



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001

February 28, 2006

MEMORANDUM TO: ACRS Members

FROM: John G. Lamb, Senior Staff Engineer,  
Technical Support Staff  
ACRS/ACNW

A handwritten signature in black ink, appearing to read "John G. Lamb".

SUBJECT: CERTIFIED COPY OF THE MINUTES OF THE ACRS SUBCOMMITTEE  
MEETING ON THE BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1  
AND 2 LICENSE RENEWAL APPLICATIONS, FEBRUARY 8, 2006 -  
ROCKVILLE, MARYLAND

A certified copy of the minutes for the subject meeting is attached for your information.

Attachments: Certification Letter  
Minutes (CERTIFIED)

cc w/o Attachment:

J. Larkins  
A. Thadani  
M. Snodderly  
S. Duraiswamy



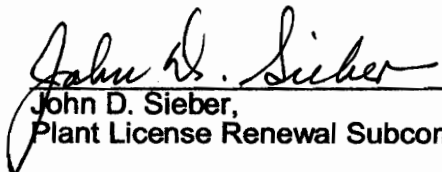
UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001

MEMORANDUM TO: John G. Lamb, Senior Staff Engineer,  
Technical Support Staff  
ACRS/ACNW

FROM: John D. Sieber, Chairman  
ACRS Plant License Renewal Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE  
MEETING ON THE BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1  
AND 2 LICENSE RENEWAL APPLICATIONS, FEBRUARY 8, 2006 -  
ROCKVILLE, MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting on February 8, 2006, are an accurate record of the proceedings for that meeting.

 2-23-06  
John D. Sieber, Date  
Plant License Renewal Subcommittee Chairman

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
MINUTES OF THE ACRS PLANT LICENSE RENEWAL SUBCOMMITTEE MEETING  
ON THE BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2  
FEBRUARY 8, 2006  
ROCKVILLE, MARYLAND**

On February 8, 2006, the Plant License Renewal Subcommittee held a meeting in Room T-2B3, 11545 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to review and discuss the Brunswick Steam Electric Plant (BSEP), Units 1 and 2 license renewal applications and the associated Safety Evaluation Report (SER).

The meeting was open to the public. No written comments or requests to make oral statements were received from members of the public related to this meeting. Mr. John G. Lamb was the Designated Federal Official for this meeting. The meeting was convened at 1:30 p.m. and adjourned at 4:13 p.m. on February 8, 2006.

**ATTENDEES:**

**ACRS MEMBERS/STAFF**

John Sieber, Chairman  
Mario Bonaca, Member  
William Shack, Member

Graham Wallis, Member  
Otto Maynard, Member  
John G. Lamb, ACRS Staff

**NRC STAFF/PRESENTERS**

P.T. Kuo, NRR  
S. K. Mitra, NRR  
K. Chang, NRR  
D. Ashley, NRR  
M. Mitchell, NRR  
A. Lee, NRR  
M. Hartzman, NRR  
R. Subbaratnam, NRR  
J. Davis, NRR  
R. Aulude, NRR  
C. Lauron, NRR  
L. Tran, NRR  
C. Li, NRR  
T. Ford, NRR  
G. Chermvenki, NRR  
M. Gutierrez, NRR  
Y. Diaz, NRR  
J. Zimmerman, NRR  
G. Galletti, NRR  
R. Mathew, NRR  
M. Morgan, NRR

C. Julian, RIII  
J. Storch, OIG  
R.K. Wild, OIG  
K. Tanube, NRR  
M. Heath, NRR  
G. Cranston, NRR  
T. Le, NRR  
H. Asher, NRR  
P.Y. Chen, NRR  
N. Iqbal, NRR  
Y. Li, NRR  
D. Shum, NRR  
J. Medoff, NRR  
M. Bagchi, NRR  
A. Stubbs, NRR  
K. Hsu, NRR  
J. Raval, NRR  
B. Rodgers, NRR  
J. Ayala, NRR  
D. Wrona, NRR

## OTHER ATTENDEES

M. Heath, CP&L	L. Beller, CP&L
M. Grantham, CP&L	J. Donohue, CP&L
R. Stewart, CP&L	T. Cleary, CP&L
C. Mallner, CP&L	E. Williams, CP&L
G. Miller, CP&L	M. Gallagher, Exelon
J. Hufnagel, Exelon	P. Mazzaferro, Constellation
M. Fallim, Constellation	D. Dellario, Constellation
J. Oddo, PPL	M. Detamore, PPL
M. Fletcher, Progress Energy	J. Lane, Progress Energy
C. Myer, Southern Nuclear	L. Seamans, NMC
J. Kneeland, NMC	R. Vincent, NMC
W. Roberts, NMC	S. Dort, First Energy
R. Gates, PNNL	

The presentation slides, handouts used during the meeting, and a complete list of attendees are attached to the Office Copy of the meeting minutes. The presentations to the Subcommittee are summarized below.

### **Opening Remarks**

Mr. John D. Sieber, Chairman of the Subcommittee on Plant License Renewal convened the meeting and made a few introductory remarks. The purpose of this meeting was to review the Carolina Power & Light Company (CP&L), the operating licensee, license renewal applications (LRAs) for BSEP Units 1 and 2 and the associated SER. Mr. Sieber called upon Dr. P.T. Kuo of the Office of Nuclear Reactor Regulation (NRR) to begin the discussion.

### **Staff Introduction**

Dr. Kuo made some introductory remarks, introduced the principal staff members present, then he turned the presentation over to the licensee.

### **Brunswick License Renewal Applications**

#### Background

By letter dated October 18, 2004 (ADAMS Accession Nos. ML043060406 and ML043060411), CP&L submitted the LRAs for BSEP in accordance with Title 10, Part 54, of the *Code of Federal Regulations* (10 CFR Part 54). CP&L is requesting renewal of the operating licenses for BSEP Units 1 and 2, (Facility Operating License Numbers DPR-71 and DPR-62, respectively) for a period of 20 years beyond the current expiration dates of September 8, 2016, for Unit 1; and December 27, 2014, for Unit 2. The NRC issued the operating licenses for Unit 1 and Unit 2 on November 12, 1976, and December 27, 1974, respectively.

#### Plant Description

The BSEP units are located south of Wilmington, NC at the mouth of the Cape Fear River in Brunswick County, North Carolina. The BSEP units are boiling water reactors (BWRs) designed and supplied by General Electric Nuclear Energy Company (GENE). The primary containments are of the BWR Mark I design; and each consists of a Drywell, a suppression chamber in the shape of a Torus and a connecting vent system between the Drywell and the suppression chamber. Each Drywell is constructed of reinforced concrete with a carbon steel liner. Each Unit is authorized to operate at 2,923 megawatts thermal (MWt).

## Recent Operating Experience and Plant Improvements

Unit 2 has a White Performance Indicator in the Unplanned Power Changes area. The following are the occurrences that caused the Unit 2 White Performance Indicator: (1) 2B reactor feed pump impeller failure in April 2005, (2) 2 B circulating water intake pump trip due to debris loading in June 2005, (3) dual unit shutdown due to identified legacy issue with diesel generator differential protection circuit in August 2005, (4) three unit downpowers due to tube leaks in the 2A condenser water box in November 2005, (5) 2B reactor recirculation pump motor-generator set trip due to a failure of the fuse in the voltage regulation circuit in December 2005. The staff is planning a supplemental inspection in February 2006.

BSEP had a fatigue failure of the electrohydraulic return line for the main turbine control valves. The licensee believes the interim power level was a likely contributor. Industry operating experience of this type of failure exists. The licensee modified the piping with a flexible connection.

BSEP had failures with socket welded drain lines. BSEP and industry operating experience of this type of failure exists. The licensee changed the socket weld configurations to a more fatigue tolerant design.

BSEP had a problem with condensate/feedwater system response during minimum flow valve operation that resulted in higher condensate pressures. The licensee optimized the system operation.

BSEP had a main generator disconnect switch failure. The switch design did not support the continuous rating. The licensee modified the disconnect switch to a hard bus configuration.

## Licensee Presentation

Mr. Mike Heath, CP&L, greeted the Subcommittee and introduced accompanying members of the CP&L staff: Mr. Lenny Beller and Mr. Mark Grantham. The licensee presented an overview of the presentation agenda. The licensee gave a description of BSEP. BSEP has 560 fuel assemblies per unit and uses hydrogen water chemistry. The original licensed thermal power (OLTP) for BSEP is 2439 MWt. BSEP had a 5% uprate to 2558 MWt in November 1996 and BSEP had a 15% power uprate to 2923 MWt in May 2002. BSEP transitioned to 24 month cycles in 1997. Unit 1 is in its 15<sup>th</sup> cycle and Unit 2 is in its 17<sup>th</sup> cycle.

Mr. Mark Grantham, CP&L, described the BSEP containment. Brunswick has a unique Mark I containment. BSEP is the only Mark I containment that actually has the suppression-pool torus encapsulated in concrete. Mr. Grantham said other sites have a freestanding torus that is supported.

The licensee presented a description of BSEP, the operating history, the current plant status, the application background, the license review methodology, the application of GALL and the commitment process. The licensee identified 34 Aging Management Programs (AMPs). The licensee said all commitments are tracked by the BSEP Corrective Action Program (CAP). Each commitment has an Implementation Plan and each implementation plan identifies all required actions, all actions are linked to the CAP, and all actions have a due date and owner. The license renewal program of BSEP will track license renewal activities and document updates are scheduled for 2006. The licensee stated that the new staff audit process was effective and allowed early identification of concerns, which allowed early resolution.

## Staff Presentation

### **Safety Evaluation Report Overview**

Mr. S.K. Mitra, Project Manager for NRR, introduced several members of the staff including Maurice Heath and Claudle Julian.

Mr. Mitra led the staff's presentation of the SER, the scoping and screening review, the AMP reviews and audits, and the time-limited aging analyses (TLAAs).

The SER was issued on December 20, 2005 (ADAMS Accession No. ML053550301), containing no open items, no confirmatory items, and three proposed license conditions. Mr. Mitra listed the dates of the audits and inspections performed by the staff.

### Scoping and Screening

Mr. Mitra described Section 2.1, "Scoping and Screening Methodology;" Section 2.2, "Plant-Level Scoping and Screening;" Section 2.3, "Scoping and Screening of Mechanical Systems;" Section 2.4, "Scoping and Screening of Containments, Structures and Supports;" and Section 2.5, "Scoping and Screening of Electrical and Instrumentation and Controls," had no open or confirmatory items. The staff said the licensee committed to review plant and industry operating experience, relevant aging effects caused by operation at power uprate and the evaluation will be submitted to the staff for review one year prior to period of extended operation.

The staff explained the structures and components subject to Aging Management Review (AMR). The staff stated the licensee's scoping methodology meets the requirements of 10 CFR Part 54.

The staff presented the Time-Limited Aging Analyses (TLAAs) for neutron embrittlement, metal fatigue, EQ, containment liner plate and penetration fatigue analysis, and other plant specific TLAAs.

### **Aging Management Program Review and Audits**

Mr. Mitra of NRR stated that of the 34 AMPs at BSEP, 26 are existing programs, 8 are new programs, 20 are common to both units, 14 are system/structural group-specific, 9 are consistent with GALL, 20 are consistent with the GALL Report with exceptions and/or enhancements, and 5 are not consistent with GALL.

Mr. Claudle Julian of Region II described some of the AMPs reviewed during the audit such as Open-Cycle Cooling Water, and Service Water Intake Structure.

### Onsite Inspection Results

Mr. Julian, Region II, described the license renewal inspections performed by the staff. The license renewal inspections follow Inspection Procedure IP 71002.

The objective of the scoping and screening inspection is to confirm that the applicant has included all structures, systems, and components (SSCs) within the scope of license renewal as required by the rule. This inspection concluded that the scoping and screening activities appropriately identified the majority of the systems.

The objective of the AMP inspection is to confirm that existing AMPs are managing current age-related degradation. Mr. Julian stated that the documentation was of very good quality, supported by a comprehensive computer database.

Mr. Julian stated that the licensee has a White Performance Indicator for Unplanned Power Changes due to several downpowers that the licensee described.

