopy seal weld)
  - No VHP nozzle or RCS pressure boundary leakage detected
  - Inspection performed prior to issuance of NRC Bulletin
- Analyses confirmed leakage paths exist such that visual examination would detect leakage
  - Westinghouse Analyses
  - FEA performed by Dominion Engineering and Structural Integrity Associates
  - Design and manufacturing information
- RO-21 Inspection – No indication or degradation identified that required repair
- Replacement Head Ordered for RO-23 (Fall 2005)

Progress Energy

RV Head Penetrations - Lower

- RNP Plans RO-22 (Spring 2004) Inspection
  - Remote bare metal visual
- Developing Contingency Plans
  - Identification of sources
  - NDE and repair

Progress Energy

Scoping and Screening Methodologies/ Exceptions to GALL

- IPA/TLAA technical work performed in accordance with Progress Energy Quality Assurance Program (Appendix B)
- LRA prepared following guidance of NEI 95-10 in SRP format
- Supplement provided to address ISGs
- Unique Aspects-
  - Grouted Tendons
  - Dedicated Shutdown Diesel
- No Major Exceptions to GALL

Progress Energy

Commitments/Tracking

- 10 Existing Programs Credited with no changes required
- 37 Commitments for 27 Enhancements and 10 New Programs
- All Commitments have been entered into RNP Commitment Tracking Program
- 18 of the Commitments are anticipated to be accomplished "near-term"
- 19 of the Commitments are anticipated to be "transitioned"
  - Transition Plan in place

Progress Energy

Commitments/Tracking

- Once Implemented
  - Commitments are identified in implementing documents
  - Change controlled by 10 CFR 50.59 process
- Configuration control process will incorporate guidance to ensure that requirements of 10 CFR 54.37(b) are met; Support by
  - License Renewal Training
  - License Renewal Design Basis Document
  - UFSAR Supplement

Progress Energy

H.B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2

License Renewal SER
with Open Items

Staff Presentation to the ACRS
SIKHINDRA (S.K.) MITRA
Project Manager
September 30, 2003

Overview

- **APPLICATION SUBMITTED BY LETTER DATED JUNE 14, 2002**
- **WESTINGHOUSE PRESSURIZED WATER REACTOR, THREE LOOP CLOSED CYCLE, GENERATE 2339 MEGAWATT THERMAL, AND 769 MEGAWATT ELECTRICAL, 1 UNIT**
- **PLANT LOCATED ON MANMADE LAKE ROBINSON IN DARLINGTON COUNTY, SOUTH CAROLINA.**

Overview (continued)

- CURRENT LICENSE EXPIRES JULY 31, 2010
- REQUEST LICENSE RENEWAL THROUGH JULY 31, 2030
- APPLICATION IMPLEMENTED THE GENERIC AGING LESSONS LEARNED (GALL) PROCESS

NRC Review Process

- 2 OPEN ITEMS (RESOLVED)
- 29 CONFIRMATORY ITEMS
- BROUGHT INTO SCOPE AND SUBJECTED TO AMR
  - 5 NEW STRUCTURES
  - 159 NEW COMPONENTS
- 4 NEW AMPs

NRC Audits and Inspections

- SCOPING AND SCREENING METHODOLOGY AUDIT
  - SEPTEMBER 17 - 20, 2002
- SCOPING AND SCREENING INSPECTION
  - MARCH 31 – APRIL 4, 2003
- AGING MANAGEMENT PROGRAM AUDIT
  - MAY 28 – 29, 2003
- AGING MANAGEMENT REVIEW INSPECTION
  - JUNE 9 – 14 and JUNE 23 -27, 2003
- FINAL INSPECTION
  - SEPTEMBER 9 – 10, 2003

Section 2 – Structures and Components Subject to an Aging Management Review

- 2.1 - SCOPING AND SCREENING METHODOLOGY
- DESCRIBES METHODOLOGY USED TO IDENTIFY SSCs THAT ARE WITHIN THE SCOPE OF THE LICENSE RENEWAL RULE AND SUBJECT TO AN AMR

