



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

December 16, 2004

MEMORANDUM TO: ACRS Members
FROM: *Cayetano Santos Jr.*
Cayetano Santos Jr., Senior Staff Engineer
Technical Support Staff
ACRS/ACNW
SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS
SUBCOMMITTEE MEETING ON THE ARKANSAS NUCLEAR ONE
UNIT 2 LICENSE RENEWAL APPLICATION, DECEMBER 1, 2004 -
ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on December 15, 2004, as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc: J. Larkins
S. Duraiswamy
J. Flack
M. Snodderly



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

MEMORANDUM TO: Cayetano Santos Jr., Senior Staff Engineer,
Technical Support Staff
ACRS/ACNW

FROM: Mario Bonaca, Chairman
ACRS Plant License Renewal Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS
SUBCOMMITTEE MEETING ON THE ARKANSAS NUCLEAR ONE,
UNIT 2 LICENSE RENEWAL APPLICATION, DECEMBER 1, 2004 -
ROCKVILLE, MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting on December 1, 2004, are an accurate record of the proceedings for that meeting.

Mario Bonaca 12/15/04
Mario Bonaca , Date
Plant License Renewal Subcommittee Chairman



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

December 15, 2004

MEMORANDUM TO: Mario Bonaca, Chairman
ACRS Plant License Renewal Subcommittee

FROM: *Cayetano Santos Jr.*
Cayetano Santos Jr., Senior Staff Engineer,
Technical Support Staff
ACRS/ACNW

SUBJECT: WORKING COPY OF THE MINUTES OF THE ACRS
SUBCOMMITTEE MEETING ON THE ARKANSAS NUCLEAR ONE
UNIT2 LICENSE RENEWAL APPLICATION, DECEMBER 1, 2004 -
ROCKVILLE, MARYLAND

A working copy of the minutes for the subject meeting is attached for your review. Please review and comment on them at your earliest convenience. If you are satisfied with these minutes please sign, date, and return the attached certification letter.

Attachments: Certification Letter
Minutes (DRAFT)

cc w/o Attachment:

J. Larkins
J. Flack
S. Duraiswamy
M. Snodderly

CERTIFIED

12/15/04

By Mario Bonaca

Issued: 12/13/04

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MINUTES OF ACRS PLANT LICENSE RENEWAL SUBCOMMITTEE MEETING
ON THE ARKANSAS NUCLEAR ONE, UNIT 2 NUCLEAR POWER PLANT
DECEMBER 1, 2004
ROCKVILLE, MARYLAND**

On December 1, 2004, the Plant License Renewal Subcommittee held a meeting in Room T2B3, 11545 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to review and discuss the Arkansas Nuclear One, Unit 2 License Renewal Application (LRA) and Draft 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. Cayetano Santos was the Designated Federal Official for this meeting. The meeting convened at 1:30 pm and adjourned at 5:45 pm on December 1, 2004.

ATTENDEES:

ACRS MEMBERS/STAFF

Mario Bonaca, Chairman
Richard Denning, Member
John Sieber, Member
Victor Ransom, Member
Cayetano Santos Jr., ACRS Staff

Stephen Rosen, Member
Peter Ford, Member
Graham Wallis, Member
Graham Leitch, Consultant

NRC STAFF/PRESENTERS

P. Kuo, NRR
J. Rowley, NRR
L. Lois, NRR
J. Medoff, NRR
R. Nease, Region IV
G. Georgiev, NRR
R. McNally, NRR
D. Merzke, NRR
L. Tran, NRR
C. Li, NRR
S. Hoffman, NRR
T. Liu, NRR
B. Rogers, NRR
M. Mitchell, NRR
M. Hartzman, NRR
J. Hernandez, NRR
K. Chang, NRR

G. Suber, NRR
R. Dipert, NRR
J. Ayala, NRR
K. Cozens, NRR
G. Cranston, NRR
D. Nguyen, NRR
S. Lee, NRR
M. Lintz, NRR
J. Guo, NRR
T. Le, NRR
M. Morgan, NRR
R. Auluck, NRR
S. Mitra, NRR
J. Tsao, NRR
V. Rodriguez, NRR
K. Hsu, NRR
J. Zimmerman, NRR