## Time Limited Aging Analyses

Mr. Heath described the staff's review of Time-Limited Aging Analysis (TLAAs). As part of the license renewal inspections, the staff reviewed six TLAAs programs: RV Neutron Embrittlement, Metal Fatigue, Containment Liner Plate and Penetration Fatigue Analysis, other Plant Specific TLAAs, and Environmental Qualification (EQ). Mr. Heath stated Reactor Vessel (RV) Upper Shelf Energy (USE) limiting plate has values of 21 and 17 for BSEP Unit 1 and 2, respectively, and the acceptance criterion is less than 23.5 % drop in USE. He said RV USE limiting weld has values of 14.1 and 13.3 for BSEP Unit 1 and 2, respectively, and the acceptance criterion is less than 39 % drop in USE. Mr. Heath said RV USE nozzle weld has values of 12 and 12 for BSEP Unit 1 and 2, respectively, and the acceptance criterion is less than 35 % drop in USE. He said RV USE nozzle forging has values of  $1.38E18$  and  $1.38E8$  for BSEP Unit 1 and 2, respectively, and the acceptance criterion is less than  $1.6E18$  n/sq cm.

Mr. Heath concluded by stating that there is reasonable assurance that activities will continue to be conducted in the renewal term in accordance with the current licensing basis.

## Member Comments

### Dr. Shack

Dr. Shack questioned if the licensee uses noble metal water chemistry at BSEP. The licensee responded BSEP uses hydrogen water chemistry only. Dr. Shack asked the licensee if they are committed to use hydrogen water chemistry in the license renewal. The licensee responded that they are not using hydrogen water chemistry as a commitment. Dr. Shack asked the licensee if they do inspections of the liner of the torus. The licensee responded that is correct it is part of the IWE program. Dr. Shack asked the licensee if the recirculation headers were still the original 304 stainless steel. The licensee responded that is correct. Dr. Shack asked what the material is for the core shroud. The licensee responded that it is 304 stainless steel.

Dr. Shack did not see a need for an interim letter.

### Dr. Wallis

Dr. Wallis questioned the licensee about the minimum thickness of the suppression pool torus encapsulated in concrete. The licensee responded the minimum thickness of the concrete is three to four feet. Dr. Wallis questioned the licensee how much bulging can they detect on the containment liner. The licensee responded that they can detect an eighth of an inch. Dr. Wallis questioned the licensee on how thick is the liner. The licensee responded that the liner is five-sixteenths inch thick. Dr. Wallis questioned the licensee how they predict how much liner material they have left that can corrode before they lose integrity of the torus or any other part of containment. The licensee responded that they perform ultrasonic thickness measurements and they know what is the minimum thickness allowed. Dr. Wallis questioned the licensee if the steam dryers were within scope of the license renewal. The licensee responded that the steam dryers are in scope. Dr. Wallis asked if the BSEP steam dryers were different from the Dresden and Quad Cities design. The licensee responded that is correct. BSEP has the BWR slant hood dryer. Dr. Wallis asked the licensee if they needed credit for containment overpressure. The licensee responded that they did. Dr. Wallis asked for how long was containment overpressure needed. The licensee responded that they need containment overpressure for approximately 20-24 hours. Dr. Wallis questioned the staff about the RV values in slides 39 and 40. Dr. Wallis said he had a lot of trouble reading the RV section in the SER to figure out what all these numbers had to do with some criterion. Dr. Wallis stated it would be helpful if the staff could put tables in the SER like the ones on slides 39 and 40. The staff said they will go through the SER to see what they can do to help. Dr. Wallis said it would be helpful if the staff could place a clarification at the end of a discussion about why the issue is resolved or why the evidence presented meets some criterion. The staff said they will look at the SER and try to revise it.

Dr. Wallis did not see a need for an interim letter.

Dr. Bonaca

Dr. Bonaca asked the licensee given their unique containment configuration, how they address the issue of leakage from refueling seals. The licensee responded that they have not observed leakage from the refueling seal. The licensee stated that they have only seen corrosion between the concrete and the liner due to construction debris. The licensee stated they inspect the liner for bulging. Dr. Bonaca questioned the licensee on their use of operating experience. The licensee responded that they do their operating experience review in order to determine whether or not there is a possibility that there is an aging effect that could be happening at BSEP that their normal aging using aging management tools would not predict.

Dr. Bonaca did not see a need for an interim letter.

Mr. Maynard

Mr. Maynard asked the licensee if they performed repairs when they found bulging in the containment liner. The licensee said they performed weld repairs in some instances and in one instance they cut out the area and replaced it. Mr. Maynard asked the licensee what ensures that commitments do not get reversed in the CAP. The licensee stated that the commitment tracking program is modeled on the Nuclear Energy Institute guidance, so you would have to perform a 50.59 safety evaluation to reverse a commitment.

Mr. Maynard did not see a need for an interim letter.

Mr. Sieber

Mr. Sieber asked the licensee if the metallic part of the torus acts as a liner as opposed to a structural member. The licensee responded that is correct and the concrete acts as a structural member. Mr. Sieber asked the licensee what material the recirculation replacement risers were made from. The licensee stated they were 316 stainless steel nuclear grade. Mr. Sieber asked the licensee how the steam dryers have performed since their power uprate. The licensee responded that the outage before the power uprate, they performed VT-1 and they found some minor cracking existing that was typically Intergranular Stress Corrosion Cracking-type cracking. The licensee said the cracking was in the six to eight-inch range. The licensee performed some modifications to the dryer based on recommendations of General Electric. The licensee said they have not seen any further degradation after one year of operating at 120 percent. Mr. Sieber asked the licensee if they had instrumentation on the dryer to detect unusual or excessive vibrations. The licensee said that they do not.

Mr. Sieber did not see a need for an interim letter.

**Subcommittee Decisions and Follow-up Actions**

The Subcommittee Chairman will summarize the discussions to the full Committee during the February 2006 ACRS meeting.



**Background Materials Provided to the Committee**

1. Safety Evaluation Report Related to the License Renewal of the Brunswick Steam Electric Plant (BSEP), Units 1 and 2, dated December 20, 2005 (ADAMS Accession No. ML053550301)
2. Carolina Power & Light Company, "Application for Renewed Operating Licenses Brunswick Steam Electric Plant Units 1 & 2," October 18, 2004 (ADAMS Accession Nos. ML043060406 and ML043060411)
3. Brunswick Steam Electric Plant Inspection Report 05000325/2005008; 05000324/2005008 dated July 22, 2005 (ADAMS Accession No. ML052100315)
4. Brookhaven National Laboratory, Audit and Review Report for Plant Aging Management Programs (AMPs) and Aging Management Reviews (AMRs) - Brunswick Steam Electric Plant, Units 1 and 2, dated June 21, 2005 (ADAMS Accession No. ML051720621)

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**NOTE:**

Additional details of this meeting can be obtained from a transcript of this meeting available in the NRC Public Document Room, One White Flint North, 11555 Rockville Pike, Rockville, MD, (301) 415-7000, downloading or view on the Internet at <http://www.nrc.gov/reading-rm/doc-collections/acrs/> can be purchased from Neal R. Gross and Co., 1323 Rhode Island Avenue, NW, Washington, D.C. 20005, (202) 234-4433 (voice), (202) 387-7330 (fax), [nrgross@nealgross.com](mailto:nrgross@nealgross.com) (e-mail).

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[Federal Register: January 25, 2006 (Volume 71, Number 16)]  
[Notices]  
[Page 4177]  
From the Federal Register Online via GPO Access [wais.access.gpo.gov]  
[DOCID:fr25ja06-114]

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NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards; Meeting of the  
**Subcommittee on Plant License Renewal**; Notice of Meeting

The **ACRS Subcommittee on Plant License Renewal** will hold a meeting on February 8, 2006, Room T-2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Wednesday, February 8, 2006--1:30 p.m. until 5 p.m.

The purpose of this meeting is to discuss the **License Renewal** Application for Brunswick Units 1 and 2 and associated Safety Evaluation Report (SER) related to the **License Renewal**. The **Subcommittee** will hear presentations by and hold discussions with representatives of the NRC staff, Carolina Power & Light Company now doing business as Progress Energy Carolinas Incorporated, and other interested persons regarding this matter. The **Subcommittee** will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. John G. Lamb (telephone 301/415-6855) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 4:15 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: January 12, 2006.

Michael L. Scott,  
Branch Chief, **ACRS/ACNW**.

[FR Doc. E6-850 Filed 1-24-06; 8:45 am]

BILLING CODE 7590-01-P

**Advisory Committee on Reactor Safeguards  
Plant License Renewal Subcommittee Meeting  
Brunswick Steam Electric Plant, Units 1 and 2  
February 8, 2006  
Rockville, MD**

-PROPOSED SCHEDULE-

Cognizant Staff Engineer: John G. Lamb [JGL1@NRC.GOV](mailto:JGL1@NRC.GOV) (301) 415-6855

Topics	Presenters	Time
Opening Remarks	J. Sieber, ACRS	1:30 pm - 1: <del>35</del> <sup>37</sup> pm
Staff Introduction	P.T. Kuo, NRR	1: <del>35</del> <sup>37</sup> pm - 1: <del>40</del> <sup>36</sup> pm
Brunswick License Renewal Application A. Application Background B. Description of Brunswick C. Operating History D. Scoping Discussion E. Application of GALL F. Commitment Process	Carolina Power and Light, Inc. Mike Heath, Lenny Beller Mark Grantham, et al.	1: <del>40</del> <sup>36</sup> pm - 2: <del>50</del> <sup>35</sup> pm
Break		2: <del>40</del> <sup>25</sup> pm - 2: <del>55</del> <sup>40</sup> pm
SER Overview A. Scoping and Screening Results B. Onsite Inspection Results	NRR -S. K. Mitra Region II - Caudle Julian	2: <del>55</del> <sup>40</sup> pm - 3: <del>15</del> <sup>2</sup> pm
Aging Management Program Review and Audits	NRR - S. K. Mitra, Kenneth Chang,	3: <del>15</del> <sup>2</sup> pm - 4: <del>00</del> <sup>33</sup> pm
Time-Limited Aging Analyses	NRR - S. K. Mitra, Maurice Heath	4: <del>00</del> <sup>33</sup> pm - 4: <del>30</del> <sup>40</sup> pm
Subcommittee Discussion	J. Sieber, ACRS	4: <del>30</del> <sup>40</sup> pm - 5: <del>00</del> <sup>13</sup> pm

**NOTE:**

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 50 copies of the presentation materials to be provided.

**Advisory Committee on Reactor Safeguards  
Plant License Renewal Subcommittee Meeting  
Brunswick Steam Electric Plant, Units 1 and 2  
February 8, 2006  
Rockville, MD**

-PROPOSED SCHEDULE-

Cognizant Staff Engineer: John G. Lamb [JGL1@NRC.GOV](mailto:JGL1@NRC.GOV) (301) 415-6855

Topics	Presenters	Time
Opening Remarks	J. Sieber, ACRS	1:30 pm - 1:35 pm
Staff Introduction	P.T. Kuo, NRR	1:35 pm - 1:40 pm
Brunswick License Renewal Application A. Application Background B. Description of Brunswick C. Operating History D. Scoping Discussion E. Application of GALL F. Commitment Process	Carolina Power and Light, Inc. Mike Heath, Lenny Beller Mark Grantham, et al.	1:40 pm - 2:40 pm
Break		2:40 pm - 2:55 pm
SER Overview A. Scoping and Screening Results B. Onsite Inspection Results	NRR -S. K. Mitra Region II - Caudle Julian	2:55 pm - 3:15 pm
Aging Management Program Review and Audits	NRR - S. K . Mitra, Kenneth Chang,	3:15 pm - 4:00 pm
Time-Limited Aging Analyses	NRR - S. K. Mitra, Maurice Heath	4:00 pm - 4:30 pm
Subcommittee Discussion	J. Sieber, ACRS	4:30 pm - 5:00 pm

**NOTE:**

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 50 copies of the presentation materials to be provided.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL

February 8, 2006  
Date

NRC STAFF PLEASE SIGN IN BELOW

PLEASE PRINT

	<u>NAME</u>	<u>ORGANIZATION</u>
1	<u>JOHN G. LAMB</u>	<u>ACRS STAFF</u>
2	<u>S. K. MITRA</u>	<u>NRR/DLR</u>
3	<u>MAURICE HEATH</u>	<u>NRR/DLR</u>
4	<u>JAMES MEDOFF</u>	<u>NRR/DCI</u>
5	<u>Donnie Ashley</u>	<u>NRR/DLR</u>
6	<u>JUAN AYALA</u>	<u>NRR/DLR</u>
7	<u>CAUDLE JULIAN</u>	<u>NRC/REGION II</u>
8	<u>Jake Zimmerman</u>	<u>NRC/NRR/DLR</u>
9	<u>Greg S Galletto</u>	<u>NRR/IGVB</u>
10	<u>Bill Rogers</u>	<u>NRR/DE</u>
11	<u>GREG CRANSTON</u>	<u>NRR/DSS</u>
12	<u>Kiyoto Tanabe</u>	<u>NRC/NRR/DLR/RLRC</u>
13	<u>Y.C. (Renee) Li</u>	<u>NRR/DE</u>
14	<u>Jim Davis</u>	<u>NRC/NRR/DLR/RLRC</u>
15	<u>P T Kuo</u>	<u>NRC/NRR/DLR</u>
16	<u>Pei-Ying Chen</u>	<u>NRC/NRR/DE</u>
17	<u>Linh Tran</u>	<u>NRC/NRR/DRL</u>
18	<u>Ken Chang</u>	<u>NRC/NRR/DRL</u>
19	<u>Janak H. Raval</u>	<u>NRC/NRR/DRA</u>
20	<u>M HARTZMAN</u>	<u>NRC/DE/EEMB</u>