Section 2.1 – Scoping and Screening Methodology (Continued)

- STAFF CONDUCTED METHODOLOGY AUDIT
- PURPOSE OF AUDIT WAS TO VERIFY THAT THE SCOPING AND SCREENING METHODOLOGY WAS CONSISTENT WITH THE REQUIREMENTS OF THE RULE
- AUDIT TEAM FOUND THAT THE APPLICANT'S METHODOLOGY SATISFIES THE RULE

Section 2.2 – Plant Level Scoping Results

- STAFF REVIEWED SECTION 2.2 TO DETERMINE IF ANY STRUCTURES OR COMPONENTS SUPPOSED TO BE WITHIN SCOPE WERE OMITTED
- SEVERAL STRUCTURES AND COMPONENTS INITIALLY OMITTED FROM SCOPE THAT MET SCOPING CRITERION 54.4(a)(2)

Section 2.3 Scoping and Screening of Mechanical Systems

- INCLUDES:
  - REACTOR SYSTEMS (7)
  - ENGINEERED SAFETY FEATURES SYSTEMS (5)
  - AUXILIARY SYSTEMS (19)
  - STEAM POWER CONVERSION SYSTEMS (12)

Section 2.3 Scoping and Screening of Mechanical Systems (Continued)

- SSCs WERE INITIALLY OMITTED FROM SCOPE. THESE SSCs MET SCOPING CRITERION 54.4(a)(2)
  - STEAM GENERATOR FEEDRINGS
  - DEEPWELL PUMPS, AND ASSOCIATED PIPING
  - HYDROGEN RECOMBINERS
  - SPENT FUEL POOL MAKEUP PATH FROM RWST
- THESE SYSTEMS WERE BROUGHT INTO SCOPE, ALONG WITH ASSOCIATED AGING MANAGEMENT INFORMATION

Open Items

- Open Item 2.3.1.6-1
  - STAFF IDENTIFIED THAT DEGRADATION OF THE FEEDRINGS, J-NOZZLES, OR J-NOZZLE WELDS COULD PRODUCE LOOSE PARTS INSIDE THE STEAM GENERATOR SHELL
    - MAY DAMAGE SAFETY-RELATED COMPONENTS, ESPECIALLY DURING TRANSIENTS
  - COMPONENTS BROUGHT INTO SCOPE AND OPEN ITEM IS RESOLVED

Open Items (continued)

- Open Item 2.3.3.8-1
  - FOLLOWING A LAKE ROBINSON DAM FAILURE AND DEPLETION OF CONDENSATE STORAGE TANK INVENTORY FAILURE OF DEEPWELL PUMPS WOULD CAUSE FAILURE OF THE SAFETY RELATED AUXILIARY FEEDWATER SYSTEM AND PREVENT THE RESIDUAL HEAT REMOVAL NECESSARY TO MAINTAIN A SAFE SHUTDOWN CONDITION
  - THREE DEEPWELL PUMPS, ASSOCIATED PIPING, AND VALVES WERE BROUGHT INTO SCOPE AND OPEN ITEM IS RESOLVED.

Confirmatory Items

- Confirmatory Item 2.3.2.5-1
  - STAFF IDENTIFIED HYDROGEN CONTROL HAS AN INTENDED FUNCTION FOR THE POST- ACCIDENT HYDROGEN SYSTEM, AND HYDROGEN RECOMBINERS PREVENT THE ACCUMULATION OF COMBUSTIBLE CONCENTRATION OF HYDROGEN WITHIN THE CONTAINMENT BUILDING.
  - HYDROGEN RECOMBINERS AND ASSOCIATED PIPING WERE BROUGHT INTO SCOPE

Confirmatory Items (continued)