Y. Li, NRR
P. Kang, RES
A. Stone, Region III

J. Ma, NRR
T. Cheng, NRR

OTHER ATTENDEES

G. Young, Entergy
M. Miller, AREVA
M. Stroud, Entergy
R. Rucker, Entergy
J. Ivy, Entergy
A. Cox, Entergy
R. Ahrabus, Entergy
J. Knorr, NMC-LLC
K. Green, ISL
P. Schoepf, AEP
D. Mlynarczyk, ISL
R. Vincent, NMC

M. Rinckel, AREVA
B. Kalinowski, AEP
D. Wooten, Dominion
D. Lach, Entergy
N. Haggerty, AEP
D. Johnson, NMC-LLC
P. Aitken, Dominion
M. Patterson, Metamorph
R. Grumbir, AEP
S. Pope, ISL
K. Prasad, ISL

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 presentation to the Subcommittee is summarized below.

Opening Remarks

Mr. Bonaca, Chairman of the Plant License Renewal Subcommittee, convened the meeting and made a few introductory remarks. The purpose of this meeting is to review Entergy's license renewal application (LRA) and the related Draft Safety Evaluation Report (SER) for Arkansas Nuclear One, Unit 2 (ANO2). Mr. Bonaca called upon Mr. Kuo of the Office of Nuclear Reactor Regulation (NRR) to begin the discussion.

Staff Introduction

Mr. Kuo introduced several members of the staff including Mr. Suber (license renewal program manager), Ms. Nease (inspection team leader), and Mr. Cranston (audit team leader). Mr. Kuo also noted that ANO2 is the second plant to be reviewed with a new process that uses on-site audits to verify consistency with the Generic Aging Lessons Learned Report (GALL).

ANO2 License Renewal Application

Mr. Young, Entergy, greeted the Subcommittee and introduced accompanying members of the Entergy and AREVA staff. The key elements of Mr. Young's presentation included a description of ANO2, its operating history, the scoping methodology, the application of GALL, and commitment tracking.

Background and Plant Description

On October 15, 2003, Entergy submitted an application to the NRC for renewal of the ANO2 operating license for an additional 20 years. The current operating license for ANO2 expires on July 17, 2018. Entergy also identified staff approved past precedents that are not in GALL and provided this information to the staff.

ANO2 is a pressurized water reactor (PWR) unit with a dry ambient containment. ANO2 began initial operations in 1978 and has a capacity of 3026 MWt or 1023 MWe. Mr. Young also noted some differences between ANO Unit 1 and 2. Unit 1 is a Babcock and Wilcox PWR that uses once through cooling, while Unit 2 is a Combustion Engineering PWR with a cooling tower.

Operating History/Major Equipment Replacements and Repairs

In 2002, a power uprate of 7.5% increased capacity by 210 MWe. In 2000 the steam generators were replaced with Westinghouse Delta 109 U-tube steam generators.

Scoping and Screening Method

The scoping methodology was applied on a plant system basis per the requirements of 10 CFR 54.4(a) and screening was performed per the requirements of 10 CFR 54.21(a)1. Mr. Young added that all components located in a room that contains both safety and non-safety related equipment were assumed to be in scope.

Application of GALL

The ANO2 license renewal application focused on consistency with GALL but since some material/environment/program combinations were not addressed in GALL some plant-specific programs were used. Mr. Young stated that information from Entergy's past precedent review was provided separately from the LRA. This information is being considered by the staff in an update of the GALL report.

Of the 33 aging management programs (AMPs) at ANO2, 15 are consistent with GALL with enhancements, 7 are consistent with GALL with exceptions, and 11 are plant-specific. Of the 11 plant-specific programs, 8 are based on past precedents. Mr. Young stated that the One-Time Inspection Program was added after the LRA was submitted.

Commitment Tracking

Mr. Young stated that all commitments made through the LRA, the audit/inspection process, and requests for additional information are tracked with the ANO Licensing Commitment Tracking System.

Mr. Young concluded by stating that the use of past precedents and the on-site audits increase the efficiency of the license renewal process.

SER Overview

Mr. Suber discussed the staff's license renewal activities. The key elements of the staff's presentation described an overview of the Draft SER, the aging management program reviews and audits, and the time-limited aging analyses.

The Draft SER did not contain any open or confirmatory items but did list the following license conditions:

1. The FSAR should be updated upon issuance of the renewed license.
2. The future activities should be completed as described in the FSAR Supplement prior to entering the period of extended operation.