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL

February 8, 2006  
Date

NRC STAFF PLEASE SIGN IN BELOW

PLEASE PRINT

	<u>NAME</u>	<u>ORGANIZATION</u>
1	Chang-Yang Li	NRR/DSS/SBPB
2	David Shum	NRR/DSS/SBPB
3	Robert Gales	PNNL
4	Tanya Ford	NRR/DSS/SBWB
5	Tommy Le	NRR/DLR
6	M. K. BAGCHI	NRR/DRA/P R A B
7	Hane Asher	NRR/DE/EGEB
8	Ram Subramaniam	NRR/ADRO/DLR
9	YOLIA DIAZ	NRR/ADRO/DLR
10	JR. ALLUDE	NRR/DLR
11	Ganesh Chouvenki	NRR/DCT
12	ANGELO STUBBS	NRR/DSS/SBPB
13	Mauricio Gutierrez	NRR/DE/EEMB
14	Kaihua HSU	NRR/DLR/RLRC
15	NAEEM IQBAL	NRR/DRA/FPB
16	Arnold Lee	NRR/ADES/DE (EEMB)
17	Carolyn Lauron	NRR/ADES/DCI/CSGB
18	Matthew A. Mitchell	NRR/DCI/CSGB
19		
20		

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL

February 8, 2006  
Date

PLEASE SIGN IN BELOW

PLEASE PRINT

	<u>NAME</u>	<u>ORGANIZATION</u>
1	Joe Dornshue	PGW
2	Leonard Beller	Progress Energy
3	Robert Stewart	"
4	Timothy P. Clerry	"
5	Christopher MALLNER	"
6	ED WILLIAMS	"
7	MARK GRANTHAM	PGN
8	GARRY MILLER	PROGRESS ENERGY
9	Michael Heath	Progress Energy
10	Michael P. Galagher	EXELON Nuclear
11	John G. Hufnagel	Exelon Nuclear
12	Peter Mazzaferro	Constellation Energy
13	MICHAEL FALLON	CONSTELLATION ENERGY
14	David Dellorio	Constellation Energy
15	JOHN M. ODDO	PPL SUSQUEHANNA
16	Michael B. Detamore	PPL Susquehanna, LLC.
17	MICHAEL H. FLETCHER	PROGRESS ENERGY
18	Jeff Lane	" "
19	Chalmer Myer	Southern Nuclear
20	LARRY SEAMANS	NMC - PALISADES

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL

February 8, 2006  
Date

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	<u>NAME</u>	<u>ORGANIZATION</u>
1	<u>John Kneeland</u>	<u>NMC</u>
2	<u>ROBERT VINCENT</u>	<u>NMC</u>
3	<u>William Gberty</u>	<u>NMC</u>
4	<u><del>Kiyoo Tanabe</del></u>	<u><del>N</del></u>
5	<u>STEVEN DORT</u>	<u>FIRST ENERGY - BEAVER VALLEY</u>
6	<u>ROY MATHEW</u>	<u>NRE.</u>
7	<u>DAVE WRONA</u>	<u>NRC</u>
8	<u>MICHAEL MORGAN</u>	<u>NRC - NRR</u>
9	<u> </u>	<u> </u>
10	<u> </u>	<u> </u>
11	<u> </u>	<u> </u>
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20	<u> </u>	<u> </u>



**From:** Jaclyn Storch  
**To:** John Lamb  
**Date:** 2/9/06 8:15AM  
**Subject:** Request for electronic copies of ACRS Brunswick handouts

Greetings, John!

My name is Jaclyn Storch and I work in the Office of the Inspector General, Audits. Currently, we are preparing for the FY 2006 audit of the license renewal program as noted in the annual 2006 Audit Plan.

My colleague R.K. Wild and I attended yesterday's (February 8) ACRS subcommittee meeting on the Brunswick License Renewal application as observers.

I noted that you are identified as the point of contact for this meeting. Therefore, I would like to ask you if it is possible to send me electronic copies of the two handouts, "Brunswick Steam Electric Plant Units 1 & "2 and the NRC staff presentation "Brunswick Steam Electric Plant (BSEP)"?

Thank you,  
Jacki Storch

Jaclyn H. Storch  
Management Analyst  
U.S. Nuclear Regulatory Commission  
Office of Inspector General  
301-415-6062  
JHB2@nrc.gov

**Mail Envelope Properties** (43EB4065.AA9 : 12 : 11582)

**Subject:** Request for electronic copies of ACRS Brunswick handouts  
**Creation Date:** 2/9/06 8:15AM  
**From:** Jaclyn Storch  
  
**Created By:** JHB2@nrc.gov

**Recipients**

owf4\_po.OWFN\_DO  
JGL1 (John Lamb)

**Post Office**

owf4\_po.OWFN\_DO

**Route**

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None  
  
**Concealed Subject:** No  
**Security:** Standard

**From:** John Lamb  
**To:** Jaclyn Storch  
**Date:** 2/9/06 8:33AM  
**Subject:** Re: Request for electronic copies of ACRS Brunswick handouts

Jaclyn,

No problem. See attached. They are Microsoft Power Point files.

I looked at the sign in sheets. I could not find your name or R.K. Wild on the sign in sheets. Did you forget to sign in? The sign in sheets are part of the Federal Advisory Committee Act (FACA) records and I would like to ensure the sign in sheets are correct. Thanks.

John

>>> Jaclyn Storch 02/09/06 8:15 AM >>>  
Greetings, John!

My name is Jaclyn Storch and I work in the Office of the Inspector General, Audits. Currently, we are preparing for the FY 2006 audit of the license renewal program as noted in the annual 2006 Audit Plan.

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Thank you,  
Jacki Storch

Jaclyn H. Storch  
Management Analyst  
U.S. Nuclear Regulatory Commission  
Office of Inspector General  
301-415-6062  
[JHB2@nrc.gov](mailto:JHB2@nrc.gov)

**CC:** Michael Snodderly

**Mail Envelope Properties** (43EB449E.548 : 23 : 2586)

**Subject:** Re: Request for electronic copies of ACRS Brunswick handouts  
**Creation Date:** 2/9/06 8:33AM  
**From:** John Lamb  
**Created By:** JGL1@nrc.gov

<b>Recipients</b>	<b>Action</b>	<b>Date &amp; Time</b>
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JHB2 (Jaclyn Storch)	Opened	02/09/06 12:06 PM
twf1_po.TWFN_DO	Delivered	02/09/06 8:33 AM
MRS1 CC (Michael Snodderly)	Opened	02/09/06 12:37 PM

<b>Post Office</b>	<b>Delivered</b>	<b>Route</b>
OWGWPO01.HQGWDO01	02/09/06 8:33 AM	
twf1_po.TWFN_DO	02/09/06 8:33 AM	

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	2521	02/09/06 08:33AM
APPLICANT_BSEP_ACRS Subcommittee 2 8 06 Presentation.ppt	11335168	02/08/06 07:15AM
Staff - Brunswick Steam Electric Plant, Units 1 and 2-for ACRS.ppt	282112	02/08/06 07:21AM

**Options**

**Auto Delete:** No  
**Expiration Date:** None  
**Notify Recipients:** Yes  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**To Be Delivered:** Immediate  
**Status Tracking:** Delivered & Opened



# Brunswick Steam Electric Plant (BSEP) Units 1 and 2 License Renewal Safety Evaluation Report

Staff Presentation to the ACRS  
Sikhindra (SK) Mitra, Project Manager  
Office of Nuclear Reactor Regulation  
February 8, 2006

February 8, 2006

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## Introduction

- Overview
- NRC Review Process
- Section 2: Scoping and Screening Review
- License Renewal Inspections
- Section 3: Aging Management Review Results
- GALL Review and Audits
- Aging Management Programs
- Section 4: Time-Limited Aging Analyses (TLAAs)

February 8, 2006

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## Overview

- LRA submitted by letter dated October 18, 2004
- GE Boiling Water Reactors, Mark 1 design containments
- BSEP located at the mouth of Cape Fear River in Brunswick County, NC, two miles north of Southport, NC
- Unit 1 expires September 8, 2016, Unit 2 expires on December 27, 2014
- Request operating license extensions 20 years beyond the current expiration dates

February 8, 2006

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## Overview (continued)

- Each unit generates 2923 MW thermal, 1007 MW electrical – Include 20% Extended Power Uprate (EPU)
- Applicant committed to review plant and industry operating experience, relevant aging effects caused by operation at power uprate. The evaluation will be submitted for NRC review one year prior to period of extended operation (Commitment # 31)

February 8, 2006

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## Overview (continued)

- SER issued on December 20, 2005
  - No Open or Confirmatory Items
  - 3 license conditions
  - 174 RAIs issued via 4 letters and 39 Audit questions requiring supplements
  - Brought into scope
    - Switchyard Breakers
    - Service Water Intake structure fan, dampers, bird screen
    - Condensate Storage Tank Piping Credited for SBO

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## NRC Review Process

- Scoping and Screening Methodology Audit
- Consistency with GALL Audits
  - AMPs
  - AMRs
- Technical staff in-house safety review
- Regional inspections
  - Scoping and Screening Inspection
  - AMP Inspection

February 8, 2006

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## NRC Review Process (continued)

- AMP GALL Audit
  - January 10 – 14, 2005
- AMR GALL Audit
  - February 7 – 11, 2005
- Scoping and Screening Methodology Audit
  - February 28 – March 4, 2005
- Regional Scoping and Screening Inspection
  - June 6 – 10, 2005
- Regional AMP Inspection
  - June 20 – 24, 2005

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## Section 2: Structures and Components Subject to Aging Management Review

- Section 2.1, Scoping and Screening Methodology
  - Staff audit and review concluded that the applicant's methodology satisfies the rule pursuant to 10 CFR 54.4 a and 10 CFR 54.21
- Section 2.2 , Plant Level Scoping Results
  - Staff identified no omission of systems and structures within the scope of the license renewal as defined by 10 CFR 54.4 criterion

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## Section 2: Structures and Components Subject to Aging Management Review

- Section 2.3, Scoping and Screening Results - Mechanical Systems
  - Reactor Vessel, Internals and Reactor Coolant System
  - Engineered Safety Features
  - Auxiliary Systems
  - Steam and Power Conversion Systems

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## Two – Tier Scoping Review for BOP Systems

- Two – Tier Scoping Review Based on Screening Criteria
  - Safety Importance/Risk significance
  - Systems Susceptible to Common Cause Failure of Redundant Trains
  - Operating Experience Indicating Likely Passive Failures
  - Previous LRA Review Experience of Omissions
- Tier 1: Screen, Review (LRA, FSAR), Identify Systems for Inspections
- Tier 2: Review (Boundary Drawings, and Other Licensing Basis Documents in Addition to LRA, FSAR)

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## Two – Tier Scoping Review

- 62 Mechanical Systems
- 39 are BOP (Most Auxiliary and Steam and Power Conversion Systems)
  - 15 BOP Systems Selected for Tier 1 Review
  - 24 BOP Systems Selected for Tier 2 Review
- 23 Mechanical Non-BOP Systems (RCS, Engineered Safety Features, Some Aux Systems), Continue to Receive Tier 2 review
- Electrical and Structural Receive Tier 2 review.

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## Section 2.3, Scoping and Screening Results - Mechanical Systems

- Condensate storage tank piping credited for SBO brought into the scope
- Service water intake structure fan, bird screen and damper housings are brought into scope.