- Confirmatory Item 2.3.3.9-1
  - FAILURE OF MAKEUP SUPPLY FROM REFUELING WATER STORAGE TANK (RWST) COULD CAUSE FAILURE OF SPENT FUEL COOLING DUE TO INADEQUATE COOLANT INVENTORY
  - SPENT FUEL POOL (SFP) MAKEUP WATER PATH AND ASSOCIATED COMPONENTS FROM RWST TO SFP WAS BROUGHT INTO SCOPE

SECTION 2.4 STRUCTURES AND STRUCTURAL COMPONENTS

- DESCRIBES STRUCTURES AND STRUCTURAL COMPONENTS
  - CONTAINMENT
  - OTHER STRUCTURES (13)
- NO OPEN OR CONFIRMATORY ITEMS

SECTION 2.5 - ELECTRICAL SYSTEMS, INSTRUMENTATION, & CONTROL SYSTEMS

- SSC WERE INITIALLY OMITTED FROM SCOPE
  - FUSE HOLDERS
  - STATION BLACKOUT COMPONENTS, SUCH AS:
    - GENERATOR ISOLATED PHASE (ISO-PHASE) BUS DUCT
    - NON SEGREGATED 4.16-kV & 480 V BUS DUCTS
    - HIGH-VOLTAGE INSULATORS

SCOPING AND SCREENING SUMMARY

- THE APPLICANT'S METHODOLOGY MEETS THE REQUIREMENTS OF THE RULE.
- SCOPING AND SCREENING RESULTS INCLUDED ALL SSCs WITHIN THE SCOPE OF LICENSE RENEWAL AND SUBJECT TO AN AMR.

LICENSE RENEWAL INSPECTIONS

- HIGHLIGHTS:
  - SCOPING AND SCREENING INSPECTION
  - AMR INSPECTION
  - FINAL INSPECTION
  - COMMITMENT TRACKING
  - PLANT ROP

License Renewal Inspection Program Implementation

- LICENSE RENEWAL MANUAL CHAPTER - MC 2516
- LICENSE RENEWAL INSPECTION PROCEDURE - IP 71002
- SITE-SPECIFIC INSPECTION PLAN FOR EACH APPLICANT
- SCHEDULED TO SUPPORT NRR's REVIEW
- RESOURCES-CONSISTENT TEAM OF THE SAME FIVE INSPECTORS
- TRAINING PROGRAM FOR REPLACEMENT TEAM MEMBERS

License Renewal Inspections

- *SCOPING AND SCREENING INSPECTION*
- OBJECTIVE: TO CONFIRM THAT THE APPLICANT HAS INCLUDED ALL APPROPRIATE SSCs IN THE SCOPE OF LICENSE RENEWAL AS REQUIRED BY THE RULE.
- ONE WEEK IN LENGTH
- CONDUCTED MARCH 31 – APRIL 4, 2003 AT ROBINSON SITE
- CONCLUDED THAT SCOPING AND SCREENING PROCESS WAS SUCCESSFUL IN IDENTIFYING THOSE SSCs NEEDING AGING MANAGEMENT REVIEW

SCOPING & SCREENING INSPECTION (Continued)

- QUESTIONED WHY UNIT 1 AND 2 FUEL OIL TRANSFER PIPING AND DEEP WELL BACKUP WATER SUPPLY FOR AUXILIARY FEEDWATER SYSTEM WERE NOT IN SCOPE
- THREE EXAMPLES OF INSCONSISTENCY BETWEEN THE APPLICATION, BOUNDARY DRAWINGS AND CALCULATIONS
- CALCULATION DESCRIBING HANDLING OF NON-SAFETY RELATED PIPING IN VICINITY OF SAFETY RELATED WAS UNCLEAR
- SUBSEQUENT INSPECTION FOLLOWUP FOUND THESE ISSSUES HAD BEEN CORRECTED