3. The reactor vessel surveillance capsules should be removed and tested in accordance with ASTM E185-82 and any changes to the withdrawal schedule or storage requirements should be approved by the NRC.

Mr. Suber listed the dates of the various audits and inspections performed by the staff.

Scoping and Screening

Mr. Suber stated that the scoping and screening methodology is adequately described in the LRA and satisfies the requirements in 10 CFR 54.4 and 10 CFR 54.21(a)(1). In addition, the review of the scoping and screening results found that the systems, structures, and components (SSCs) within scope of license renewal and subject to an aging management review (AMR) have been identified. As a result of the staff's review, the feedwater outboard block valve and the power transmission conductors were brought into scope, and the intake canal structure was included in an aging management program.

Onsite Inspection Results

Ms. Nease, Region IV, described the license renewal inspections performed by the Region. These inspections were performed in accordance with License Renewal Manual Chapter MC2516, Inspection Procedure IP 71002, and a site-specific inspection plan. The scoping and screening inspection was performed in March 2004 and concluded that the scoping and screening process successfully identified those SSCs requiring an AMR. As a result of this inspection the spent fuel pool cooling pumps and the switchyard control house were brought into scope of license renewal. The aging management review inspection was performed in November 2004 to confirm that the applicant has or will implement AMPs to manage the effects of aging. The results of this inspection will be documented in a future inspection report.

Ms. Nease also described the recent performance of ANO2. All of the NRC performance indicators for the third quarter of 2004 are green. However, ANO2 is in the Regulatory Response Column of the NRC Action Matrix because of a white finding in the area of fire protection. Ms. Nease concluded by stating that the Annual Assessment Letter for ANO2 identified a substantive issue regarding Problem Identification and Resolution.

Aging Management Program Review and Audits

Mr. Suber described the staff's review of the aging effects associated with various plant systems and components. The staff's review of the reactor vessel, internals and reactor coolant systems resulted in 1 license condition and 3 commitments to submit AMPs for NRC review and approval. As a result of the staff's review the One-Time Inspection Program was added to supplement the System Walkdown AMP and the intake canal structure was included in the Structures Monitoring Program. Even though the pH, chloride and sulfate levels of the below grade water environment are nonaggressive, the Structures Monitoring Program will be used to manage the effects of aging of inaccessible concrete. Mr. Suber also noted that the power transmission conductors which were brought in scope as a result of the staff's review, did not require an AMP.

Mr. Cranston, NRR, stated that AMPs are divided into 4 categories: consistent with GALL, consistent with GALL with exceptions, consistent with GALL with enhancements, and based on previously approved staff positions. Mr. Cranston also noted that information regarding NRC approved precedents was supplementary information provided voluntarily by the applicant. It

was not part of the LRA. For the AMPs based on past precedents, the audit team evaluated the applicability of the previously approved staff position, determined if the program was bounded by the conditions for which the previous staff position was approved, and verified that the program contains the attributes of the referenced precedent. Mr. Cranston described several of the AMPs including the Structures Monitoring - Masonry Wall Program, the Diesel Fuel Monitoring Program, the Fire Water System Program, and the Cast Austenitic Stainless Steel Evaluation Program.

The Structures Monitoring - Masonry Wall Program is an existing AMP that is consistent with GALL. During the audit of this AMP, the team found that the initial baseline examinations were not documented properly, the first 5 year reexamination was not performed, and qualifications for personnel qualified to perform walkdowns were not established. The applicant generated a condition report to document and correct these deficiencies.

The Diesel Fuel Monitoring Program is new AMP that is consistent with GALL with exceptions. The exceptions are the use of fewer additives, the use of ASTM standard D 1796 instead of D 2709, the use of a smaller filter pore size, and a lack of ultrasonic measurements of tank bottoms. The staff found these exceptions acceptable because a vendor recommended additive package was used, ASTM D2709 did not apply, the smaller pore size is more conservative, the bottom of the tank is not likely to be exposed to water, accessible tank surfaces undergo a periodic visual inspection, and operating experience at ANO2 has not shown any wall thinning problems.

The Fire Water System is an example of an AMP that is consistent with GALL with enhancements. The program enhancement is to inspect sprinkler heads consistent with Interim Staff Guidance (ISG) 04.