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## Section 2: Structures and Components Subject to Aging Management Review

- Section 2.4, Scoping and Screening Results – Structures
  - Containment
  - Other Class 1 and in-scope Structures (15)

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## Section 2: Structures and Components Subject to Aging Management Review

- Section 2.5, Scoping and Screening Results – Electrical and Instrumentation and Control (I&C) Systems
  - Guidance contained in NEI 95-10 Appendix B was used in developing a list of electrical and I&C commodity groups
  - Switchyard breakers (230 kv gas-filled power circuit breakers) represent the first breakers for SBO recovery path were brought into scope of license renewal

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## Scoping and Screening Summary

- The applicant's scoping methodology meets the requirements of 10 CFR Part 54
- Scoping and screening results as amended included all SSCs within the scope of license renewal and subject to AMR

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## License Renewal Inspections

- Scoping and Screening Inspection
- Aging Management Inspection
- Commitment Tracking
- Plant Reactor Oversight Process (ROP)

February 8, 2006

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## License Renewal Inspection Program Implementation

- License Renewal Manual Chapter – MC 2516
- License Renewal Inspection Procedure – IP 71002
- Site-specific inspection plan
- Scheduled to support NRR safety review

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## 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 10 CFR 54.4
  - Conducted June 6 – 24, 2005
    - MC 2516 and IP 71002 have been revised to reduce the scope of Scoping and Screening inspections and combine them with Aging Management Program inspections
    - Focus is on 10 CFR 54.4 (a) (2) situations - non safety related that could effect safety related equipment

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## License Renewal Inspections

- Incorporated 3 - Tier – 1 Scoping Review Inspections
  - Heat Tracing Systems
  - Moisture Separator Reheater Drains and Reheat Steam System
  - Heater Drains and Miscellaneous Vents and Drains
- Concluded that the applicant's scoping and screening process was successful in identifying those SSCs requiring AMR

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## Aging Management Program Inspection

- Objective: to confirm that existing AMPs are managing current age related degradation
- Applicant established an implementation plan in the plant Action Request system to track committed future actions
- Inspectors found a few examples where actions committed in AMP description documents were not yet in implementation plan.
- Applicant promptly made needed corrections and several changes.
- Material condition of plant was being adequately maintained
- Documentation was of very good quality, supported by a comprehensive computer database

February 8, 2006

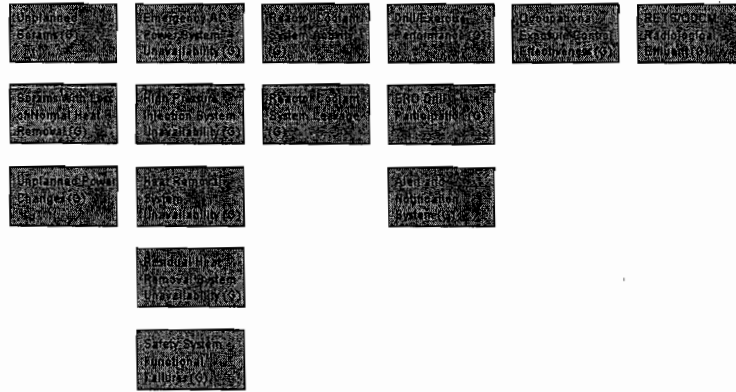
20



# Brunswick, Unit 1

## 3Q/2005 Performance Summary

### Performance Indicators



February 8, 2006

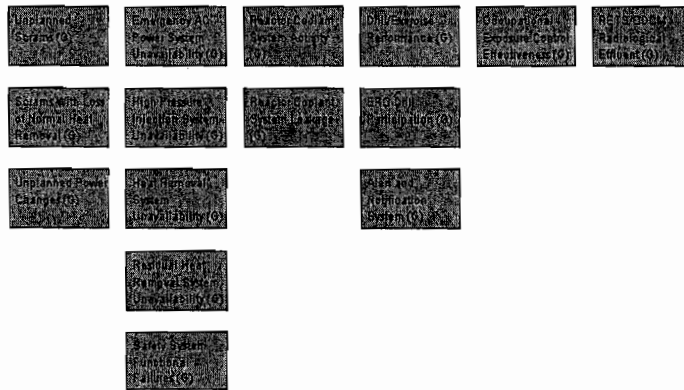
21



# Brunswick, Unit 2

## 3Q/2005 Performance Summary

### Performance Indicators



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## Section 3: Aging Management Review Results

- 3.1, Reactor Vessel, Internals, and Reactor Coolant System
- 3.2, Engineered Safety Features Systems
- 3.3, Auxiliary Systems
- 3.4, Steam and Power Conversion Systems
- 3.5, Containments, Structures and Component Supports
- 3.6, Electrical Components

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## Aging Management Programs (AMPs)

- Total 34 AMPs
- Consistent with GALL: 9
- Consistent with GALL, with deviations: 20
- Plant Specific: 5

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## EXAMPLES OF AUDIT AND REVIEW TEAM FINDINGS AND RESULTS

- Originally used Risk Informed ISI program for AMP, ASME Section XI, In-service Inspection, Subsections IWB, IWC and IWD Program
  - Modified AMP to be consistent with GALL, ASME Section XI, & 50.55a: added periodic volumetric, surface and visual examinations
- Originally committed to inspect and clean RHR and EDG jacket water heat exchangers prior to the period of extended operation
  - Modified Open-Cycle Cooling Water AMP to include performance testing (heat transfer capability) [Commitment 4]

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## EXAMPLES OF AUDIT AND REVIEW TEAM FINDINGS AND RESULTS

- Originally committed to inspect buried piping only during opportunistic inspections
  - Modified Buried Piping AMP to say [Commitment 13]
    - Opportunistic inspection may be used to satisfy inspection requirements, but in no case will frequency of inspection exceed 10 years
    - Inspection by qualified coating inspector
- Structures Monitoring Program originally not consistent with GALL
  - Modified AMP to [Commitment 16]
    - Include inspections of the submerged portions of the Service Water Intake Structure on a frequency not to exceed five years
    - Specify annual groundwater monitoring inspection frequency for concrete structures
    - Specify inspection frequency for the Service Water Intake Structure and Intake Canal to not exceed five years

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## Section 3.1, Reactor Vessel, Internals, and Reactor Coolant System

- Reactor Vessel and Internals
- Neutron Monitoring System
- Reactor Manual Control System
- CRD Hydraulic System
- Reactor Coolant Recirculation System

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## Reactor Vessel and Internals Structural Integrity Program (RV&ISIP)

- The RV&ISIP is a plant-specific aging management program
- The RV&ISIP inspections are based on the augmented inspections recommended in BWRVIP
- Commitment # 22 defines which BWRVIP reports are included in the scope of the RV&ISIP and additional specific augmented activities that will be taken by the applicant

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## Reactor Vessel Surveillance Program (RVSP)

- The RVSP monitors for the impact of neutron irradiation on the fracture toughness properties of RV materials
- The RVSP is based on the integrated surveillance program criteria in BWRVIP-78 and BWRVIP-86
- The RVSP will be enhanced to include conformance with the updated integrated surveillance program criteria in BWRVIP-116, once approved by the NRC (Commitment #10)

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## Section 3.2, Engineered Safety Features Systems

- 10 Plant-Specific Systems
- In response to RAI 3.2.4, the applicant is committed to manage the loss of material and cracking for small-bore Class 1 piping in treated water (include steam) (internal) environments, using the One Time Inspection program (commitment 11)

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## Section 3.3, Auxiliary Systems

- 34 plant-specific systems
- Applicant committed to add to Preventive Maintenance Program, routine sampling and analysis to address corrosion concerns related to potential water intrusion into lubricating oil in the Service Water Pump Motor Cooler Coils and the Emergency Diesel engines Lube Oil System (Commitment 24)
- Additionally, applicant committed to add to One Time Inspection Program at least one of the four Emergency Diesel Engine Sumps and at least one of the ten Service Water Pump Lubricating Oil Cooling coils for corrosion products and evidence of moisture (Commitment 11)

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## Section 3.4, Steam and Power Conversion Systems

- 13 Plant Specific Systems
- The applicant's AMR result for the titanium components in a raw water environment was an issue requiring additional information. The applicant clarified that the titanium in a raw water environment at a temperature less than 160 degree F does not exhibit aging effects. The titanium tubes in a raw water environment are at a temperature less than 160 degree F.

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## Section 3.5, Containments, Structures and Component Supports

- Containment
- Other Class 1 and In-Scope Structures (15)
- BSEP Credits ASME Section XI, Subsection IWE and 10 CFR Part 50, Appendix J for management of Drywell Liner
- Both IWE and Appendix J requires 100% inspection per period, there are 3 periods per interval, and each interval is ten years.

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## Aging Management of In-Scope Inaccessible Concrete

	Aggressive Limit	BSEP
pH	<5.5	6.4 – 7.5
Chlorides	>500 ppm	11 – 49 ppm
Sulfates	>1500 ppm	2 – 66 ppm

- Ground water phosphate level at 0.12 ppm
- Below grade environment is non-aggressive

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## Section 3.6, Electrical and I & C

- Component/Commodities subject to AMR
  - Non-EQ Insulated Cables and Connections
  - Phase Bus
  - Non-EQ Electrical/ I & C Penetration Assembly
  - High Voltage Insulators
  - Switchyard Bus
  - Transmission Conductors

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## Section 3.6, Electrical and I & C

- Applicant committed to add to Preventive Maintenance Program, periodic inspection of High-Voltage Insulators for Water Beading on Silicone Coating and for age related degradation (Commitment 24)
- Applicant committed to include in the Phase Bus Aging Management Program, inspecting the interior condition of the bus enclosure and perform thermography on a 10 year- frequency while bus is energized and loaded (Commitment 25)

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## Section 4: Time-Limited Aging Analyses (TLAAs)

- 4.1 Identification of TLAAs
- 4.2 Reactor Vessel Neutron Embrittlement
- 4.3 Metal Fatigue
- 4.4 Environmental Qualification of Electrical Equipment
- 4.5 Concrete Containment Tendon Prestress
- 4.6 Containment liner Plate and Penetration Fatigue Analysis
- 4.7 Other Plant Specific TLAAs

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## Section 4.2, Reactor Vessel Neutron Embrittlement

- Ten TLAAs identified on neutron irradiation embrittlement
  - Neutron Fluence Calculations
  - Upper-Shelf Energy (USE)
  - Pressure-Temperature (P-T) Limits
  - Adjusted Reference Temperature
  - Circumferential Weld Calculations
  - Axial Weld Probability of Failure Analysis
  - Shroud Repair Hardware Analysis
  - Core Plate Plug Analysis
  - Core Shroud Thermal Shock Reflood Analysis
  - RV Thermal Shock Reflood Analysis (Added in response to RAI)

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## Reactor Vessel (RV) Upper Shelf Energy (USE) Equivalent Margins Analysis (EMA)

RV Material	TLAA (EMA) Basis	Acceptance Criterion	BSEP-1 Value	BSEP-2 Value
Limit. Plate	BWRVIP-74-A %Drop in USE	<23.5	21.0 (BSEP) 21.0 (Staff)	17.0 (BSEP) 17.1 (Staff)
Limit. Weld	BWRVIP-74-A %Drop in USE	<39.0	14.1 (BSEP) 14.1 (Staff)	13.3 (BSEP) 13.5 (Staff)
Nozzle Forging	Plant Specific - Fluence (n/sq cm)	<1.6E18	1.38E18 (Staff)	1.38E18 (Staff)
Nozzle Weld	BWRVIP-74-A %Drop in USE	<35.0	12.0 (Staff)	12.0 (Staff)

- TLAA for USE/EMA were in all cases determined to be acceptable under 10 CFR 54.21(c)(1)(i) or (ii)

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## RV Circumferential Weld/ RV Axial Weld Probability of Failure Analyses

RV Material	TLAA Basis	Acceptance Criterion (° F)	BSEP-1 Value (° F)	BSEP-2 Value (° F)
Limiting Circ. Weld	BWRVIP-05 Mean RT <sub>ndt</sub> Value in ° F	<70.6	6.6 (BSEP) 6.6 (Staff)	-34.1 (BSEP) -34.1 (Staff)
Limiting Axial Weld	BWRVIP-05 Mean RT <sub>ndt</sub> Value in ° F	<114.0	53.0 (BSEP) 52.8 (Staff)	53.0 (BSEP) 52.5 (Staff)

- TLAA for the Circ. Weld and Axial Weld Mean RT<sub>ndt</sub> values were in all cases determined to be acceptable under 10 CFR 54.21(c)(1)(i) or (ii)

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## Section 4.3, Metal Fatigue

- Effect of Reactor Coolant Environment on Fatigue Life of Components and Piping (Generic Safety Issue 190)
  - Applicant performed refined fatigue analysis based on data collection from Cycle Evaluation Module (CEM) and finite element analysis from Fatigue Monitoring Program to show CUF will remain below the ASME Code limiting value
  - Staff found applicants assessment acceptable in accordance with 10 CFR 54.21(c)(1)(ii)