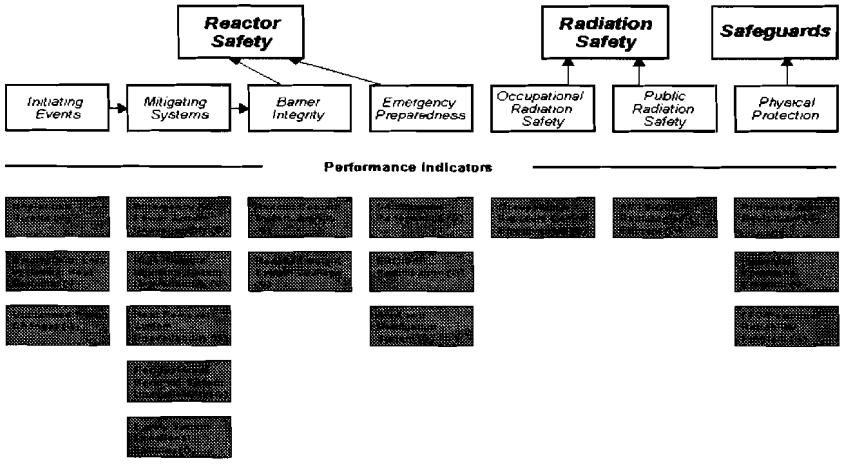
AGING MANAGEMENT INSPECTION

- OBJECTIVE: TO CONFIRM THAT EXISTING AMPs ARE WORKING WELL AND TO EXAMINE THE APPLICANT's PLANS FOR ESTABLISHING NEW AMPs AND ENHANCING EXISTING AMPs
- TWO WEEKS IN LENGTH
- CONDUCTED JUNE 9–27, 2003
- INCOMPLETE INTEGRATION OF FUTURE TASKS INTO ESTABLISHED SITE ACTION REQUEST TRACKING SYSTEM
- MATERIAL CONDITION OF PLANT WAS BEING ADEQUATELY MAINTAINED AND HAS IMPROVED OVER TIME.
- DOCUMENTATION WAS OF GOOD QUALITY.

AGING MANAGEMENT INSPECTION
(Continued)

- THIRD (OPTIONAL) INSPECTION
- CONDUCTED SEPTEMBER 9-10, 2003
- APPLICANT HAD LOADED FUTURE TASKS INTO ESTABLISHED SITE ACTION REQUEST TRACKING SYSTEM
- TRANSITION PLAN FOR COMPLETION OF LICENSE RENEWAL PROJECT WAS ESTABLISHED

RNP
2Q/2003 PERFORMANCE SUMMARY



Last Modified: July 22, 2003

SECTION 3 - AGING MANAGEMENT REVIEW

- GALL DIVIDES SYSTEMS AND STRUCTURES INTO 6 BROAD SYSTEM/STRUCTURAL GROUPS
  - REACTOR SYSTEMS (3.1)
  - ENGINEERED SAFETY FEATURES SYSTEMS (3.2)
  - AUXILIARY SYSTEMS (3.3)
  - STEAM AMD POWER CONVERSION SYSTEMS (3.4)
  - CONTAINMENTS, STRUCTURES AND COMPONENT SUPPORTS (3.5)
  - ELECTRICAL AND INSTRUMENTATION AND CONTROLS (3.6)

AGING MANAGEMENT PROGRAMS

- 12 COMMON AGING MANAGEMENT PROGRAMS (AMPs)
- 26 SYSTEM/STRUCTURAL GROUP-SPECIFIC AMPs
- CONSISTENT WITH GALL: 13
- CONSISTENT WITH GALL, BUT WITH SOME DEVIATION: 18
- NON-GALL: 7
- STAFF EVALUATION RESULTS OF COMMON AMPs DOCUMENTED IN SER SECTION 3.0.3, SYSTEM SPECIFIC AMPs IN EACH SYSTEM/STRUCTURE GROUP

RNP AMPs STATISTICS

- TOTAL NUMBER OF AMPs: 38
- NUMBER OF AMPs ARE REFERENCED IN THE LRA: 34, NOW: 38
- FOUR AMPS ADDED FOR FOLLOWING COMPONENTS
  - RADIATION MONITORING INSTRUMENTATION NON–EQ CABLE
  - NEUTRON FLUX INSTRUMENTATION CABLE
  - FUSE HOLDERS
  - BUS DUCTS

RNP AMPs AUDIT

- DATE OF AUDIT - MAY 28-29, 2003
- AUDITORS - 5 PROJECT MANAGERS FROM LICENSE RENEWAL
- AUDITED ALL THE ATTRIBUTES OF THE AMPs CLAIMED TO BE CONSISTENT WITH GALL
- CONCLUDED AMPs WERE CONSISTENT WITH GALL EXCEPTING:
  - NON-EQ INSULATED CABLES AND CONNECTIONS PROGRAM LACKED DETAIL TO CONCLUDE CONSISTENCY WITH GALL
  - AMP WAS REVISED AND RESUBMITTED TO TECHNICAL STAFF FOR REVIEW
  - STAFF FOUND IT ACCEPTABLE

SECTION 3.1 - REACTOR SYSTEMS

- REACTOR COOLANT SYSTEM PIPING
- REACTOR COOLANT PUMPS
- PRESSURIZER
- REACTOR VESSEL
- REACTOR VESSEL INTERNALS
- STEAM GENERATORS

- NINE CONFIRMATORY ITEMS
- NO OPEN ITEMS

ALLOY 600 PROGRAM

- NRC ORDER EA-009-03 REQUIRES AUGMENTED INSPECTIONS OF ALLOY 600 NOZZLES TO UPPER REACTOR VESSEL HEAD DURING CLB
- NRC BULLETIN 2003-03 ADDRESSES CRACKING IN THE ALLOY 600 PENETRATION NOZZLES ADJOINED TO THE LOWER VESSEL HEAD
- AS OTHER ALLOY 600 OR ALLOY 82/182 ISSUES ARISE, STAFF WILL ADDRESS THEM WITHIN THE CURRENT OPERATING TERM

ALLOY 600 PROGRAM (Continued)

- COMMITMENT BY THE APPLICANT TO SUBMIT THE ALLOY 600 PROGRAM TO THE STAFF FOR REVIEW AND APPROVAL BY JULY 31, 2009
- THE COMMITMENT WILL PERMIT THE STAFF TO REVIEW THE AMP FOR ACCEPTABILITY AGAINST NRC REQUIREMENTS AS WELL AS THOSE INSPECTION ACTIVITIES RECOMMENDED BY THE EPRI-MRP FOR CLASS 1 ALLOY 600 BASE METALS AND ALLOY 82/182 WELD MATERIALS

SECTION 3.2 - ENGINEERED SAFETY FEATURES (ESF) SYSTEMS

- RESIDUAL HEAT REMOVAL
- SAFETY INJECTION
- CONTAINMENT SPRAY
- CONTAINMENT AIR RECIRCULATION COOLING
- CONTAINMENT ISOLATION

- NO OPEN OR CONFIRMATORY ITEMS

SECTION 3.3 - AUXILIARY SYSTEMS

- 19 AUXILIARY SYSTEMS
- THREE CONFIRMATORY ITEMS
- NO OPEN ITEMS

SECTION 3.4 - STEAM AND POWER CONVERSION SYSTEMS

- 12 STEAM AND POWER CONVERSION SYSTEMS
- NO OPEN ITEMS
- NO CONFIRMATORY ITEMS

SECTION 3.5 - CONTAINMENT, STRUCTURES, AND COMPONENT SUPPORTS

- CONTAINMENT STRUCTURE
- 13 OTHER STRUCTURES
- ONE CONFIRMATORY ITEM
- NO OPEN ITEMS

AGING MANAGEMENT OF IN-SCOPE INACCESSIBLE CONCRETE

- BELOW GRADE SOIL/WATER-AGGRESSIVE, pH SLIGHTLY LOWER THAN THE THRESHOLD OF 5.5
- PRIME INDICATORS: INSPECTION OF INTAKE STRUCTURE, DAM SPILLWAY, EXCAVATED RAB FOUNDATION, MANHOLES
- PERIODIC TESTING OF GROUNDWATER TO MONITOR CHANGES
- COMMITMENT TO RESOLVE BELOW GRADE DEGRADATION ISSUES THROUGH ENHANCEMENTS OF SMP AND IWL