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## Section 4.4, Environmental Qualification (EQ) of Electrical Equipment

- Applicant's EQ Program consistent with GALL AMP, X.E1, "Environmental Qualification of Electrical Components"
- Operating Experience identified no age-related equipment failures that its program is intended to prevent

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## Section 4.6, Containment Liner Plate, Metal Containments and Penetration Fatigue Analysis

- Torus Downcomer/Vent Header Fatigue Analysis
- Torus – Attached and SRV Piping System Fatigue Analyses
- The staff accepted the evaluation in accordance with 10 CFR 54.21(c)(1)(ii)

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## Section 4.7, Other Plant Specific TLAAs

- Torus Component Corrosion Allowance
  - Component supports classified as ASME Section XI, In-service-Inspection (ISI) supports and non-ASME Section XI, ISI supports
  - Staff needed additional information on calculations for corrosion rates for ASME components and clarification on One Time Inspection program for non-ASME ISI supports
- In letter dated March 31, 2005 the applicant presented calculations for corrosion rates and descriptions on OTI program for non ASME ISI supports
- The staff accepted the evaluation in accordance with 10 CFR 54.21(c)(1)(ii)

February 8, 2006

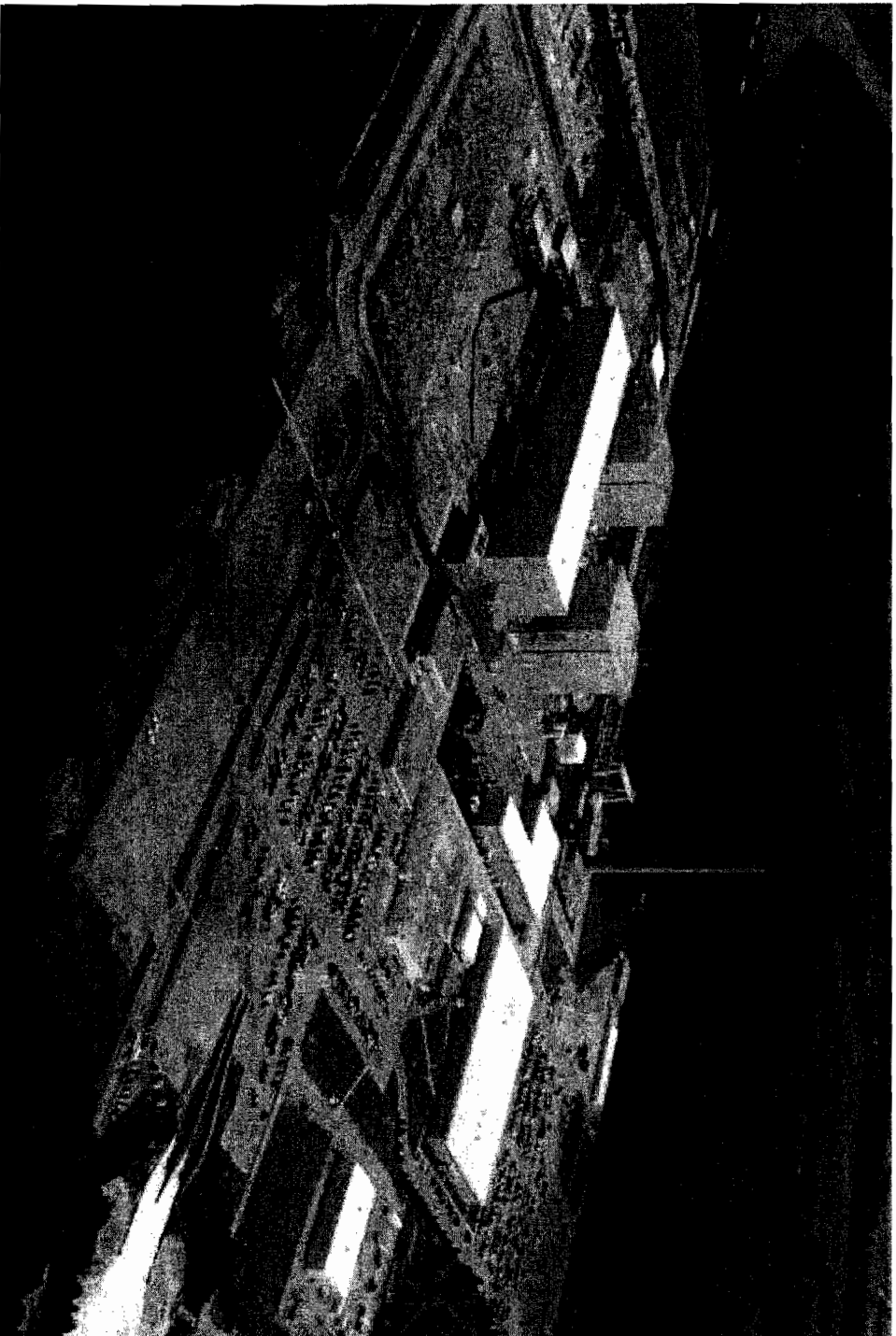
44



## TLAA Summary

- TLAA
  - 10 CFR 54.3
    - TLAA list adequate, as amended
  - 10 CFR 54.21 (c) (1)
    - (i) - analysis remain valid for period of extended operation
    - (ii) - analysis have been projected to the end of the period of extended operation
    - (iii) - effects of aging on the intended function will be adequately managed for the period of extended operation.

# Brunswick Steam Electric Plant Units 1 and 2



**Brunswick Steam Electric Plant  
Units 1 and 2**

# **License Renewal Presentation to ACRS Subcommittee**



# Agenda

- Description of BSEP
- Operating History
- Current Plant Status
- Application Background
- LR Review Methodology
- Application of GALL
- Commitment Process

INDEX

# Description of BSEP

- Located in Southport, NC
- Cape Fear River is Ultimate Heat Sink
- Dual unit GE BWR 4 with Mark I Reinforced Concrete Containment
- 560 Fuel Assemblies/Unit
- Hydrogen Water Chemistry plant

INDEX

# Operating History

- Commercial Operation
  - ◆ Unit 1 March 1977
  - ◆ Unit 2 November 1975
- Current License Expiration
  - ◆ Unit 1 September 2016
  - ◆ Unit 2 December 2014

INDEX





# Operating History

- Licensed Thermal Power History
  - ◆ Original licensed thermal power (OLTP)
    - ◆ 2436 MWt
  - ◆ 105% OLTP Uprate (November 1996)
    - ◆ 2558 MWt
  - ◆ 120% OLTP Extended Uprate (May 2002)
    - ◆ 2923 MWt

INDEX

# Current Plant Status

- Unit 1
  - ◆ Operating in 15<sup>th</sup> cycle
  - ◆ Transitioned to 24 month cycles in 1997
  - ◆ Currently Operating at 100% rated power
  - ◆ Will enter a Refuel Outage March 4, 2006

INDEX

# Current Plant Status

- Unit 2
  - ◆ Operating in 17<sup>th</sup> cycle
  - ◆ Transitioned to 24 month cycles in 1997
  - ◆ Currently operating at 100% rated power
  - ◆ Plant issues
    - ◆ White Unplanned Power Changes Performance Indicator

INDEX

# Application Background

- LRA used Class of 2003 Format – May 2003
- Information conformed to:
  - ◆ NUREG-1800, SRP-LR, April 2001
  - ◆ NUREG-1801, GALL, April 2001
  - ◆ NEI 95-10, Rev. 3, March 2001
- Information in the LRA was developed in plant calculations

# LR Review Methodology

- Scoping
  - ◆ Based on UFSAR, DBDs, Docketed Correspondence
  - ◆ Quality Class Review using Equipment Database
  - ◆ Focused Reviews for Regulated Events and Non-safety Impacting Safety
    - ◆ NSR Steam Dryers and NSR Drains in scope
  - ◆ Addressed ISGs 1 through 20
- Aging Management Review
  - ◆ Class of 2003 table format
  - ◆ Provides NUREG-1801 Comparison
- Aging Management Programs
  - ◆ 34 AMPs Identified

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# Commitment Tracking

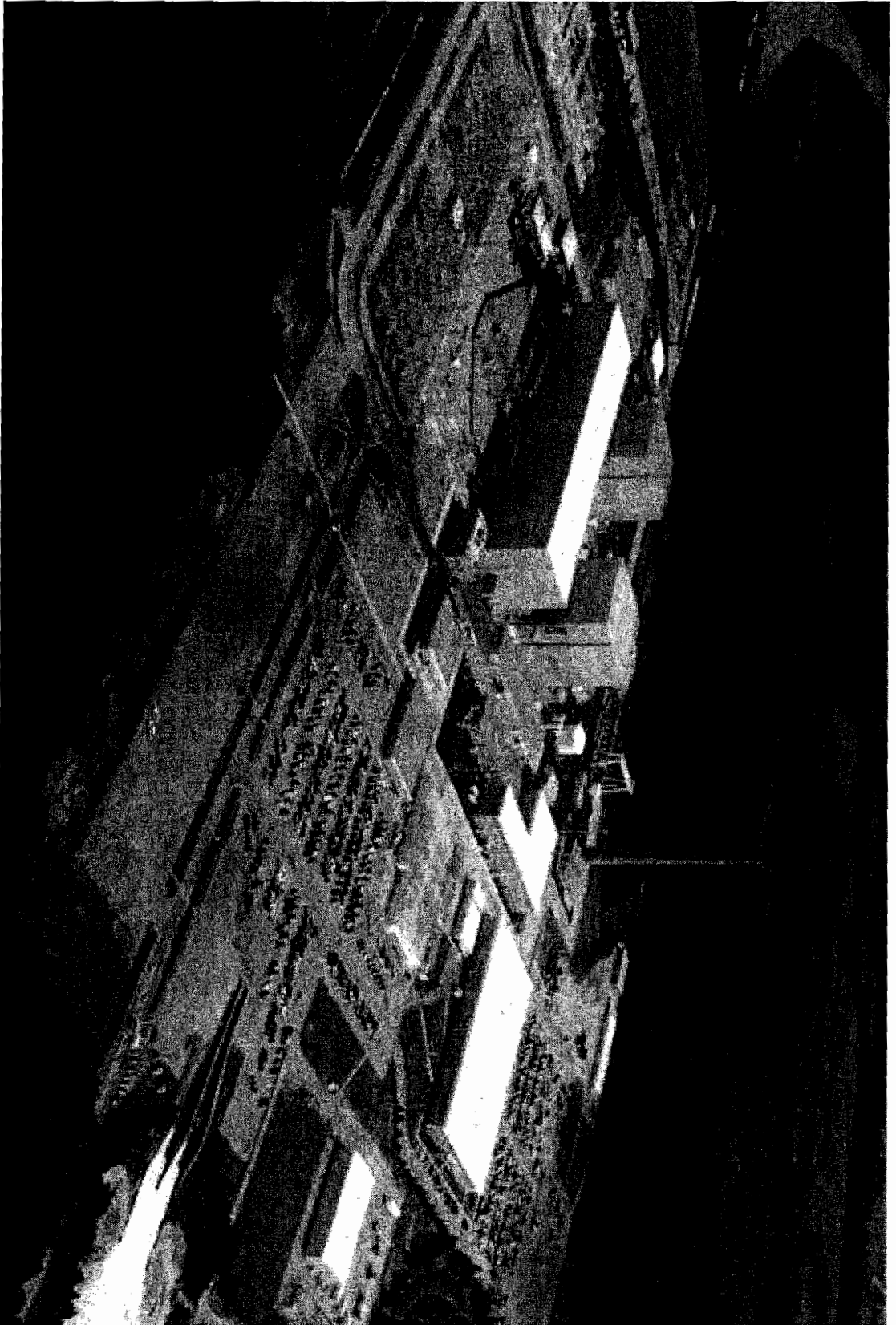
- All Commitments are Tracked by the BSEP Corrective Action Program (CAP)
- Each Commitment Has an Implementation Plan
  - ◆ Each Implementation Plan Identifies all required actions
  - ◆ All actions are linked to the CAP
  - ◆ All actions have a due date and owner
- LR Program Procedure Will Track LR Activities
- Document Updates Scheduled for 2006

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# Conclusion

- The New Audit Process Effective
- Early Identification of Concerns Allowed Early Resolution