SECTION 3.6 - ELECTRICAL AND I&C

- 3 COMPONENT COMMODITY GROUPS SUBJECT TO AN AMR
  - BUS DUCTS
  - INSULATED CABLES AND CONNECTIONS
  - ELECTRICAL/I&C PENETRATIONS ASSEMBLIES
- THREE CONFIRMATORY ITEMS
- NO OPEN ITEMS
- FOUR AMPs ADDED FOR THE FOLLOWING COMPONENTS:
  - RADIATION MONITORING INSTRUMENTATION NON-EQ CABLE
  - NEUTRON FLUX INSTRUMENTATION CABLE
  - FUSE HOLDERS
  - BUS DUCTS

SECTION 4 - TIME-LIMITED AGING ANALYSES

4.1 - IDENTIFICATION OF TLAAs

4.2 - REACTOR VESSEL NEUTRON EMBRITTLEMENT

4.3 - METAL FATIGUE

4.4 - ENVIRONMENTAL QUALIFICATION

4.5 - CONCRETE CONTAINMENT TENDON PRESTRESS

4.6 - OTHER TLAAs

- 4.6.1 - THERMAL AGING EMBRITTLEMENT, LBB ANALYSIS
- 4.6.2 - FOUNDATION PILE CORROSION
- 4.6.3 - ELIMINATION OF CONTAINMENT PENETRATION COOLERS
- 4.6.4 - AGING OF BORAFLEX

SECTION 4.2 - REACTOR VESSEL NEUTRON EMBRITTLEMENT

- Analysis of PTS projected to end of PEO
- Staff performed independent calculations

ITEMS	LIMIT (° F)	RNP (°F)
CIRCUMFERENTIAL WELDS	300	275
PLATES/FORGINGS/AXIAL WELDS	270	235

PTS = Pressurized Thermal Shock

REACTOR VESSEL UPPER SHELF ENERGY (USE)

- ANALYSIS OF USE PROJECTED AT THE END OF PEO
- STAFF PERFORMED INDEPENDENT CALCULATION

REACTOR VESSEL UPPER SHELF ENERGY (USE)	LIMIT (MINIMUM) FT-LBS	RNP FT-LBS
WELDS/FORGINGS	50	56
PLATE MATERIALS	42 (EMA)	45
NOZZLE FORGING	50	53
NOZZLE WELDS	50	52

EMA = Equivalent Margin Analysis

SECTION 4.3 METAL FATIGUE

AUXILIARY FEEDWATER (AFW) LINE FATIGUE:

- 4"X16" AFW AND MAIN FW CONNECTIONS ARE FATIGUE CRITICAL
- CUF=1.0 AT ~ 50 YEARS (BASED ON PROJECTIONS OF ACTUAL TRANSIENTS TO DATE)

CUF = Cumulative Usage Factor

AUXILIARY FEEDWATER (AFW) LINE FATIGUE (Continued):

- COMMITMENT
  - TRANSIENTS WILL BE TRACKED BY FMP
  - COMPONENTS WILL BE EITHER RE-ANALYZED OR REPLACED PRIOR TO EXCEEDING CYCLES OF TRANSIENTS TRACKED BY FMP
  - REVISION OF UFSAR SUPPLEMENT IS CONFIRMATORY ITEM 4.3.2-1

ENVIRONMENTALLY-ASSISTED FATIGUE (EAF)

- PROJECTED EAF-ADJUSTED CUF>1.0 FOR PZR SURGE LINE DURING EXTENDED PERIOD OF OPERATION
- COMMITMENT:
  - FATIGUE OF SURGE LINE WILL BE MANAGED USING ONE OR MORE OF THE FOLLOWING OPTIONS:
    1. REFINE FATIGUE ANALYSIS TO LOWER CUF TO LESS THAN ONE
    2. REPAIR AFFECTED LOCATIONS
    3. REPLACE AFFECTED LOCATIONS
    4. MANAGE FATIGUE BY USING NRC APPROVED AUGMENTED ISI PROGRAM

ENVIRONMENTALLY-ASSISTED FATIGUE (EAF) (Continued)

- THE APPLICANT IS TO PROVIDE DETAILS OF THE ISI PROGRAM FOR NRC STAFF'S REVIEW AND APPROVAL PRIOR TO THE PERIOD OF EXTENDED OPERATION, IF OPTION 4 IS SELECTED
- REVISION OF THE UFSAR SUPPLEMENT IS CONFIRMATORY ITEM 4.3.2-2

SECTION 4.4 - ENVIRONMENTAL QUALIFICATION

- APPLICANT'S EQ PROGRAM CONSISTENT WITH GALL
- STAFF CONCLUDED EQ PROGRAM WILL CONTINUE TO MANAGE EQUIPMENT IN ACCORDANCE WITH 10 CFR 50.49, AND MEETS 10 CFR 54.21(C)(1)(iii)
- GSI-168, "ENVIRONMENTAL QUALIFICATION OF LOW-VOLTAGE INSTRUMENTATION AND CONTROL CABLES"
  - STAFF ISSUED RIS 2003-09, ON MAY 2, 2003
  - ISSUE IS CLOSED
  - NO ACTION IS REQUIRED

SECTION 4.5 - CONCRETE CONTAINMENT TENDON LOSS OF PRESTRESS

- PRESTRESS LOSSES ESTIMATED FOR 60 YEARS
- STAFF FINDS ESTIMATION REASONABLE
- STAFF CONCERN – GROUTED TENDONS – TENDON MONITORING NOT POSSIBLE
- APPLICANT AGREED TO PERFORM TWO TESTS SIMILAR TO STRUCTURAL INTEGRITY TESTING (SIT) DURING PEO AT DESIGN BASIS ACCIDENT PRESSURE (DBA)
- MEASUREMENTS AND OBSERVATIONS – VERIFY GROSS BEHAVIOR OF CONTAINMENT

4.6 - OTHER TLAAs

SECTION 4.6.1 - THERMAL AGING EMBRITTLEMENT AND LEAK BEFORE BREAK

- THE APPLICANT EVALUATED THE VALIDITY OF THE LEAK-BEFORE-BREAK (LBB) ANALYSIS OF THE MAIN LOOP PIPING FOR THE PERIOD OF EXTENDED OPERATION
- LBB ANALYSIS INCLUDED THE EFFECTS OF THERMAL AGING ON THE FRACTURE TOUGHNESS PROPERTIES AND CRITICAL CRACK SIZE ANALYZED FOR CASS MATERIALS
- THE STAFF REVIEWED THE LBB ANALYSIS AND FOUND IT ACCEPTABLE

SECTION 4.6.2 FOUNDATION PILE CORROSION

- RNP STEEL PILES ARE UNDER THE CATEGORY 1 STRUCTURES
- APPLICANT COMPARED MATERIAL AND ENVIRONMENT TO EPRI REPORT, TR-103842
  - CONCLUSION: CORROSION INSIGNIFICANT
- RNP STEEL PILES ARE IN UNDISTURBED NATURAL SOIL, AND THEY ARE NOT APPRECIABLY AFFECTED BY CORROSION DUE TO THE DEFICIENCY OF OXYGEN.
- STAFF FINDS THE TLAA FINDING ACCEPTABLE

SECTION 4.6.3 - ELIMINATION OF CONTAINMENT PENETRATION COOLERS

- CONCRETE TEMPERATURE AROUND CONTAINMENT PENETRATION REMAIN BELOW 200°F.
- APPLICANT WITHDREW THE TLAA AND RESPONSE OF CONFIRMATORY ITEM 4.6.3-1 WILL ADDRESS THE ISSUE