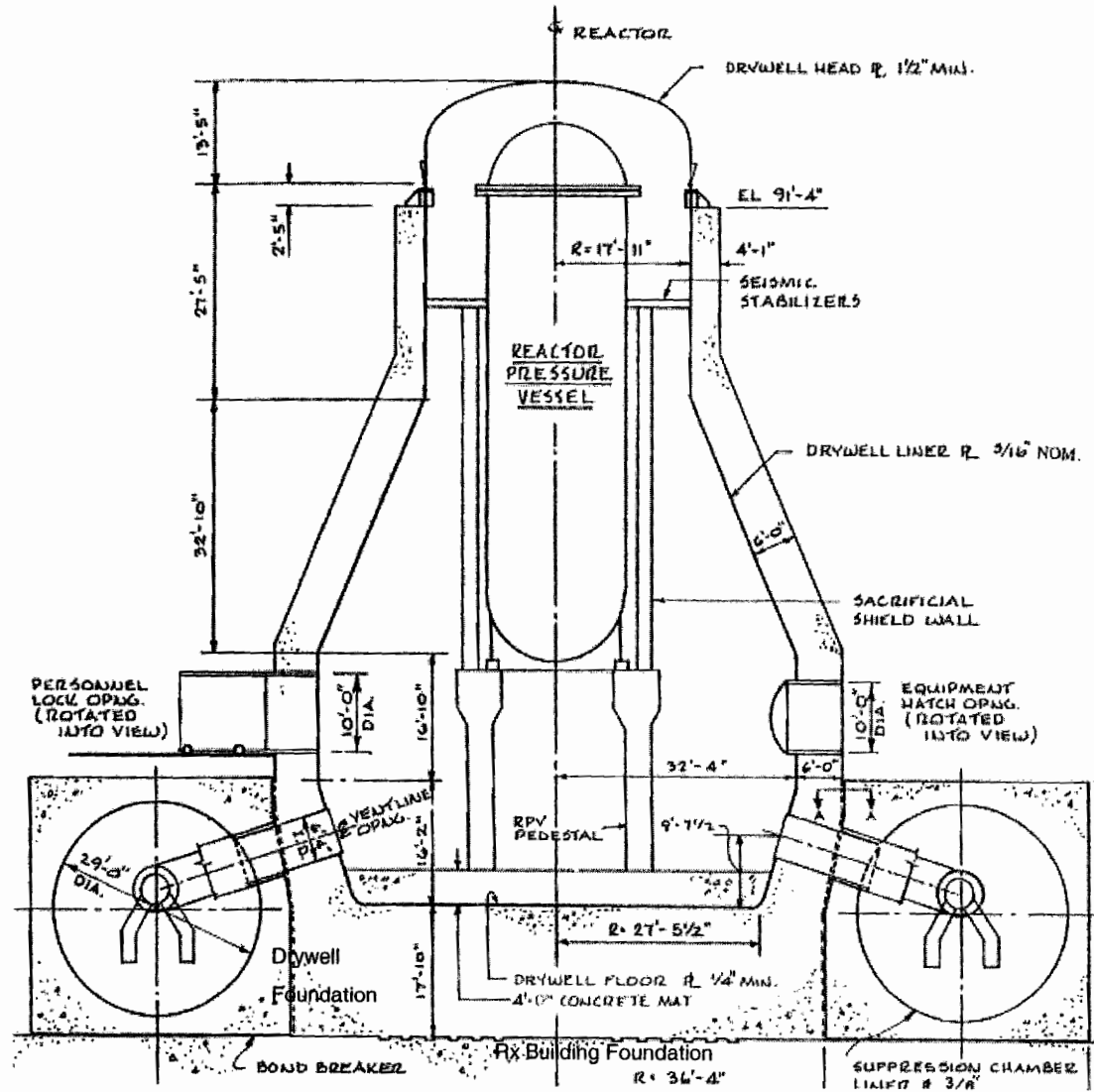


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# Mark I Reinforced Concrete Containment



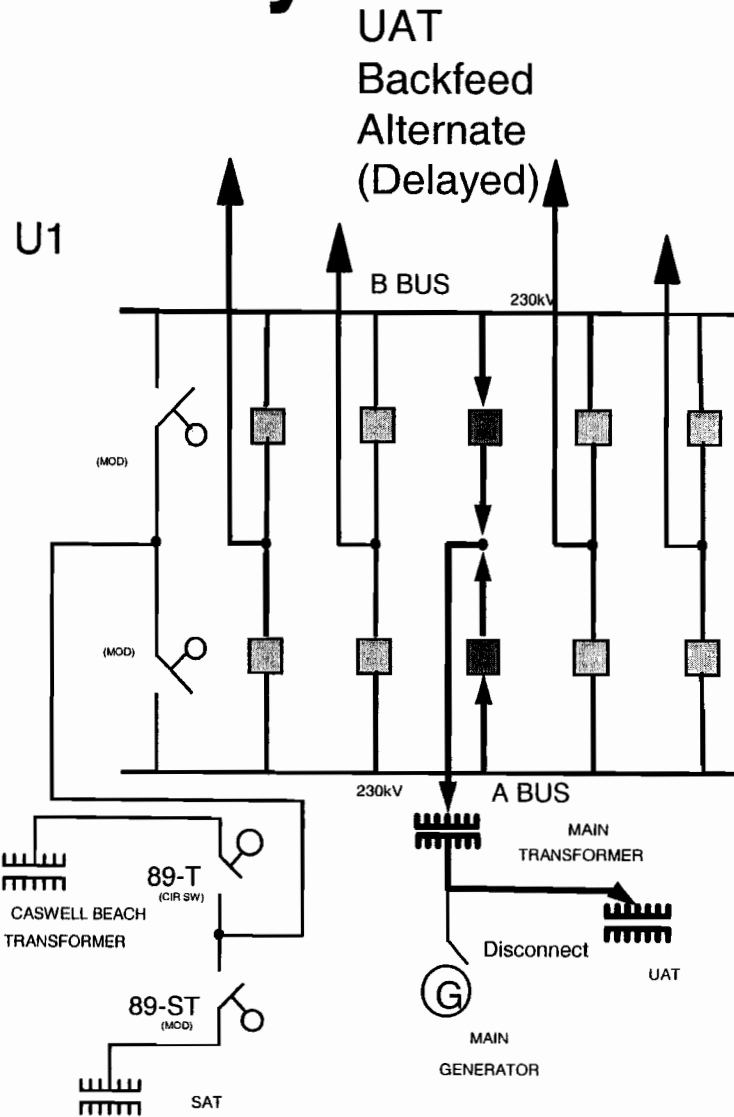
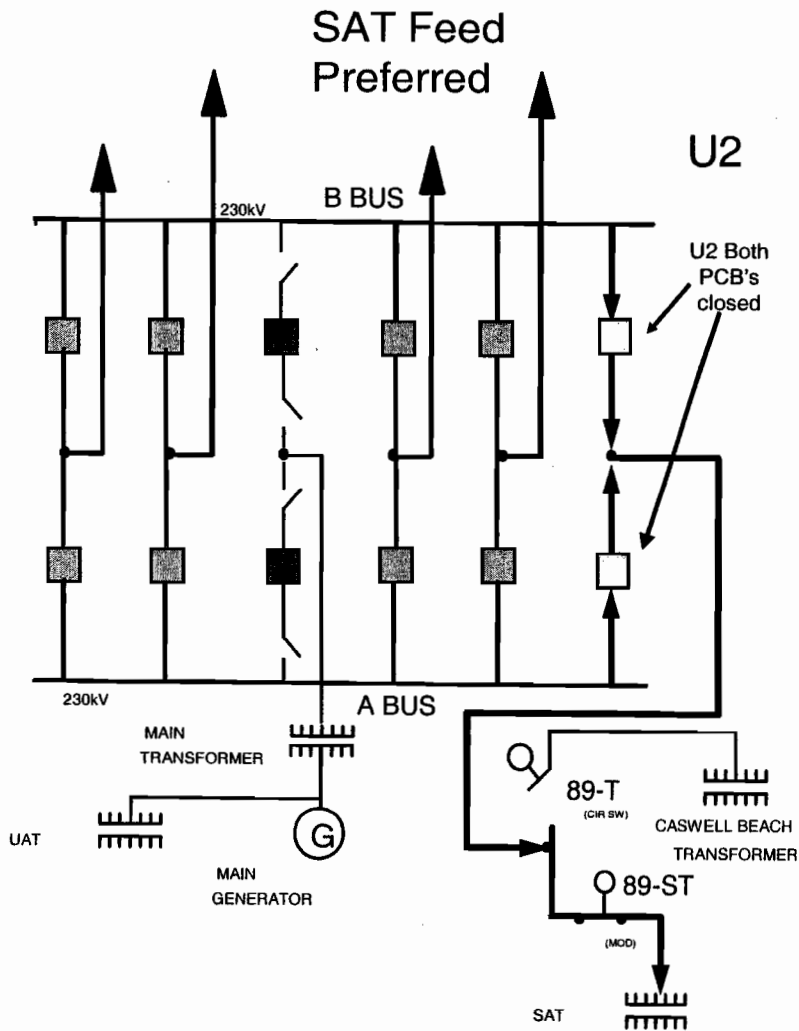
# **NRC Information Notice 2006-01**

## **BWR Mark I Containment Torus Cracking**

- The Brunswick HPCI exhaust:
  - ◆ utilizes a sparger configuration
  - ◆ significantly different from the Fitzpatrick configuration (turned down elbow within 2-1/2 feet of the torus shell).
- The BSEP torus is steel lined, reinforced concrete
- The Fitzpatrick Torus is free standing steel.

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# SBO Recovery



# **BSEP Steam Dryer Review**

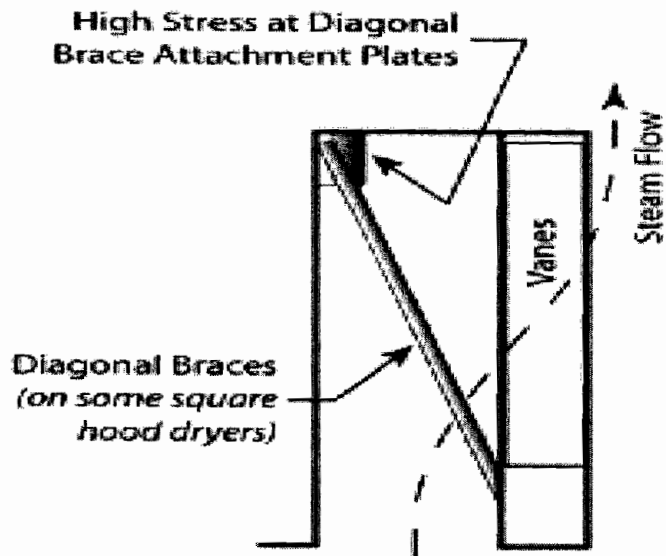


# Steam Dryer Background

- BSEP has a BWR-4 slanted hood dryer
  - ◆ Does not include internal diagonal brace attachments
  - ◆ Lower resultant stresses
- BSEP has significantly lower steam line velocities than other dryers damaged post-EPU
  - ◆ BSEP – 146 ft/sec
  - ◆ Damaged dryers post EPU >200 ft/sec
  - ◆ Steam line velocities remain in the middle of the BWR fleet

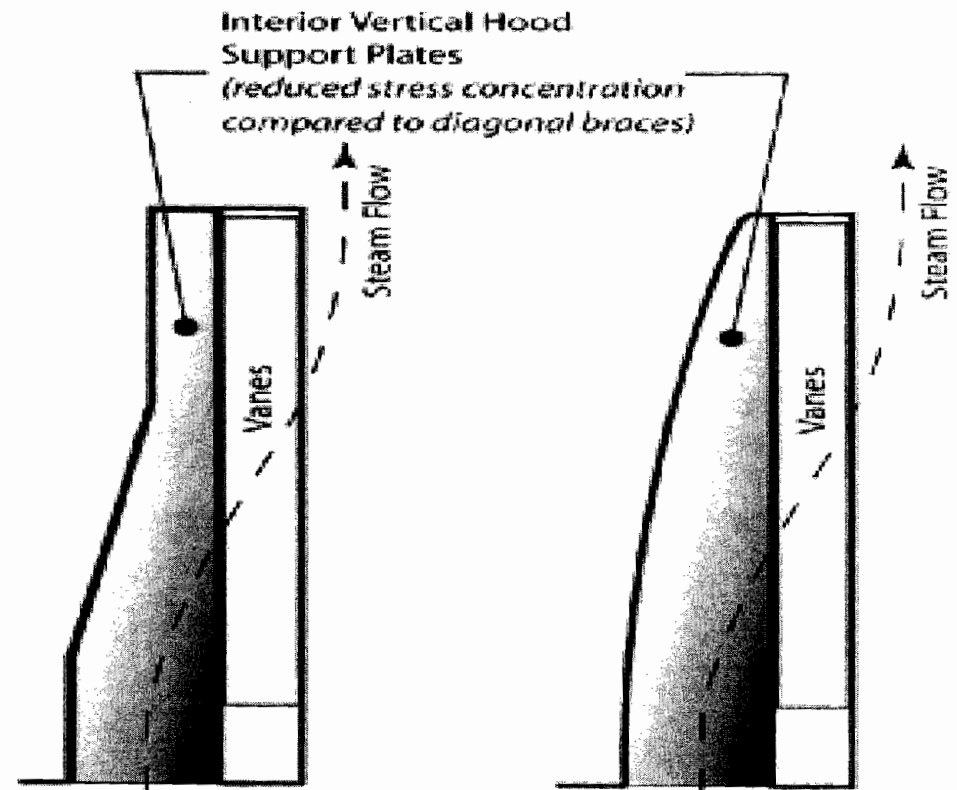
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# Steam Dryer Designs



**Square Hoods**  
BWR/3 Style Design

**Damaged Dryers**  
Post EPU



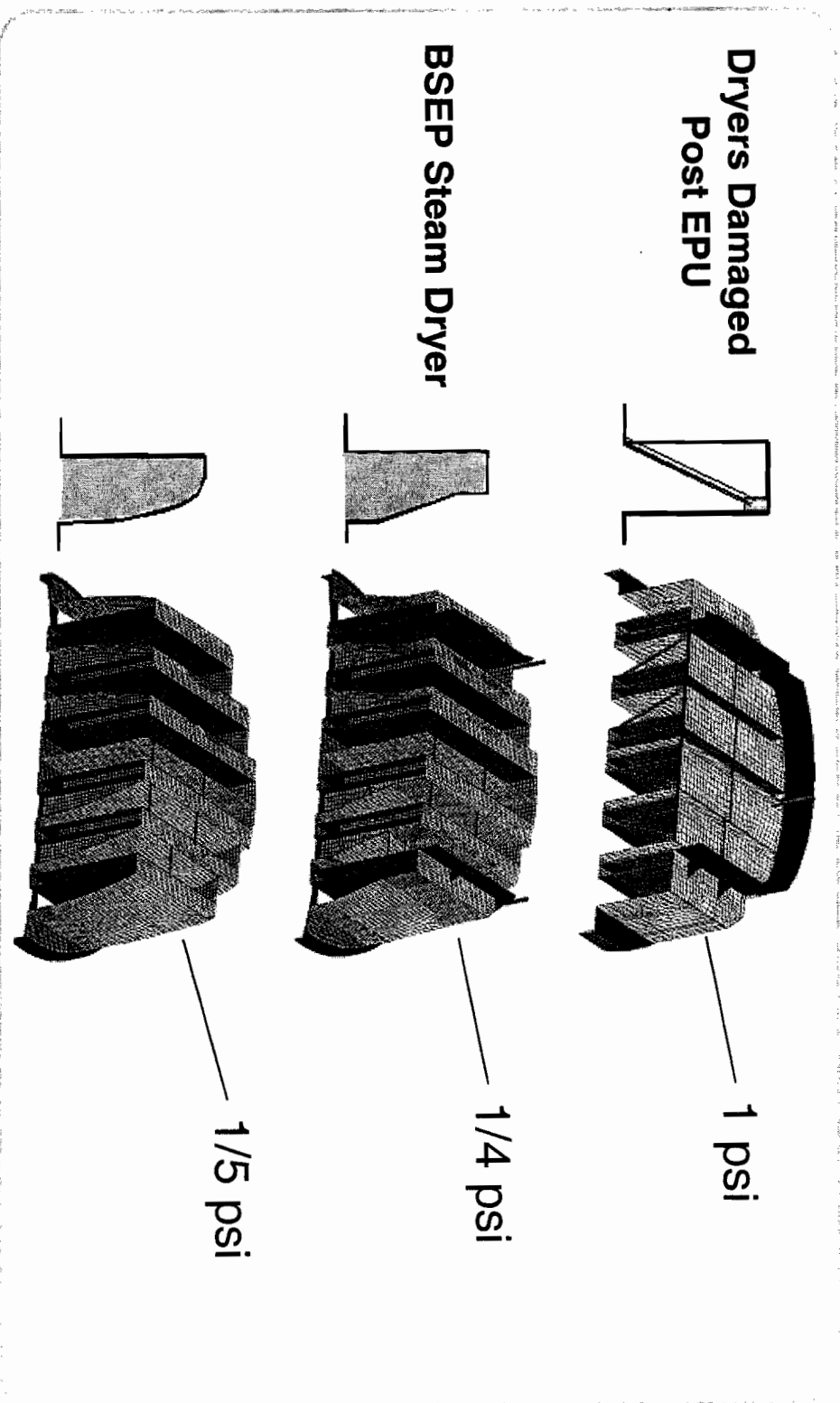
**Slanted Hoods**  
BWR/4 Style Design  
Improved Steam Flow

**BSEP Steam Dryer**

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**Curved Hoods**  
BWR/5 Style Design  
Optimized Steam Flow

# Relative Stress on Dryer Hood



# BSEP Steam Dryer Inspections

## Unit 1

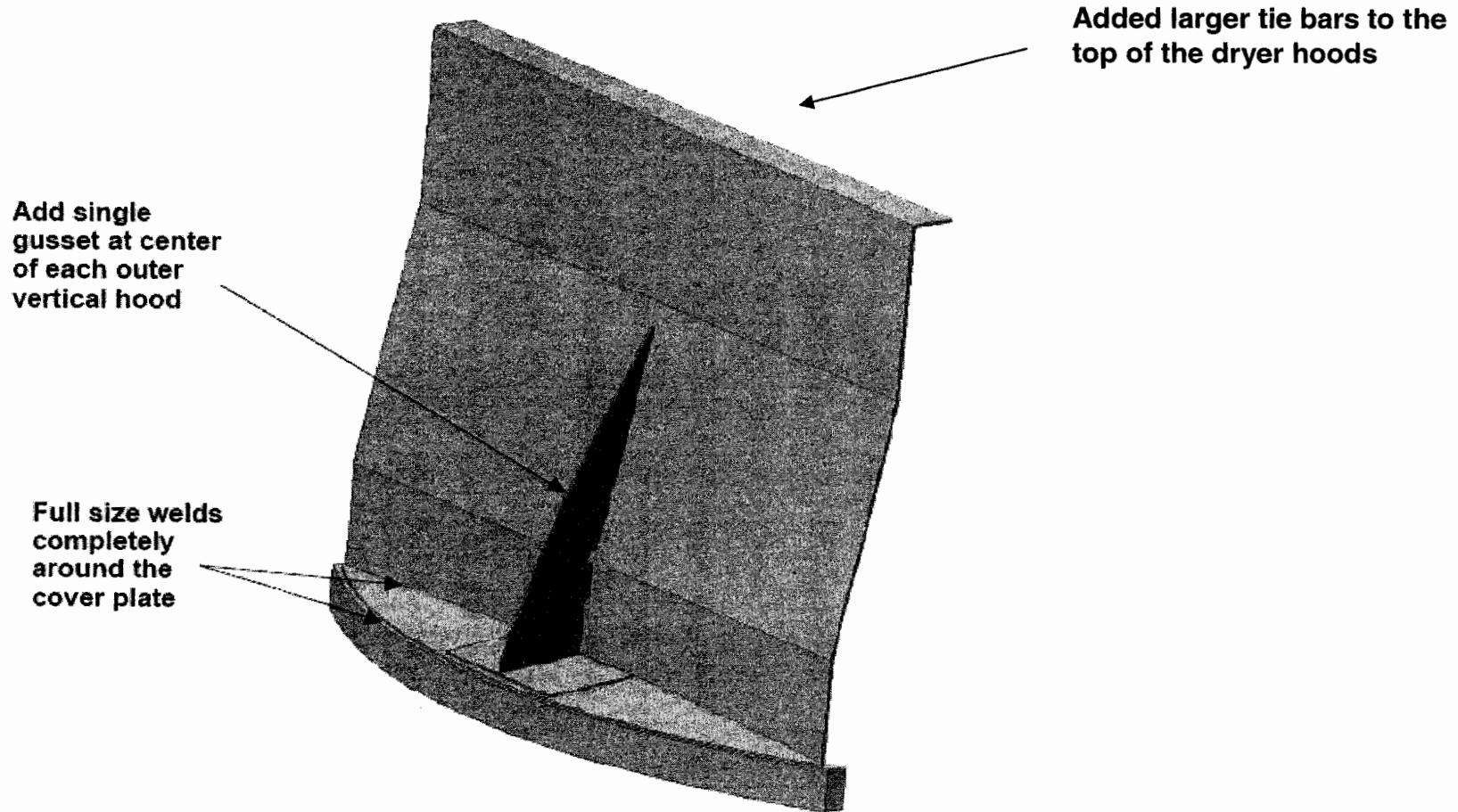
- June 2002 -Uprate to 113% OLTP
- Sept. 2002 – General inspection during mid-cycle outage – No degradation noted
- March 2004 – 100% exterior inspection and dryer modification performed – minor weld repairs
- April 2004 – Uprate to 120% OLTP
- April 2005 – Inspection performed during mid-cycle outage – No new degradation noted
- March 2006 – Planned inspection during refuel outage

## Unit 2

- April 2003 – Uprate to 116% OLTP
- March 2005 - 100% exterior inspection and dryer modification performed – minor weld repairs
- April 2005 – Uprate to 120% OLTP
- May 2006 – Planned inspection during mid-cycle outage
- March 2007 – Planned inspection during refuel outage



# BSEP Steam Dryer Modifications



# BSEP Operating Experience with EPU

- Fatigue failure of EHC return line for main turbine control valves
  - ◆ Interim power level was likely a contributor
  - ◆ Industry OE with these types of failure exists
  - ◆ Piping modified to a flexible connection
- Socket welded drain line failures
  - ◆ Previous industry and BSEP OE with these types of failures
  - ◆ Changed socket weld configurations to a more fatigue tolerant design

# BSEP Operating Experience with EPU

- Condensate/Feedwater system response
  - ◆ System response during minimum flow valve operation
  - ◆ Higher condensate pressures
  - ◆ Optimization of system operation
- Main generator disconnect switch failure
  - ◆ Switch design did not support the continuous rating
  - ◆ Modified to a hard bus configuration

# U2 Unplanned Power Changes per 7000 Hours Critical

- Occurrences causing transition to White
  - ◆ April '05 – 2B Reactor Feed Pump Impeller Failure
  - ◆ June '05 – 2B Circulating Water Intake Pump Trip Due to Debris Loading
  - ◆ August '05 – Dual Unit Shutdown Due to Identified Legacy Issue with Diesel Generator Differential Protection Circuit
  - ◆ November '05 – Three Unit Downpowers due to Tube Leaks in the 2A Condenser Water Box
  - ◆ December '05 – 2B Reactor Recirculation Pump MG Set Trip due to Failure of Fuse in the Voltage Regulation Circuit
- NRC Supplemental Inspection February 2006

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[Notices]

[70471-70473]

the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr06de04-62]

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NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50-325 and 50-324]

Carolina Power & Light Company, Brunswick Steam Electric Plant, Units 1 and 2; Notice of Acceptance for Docketing of the Application and Notice of Opportunity for Hearing Regarding Renewal of Facility Operating License Nos. DPR-71 and DPR-62 for an Additional 20-Year Period

The U.S. Nuclear Regulatory Commission (NRC or Commission) is considering an application for the renewal of Operating License Nos. DPR-71 and DPR-62, which authorizes the Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc. (PEC), to operate Brunswick Steam Electric Plant, at 2,923 megawatts thermal for Unit 1, and 2,923 megawatts thermal for Unit 2. The renewed licenses would authorize the applicant to operate the Brunswick Steam Electric Plant, Units 1 and 2, for an additional 20 years beyond the period specified in the current licenses.

[70472]]

The current operating license for Brunswick Steam Electric Plant, Unit 1 expires on September 8, 2016, and the current operating license for Brunswick Steam Electric Plant, Unit 2 expires on December 27, 2014.

The Commission's staff has received an application dated October 18, 2004, from Carolina Power & Light Company, filed pursuant to 10 CFR Part 54, to renew the Operating License Nos. DPR-71 and DPR-62 for Brunswick Steam Electric Plant, Units 1 and 2, respectively. A Notice of Receipt and Availability of the license renewal application, 'Carolina Power & Light Company; Notice of Receipt of Application for Renewal of Brunswick Steam Electric Plant, Units 1 and 2; Facility Operating License Nos. DPR-71 and DPR-62 for an Additional 20-year Period' was published in the Federal Register on November 18, 2004 (69 FR 67611).