SECTION 4.6.4 - AGING OF BORAFLEX

- LICENSE AMENDMENT WAS SUBMITTED TO ELIMINATE CREDIT OF THE BORAFLEX PANELS FROM RNP TECHNICAL SPECIFICATIONS
- PANELS ARE NOT NEEDED TO MAINTAIN Keff FOR THE GEOMETRY OF THE SPENT FUEL RODS
- STAFF IS REVIEWING THE AMENDMENT APPLICATION
- CONFIRMATORY ITEM 4.6.4-1 ADDRESSED, IF THE AMENDMENT IS NOT APPROVED OR IS DELAYED FOR APPROVAL BEYOND NOVEMBER 2003, APPLICANT WILL SUBMIT AGING OF BORAFLEX TLAA AND BORAFLEX MONITORING PROGRAM
- REVIEW OF PROGRAM WILL BE INCLUDED IN FINAL SER, IF NECESSARY

September 30, 2003

MEMORANDUM TO: Graham Leitch, Chairman
Plant License Renewal Subcommittee

FROM: John J. Barton, ACRS Consultant

SUBJECT: APPLICATION TO RENEW THE OPERATING LICENSE FOR THE H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2

Having completed my review of the License Renewal Application and Safety Evaluation Report (SER) for the H. B. Robinson Steam Electric Plant, Unit 2, I offer the following comments.

My reaction to this application is that it was well organized and easy to review. The same can be said for the staff's SER. The applicant fully utilized the Gall process and in doing, improved the effectiveness and efficiency of the renewal process. There being so few open items in the SER may be explained by the applicant's commitment to Gall.

The scoping and screening methodology was sound and the applicant considered the requirement of the NRC rule and the Statements of Consideration for the rule. The applicant also utilized guidance presented in the Nuclear Energy Institute's (NEI's) Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 (NEI 95-10). In addition, the applicant also considered the NRC staff's correspondence with other applicants and with NEI in the development of this methodology. Utilizing this information led to a more thorough job in developing the application and, in my opinion, far less unresolved issues.

In my review of various sections of the License Renewal Application and SER, I have the following questions/comments:

License Renewal Application

1. **Section 2.5.2 — Electrical/I&C Component Commodity Groups**
   Page 2.5-2 of the LRA
   Item 1 — Electrical Bus

   This item has been eliminated from the aging management review. The item describes the isolated phase bus system (and associated bus duct), and the switchyard and transformer (and associated switchyard bus).

Question:

Is any of this equipment that has been eliminated from aging management needed to support a station blackout event?

2. **Sections 3.1 thru 3.6 — Aging Management Programs for Plant Systems and Components**

In review of these sections of the License Renewal Application, it is noted that since the licensee committed to the aging management programs recommended in GALL, I have no specific issues.

Some component commodities do have programs that differ or are not addressed in Gall. In reviewing how the applicant addresses these differences, he proposes to use existing station programs for aging management. Examples of existing programs being recommended are the station water chemistry program, the station preventive maintenance program, and inspection program.

I consider that these station programs are satisfactory for the aging management or components not covered by Gall.

3. **General Comment**

Based on NRC inspection reports conducted earlier this year at the Robinson Station, I am not certain of the status of the containment liner as far as NRC is concerned.

The configuration at Robinson is unique in that most of the liner is covered by insulation blankets. Is NRC satisfied that the condition of the liner behind the insulating blankets is in an acceptable material condition?

4. **Conclusion** Based Upon My Review of the H. B. Robinson License Renewal Application and the NRC Staff Safety Evaluation Report

My review of this application leads me to conclude that the applicant performed a thorough review of the station structures systems and components and developed a solid aging management program.

Upon resolution of the remaining open items to the staff's satisfaction, I see no reason the applicant should not be granted the requested life extension.