The Commission's staff has determined that Carolina Power & Light Company has submitted sufficient information in accordance with 10 CFR 54.19, 54.21, 54.22, 54.23, and 51.53(c) that is acceptable for docketing. The current Docket Nos. 50-325 and 50-324 for Operating License Nos. DPR-71 and DPR-62, respectively, will be retained. The docketing of the renewal application does not preclude requesting additional information as the review proceeds, nor does it predict whether the Commission will grant or deny the application.

Before issuance of each requested renewed license, the NRC will have made the findings required by the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. In accordance with 10 CFR 54.29, the NRC will issue a renewed license on the basis of its review if it finds that actions have been identified and have been or will be taken with respect to (1) managing the effects of aging during the period of extended operation on the functionality

of structures and components that have been identified as requiring aging management review, and (2) time-limited aging analyses that have been identified as requiring review, such that there is reasonable assurance that the activities authorized by the renewed licenses will continue to be conducted in accordance with the current licensing basis (CLB), and that any changes made to the plant's CLB comply with the Act and the Commission's regulations.

Additionally, in accordance with 10 CFR 51.95(c), the NRC will prepare an environmental impact statement that is a supplement to the Commission's NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants," dated May 1996. Pursuant to 10 CFR 51.26, and as part of the environmental scoping process, the staff intends to hold a public scoping meeting. Detailed information regarding this meeting will be included in a future Federal Register notice.

Within 60 days after the date of publication of this Federal Register Notice, the requestor/petitioner may file a request for a hearing, and any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a written request for a hearing and a petition for leave to intervene with respect to the renewal of the licenses. Requests for a hearing and a petition for leave to intervene shall be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in 10 CFR Part 2. Interested persons should consult a current copy of 10 CFR 2.309, which is available at the Commission's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland 20852 and is accessible from the Agencywide Documents Access and Management System's (ADAMS) Public Electronic Reading Room on the Internet at <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have

access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC's PDR reference staff at 1-800-397-4209, or by e-mail at [pdr@nrc.gov](mailto:pdr@nrc.gov). If a request for a hearing or a petition for leave to intervene is filed within the 60-day period, the Commission or a presiding officer designated by the Commission or by the Chief Administrative Judge of the Atomic Safety and Licensing Board Panel will rule on the request and/or petition; and the Secretary or the Chief Administrative Judge of the Atomic Safety and Licensing Board

\* \* \* \* \* NO SUMMARY FOUND -- VIEW "TEXT" TO SEE COMPLETE FILE \* \* \* \* \*

[Federal Register: December 6, 2004 (Volume 69, Number 233)]

[Notices]

[Reference: 70471-70473]

the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr06de04-62]

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[Reference: 70472]]

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Within 60 days after the date of publication of this Federal Register Notice, the requestor/petitioner may file a request for a hearing, and any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a written request for a hearing and a petition for leave to intervene with respect to the **renewal** of the licenses. Requests for a hearing and a petition for leave to intervene shall be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in 10 CFR Part 2. Interested persons should consult a current copy of 10 CFR 2.309, which is available at the Commission's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland 20852 and is accessible from the Agencywide Documents Access and Management System's (ADAMS) Public Electronic Reading Room on the Internet at <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have

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As required by 10 CFR 2.309, a petition for leave to intervene shall set forth with particularity the interest of the petitioner in the proceeding, and how that interest may be affected by the results of the proceeding, taking into consideration the limited scope of matters that may be considered pursuant to 10 CFR parts 51 and 54. The petition must specifically explain the reasons why intervention should be permitted with particular reference to the following factors: (1) The nature of the requestor's/petitioner's right under the Act to be made a party to the proceeding; (2) the nature and extent of the requestor's/petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any decision or order which may be entered in the proceeding on the requestor's/petitioner's interest. The petition must also set forth the specific contentions which the petitioner/requestor seeks to have litigated at the proceeding. Each contention must consist of a specific statement of the issue of law or fact to be raised or controverted. In addition, the

requestor/petitioner shall provide a brief explanation of the bases of each contention and a concise statement of the alleged facts or the expert opinion that supports the contention on which the requestor/petitioner intends to rely in proving the contention at the hearing. The requestor/petitioner must also provide references to those specific sources and documents of which the requestor/petitioner is aware and on which the requestor/petitioner intends to rely to establish those facts or expert opinion. The requestor/petitioner must provide sufficient information to show that a genuine dispute exists with the applicant on a material issue of law or fact.\1\ Contentions shall be limited to matters within the scope of the action under consideration. The contention must be one that, if proven, would entitle the requestor/petitioner to relief. A requestor/petitioner who fails to satisfy these requirements with respect to at least one contention will not be permitted to participate as a party.

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\1\ To the extent that the application contains attachments and supporting documents that are not publicly available because they are asserted to contain safeguards or proprietary information, petitioners desiring access to this information should contact the applicant or applicant's counsel to discuss the need for a protective order.

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Each contention shall be given a separate numeric or alpha designation within one of the following groups and all like subject-matters shall be grouped together:

1. Technical--primarily concerns issues relating to technical safety or health and safety matters discussed or referenced in the Brunswick Steam Electric Plant, Units 1 and 2, safety analysis for the application (including issues related to emergency planning and physical security to the extent that such matters are discussed or referenced in the application).

[[Page 70473]]

2. Environmental--primarily concerns issues relating to matters discussed or referenced in the Environmental Report for the license **renewal** application

3. Miscellaneous--does not fall into one of the categories outlined above.

As specified in 10 CFR 2.309, if two or more requestors/petitioners seek to co-sponsor a contention, the requestors/petitioners shall jointly designate a representative who shall have the authority to act for the requestors/petitioners with respect to that contention. If a requestor/petitioner seeks to adopt the contention of another sponsoring requestor/petitioner, the requestor/petitioner who seeks to adopt the contention must either agree that the sponsoring requestor/petitioner shall act as the representative with respect to that contention, or jointly designate with the sponsoring requestor/petitioner a representative who shall have the authority to act for the requestors/petitioners with respect to that contention.

Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene, and have the opportunity to participate fully in the conduct of the hearing. A request for a hearing or a petition for leave to intervene must be filed by: (1) First class mail addressed to the Office of the

Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC, 20555-0001, Attention: Rulemaking and Adjudications Staff; (2) courier, express mail, and expedited delivery services: Office of the Secretary, Sixteenth Floor, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852, Attention: Rulemaking and Adjudications Staff; (3) E-mail addressed to the Office of the Secretary, U.S. Nuclear Regulatory Commission, [HEARINGDOCKET@NRC.GOV](mailto:HEARINGDOCKET@NRC.GOV); or (4) facsimile transmission addressed to the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC, Attention: Rulemaking and Adjudications Staff at 301-415-1101, verification number is 301-415-1966. A copy of the request for hearing and petition for leave to intervene must also be sent to the Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and it is requested that copies be transmitted either by means of facsimile transmission to 301-415-3725 or by e-mail to [OGCMailCenter@nrc.gov](mailto:OGCMailCenter@nrc.gov). A copy of the request for hearing and petition

for leave to intervene should also be sent to the attorney for the applicant. Attorney for the Applicant: Mr. Steven R. Carr, Associate General Counsel--Legal Department, Progress Energy Service Company, LCC, Post Office Box 1551, Raleigh, North Carolina, 27602-1551.

Non-timely requests and/or petitions and contentions will not be entertained absent a determination by the Commission, the presiding officer, or the Atomic Safety and Licensing Board that the petition, request and/or contentions should be granted based on a balancing of the factors specified in 10 CFR 2.309(a)(1)(i)-(viii).

Detailed information about the license **renewal** process can be found under the Nuclear Reactors icon at <http://www.nrc.gov/reactors/operating/licensing/renewal.html> on the NRC's Web site. Copies of the

application to renew the operating licenses for Brunswick Steam Electric Plant, Units 1 and 2, are available for public inspection at the Commission's PDR, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland 20852-2738, and on the NRC's webpage at <http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html> while the application is under review. The NRC

maintains an Agencywide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. These documents may be accessed through the NRC's Public Electronic Reading Room on the Internet at <http://www.nrc.gov/reading-rm/adams.html> under

ADAMS accession number ML043060444. (Note: Public access to ADAMS has been temporarily suspended so that security reviews of publicly available documents may be performed and potentially sensitive information removed. Please check the NRC's Web site for updates on the resumption of ADAMS access.) Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS may contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr@nrc.gov](mailto:pdr@nrc.gov).

The staff has verified that a copy of the license **renewal** application is also available to local residents near the Brunswick Steam Electric Plant, Units 1 and 2, at the North Carolina University at Wilmington, William Randall Library, 601 South College Road, Wilmington, North Carolina.

Dated at Rockville, Maryland, this 30th day of November, 2004.

For the Nuclear Regulatory Commission.  
Pao-Tsin Kuo,

Program Director, License **Renewal** and Environmental Impacts Program,  
Division of Regulatory Improvement Programs, Office of Nuclear Reactor  
Regulation.

[Doc. 04-26693 Filed 12-3-04; 8:45 am]

BILLING CODE 7590-01-P

# BRUNSWICK LRA

**INTRODUCTORY STATEMENT BY THE CHAIRMAN OF THE  
MEETING OF THE ACRS SUBCOMMITTEE  
ON PLANT LICENSE RENEWAL**

ROCKVILLE, MARYLAND

FEBRUARY 8, 2006

The meeting will now come to order. This is a meeting of the Plant License Renewal Subcommittee. I am John D. Sieber, Chairman of the Plant License Renewal Subcommittee.

ACRS members in attendance are Dr. Graham Wallis, Dr. William Shack, and Dr. Mario Bonaca. John Lamb of the ACRS staff is the Designated Federal Official for this meeting.

The purpose of this meeting is to discuss the license renewal application for the Brunswick Steam Electric Plant, Units 1 and 2. We will hear presentations from representatives of the Office of Nuclear Reactor Regulation (NRR), the Region II office, and the Carolina Power & Light Company.

The Subcommittee will gather information, analyze relevant issues and facts and formulate proposed position and action as appropriate for deliberation by the Full Committee.

The rules for participation in today's meeting were announced as part of the Notice of this meeting, previously published in the *Federal Register* on January 25, 2006 (71 FR 4177). We have received no written comments or requests for time to make oral statements from members of the public regarding today's meeting.

A transcript of the meeting is being kept and will be made available as stated in the *Federal Register* notice. Therefore, we request that participants in this meeting use the microphones located throughout the meeting room when addressing the Subcommittee. Participants should first identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

We will now proceed with the meeting and I call upon Mr. P.T. Kuo of the Office of Nuclear Regulatory Reactor Regulations to begin.

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
SUBCOMMITTEE ON PLANT LICENSE RENEWAL  
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2  
FEBRUARY 8, 2006  
ROCKVILLE, MARYLAND**

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<b>Status Report</b>	<b>2</b>

**Advisory Committee on Reactor Safeguards  
Plant License Renewal Subcommittee Meeting  
Brunswick Steam Electric Plant, Units 1 and 2**

February 8, 2006  
Rockville, MD

-PROPOSED SCHEDULE-

Cognizant Staff Engineer: John G. Lamb [JGL1@NRC.GOV](mailto:JGL1@NRC.GOV) (301) 415-6855

<b>Topics</b>	<b>Presenters</b>	<b>Time</b>
Opening Remarks	J. Sieber, ACRS	1:30 pm - 1:35 pm
Staff Introduction	P.T. Kuo, NRR	1:35 pm - 1:40 pm
Brunswick License Renewal Application A. Application Background B. Description of Brunswick C. Operating History D. Scoping Discussion E. Application of GALL F. Commitment Process	Carolina Power and Light, Inc. Mike Heath, Lenny Beller Mark Grantham, et al.	1:40 pm - 2:40 pm
Break		2:40 pm - 2:55 pm
SER Overview A. Scoping and Screening Results B. Onsite Inspection Results	NRR -S. K. Mitra Region II - Caudle Julian	2:55 pm - 3:15 pm
Aging Management Program Review and Audits	NRR - S. K . Mitra, Kenneth Chang,	3:15 pm - 4:00 pm
Time-Limited Aging Analyses	NRR - S. K. Mitra, Maurice Heath	4:00 pm - 4:30 pm
Subcommittee Discussion	J. Sieber, ACRS	4:30 pm - 5:00 pm

**NOTE:**

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 50 copies of the presentation materials to be provided.