The Cast Austenitic Stainless Steel (CASS) Evaluation Program was originally submitted based on a previously approved staff position but was changed to be consistent with GALL. The audit team determined that the code case to perform only external visual inspections was not applicable to ANO2. Therefore, the applicant revised the AMP to be consistent with GALL. An example of a plant-specific AMP based on a previously approved staff position is the Wall Thinning Monitoring Program. This AMP was previously approved by the staff for ANO1.

The staff concluded that the applicant has demonstrated the effects of aging will be managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation.

Time Limited Aging Analyses (TLAAs)

Mr. Suber stated that the applicant has identified the appropriate TLAAs. Of the 11 TLAAs at ANO2, 5 were identified from NUREG 1800 and 6 were identified by the applicant. The applicant has also demonstrated that (1) the TLAAs are valid for the period of extended operation, (2) the TLAAs are projected to the end of the period of extended operation, or (3) that aging effects will be adequately managed for the period of extended operation.

Embrittlement of the reactor vessel affects TLAAs associated with upper shelf energy (USE), pressurized thermal shock (PTS), and pressure temperature limits. Calculations by the staff and applicant demonstrate that the beltline materials continue to meet the USE acceptance

criterion in 10 CFR 50 Appendix G through 48 Effective Full Power Years (EFPY). The staff also performed independent calculations of RT_{PTS} values and concluded that the limiting beltline material continues to meet the screening criterion in 10 CFR 50.61 through 48 EFPY.

The staff concluded that analyses associated with fatigue of ASME Class 1 components; fatigue of ASME Non-Class 1 piping components; fatigue of containment liner plate and penetrations; fracture of reactor coolant pump casings, and Leak-Before-Break of RCS piping systems remain valid for the period of extended operation.

The staff made the following conclusions regarding the other TLAAAs:

1. The loss of prestress in containment tendons will be adequately managed for the extended period of operation.
2. The Environmental Qualification Program is consistent with GALL and will continue to manage equipment in accordance with 10 CFR 50.49.
3. The analyses of Alloy 600 nozzle repairs projected through the period of extended operation are valid.

Mr. Suber concluded by stating that the applicant has met the requirements for license renewal and there is reasonable assurance that activities will continue to be conducted in the renewal term in accordance with the current licensing basis.

Member Comments

General

Chairman Bonaca and Member Rosen asked about the replacement steam generators. Mr. Young replied that the replacement steam generators were of the same design as the original steam generators but were designed for a higher power rating and contained tube materials constructed from Alloy 690.

Several Members and Consultant Leitch asked questions regarding the reactor pressure vessel head. The applicant stated that an inspection of the head in 2002 did not indicate any leakage even though ANO2 is a high susceptibility plant. Since some of the penetrations are covered by a shroud which prevents a complete 360° bare metal visual inspection, alternative eddy current and ultrasonic inspections were performed. The results of these volumetric inspections did not show any cracking. The applicant has plans to replace the head, but the earliest this could be done is 2008. In the meantime the applicant plans to modify the shroud covering the penetrations to allow increased access for visual inspections.

In response to a question from Consultant Leitch, Ms. Nease stated that the material condition of the plant was very good.

Chairman Bonaca and Member Rosen asked about the issue identified in the Annual Assessment Letter regarding Problem Identification and Resolution. Ms. Nease responded that errors in the prioritization, implementation, and effectiveness of corrective actions were found across the board at the plant. This is a concern because AMPs depend upon the effectiveness of the Corrective Action Program.

Chairman Bonaca and Member Wallis commented that the audit report for AMPs and AMRs is very valuable to reviewers.

Several Members commented that there are no issues regarding the ANO2 license renewal application or draft SER.

Scoping and Screening

Several Members and Consultant Leitch asked questions regarding the justification for the scoping and screening classification of components.

In response to a question from Consultant Leitch, the applicant stated that there were no problems associated with the scoping of systems shared between Units 1 and 2.

Consultant Leitch asked if the scoping process considers situations in which the disintegration of non safety-related components affects the operation of safety-related components. Except for steam dryers in BWRs, operating experience has shown that this type of interaction has not been a problem. The staff added that active components are examined routinely as part of the maintenance program.

Aging Management

Consultant Leitch asked why buried components are inspected opportunistically and not at a scheduled frequency as recommended by GALL. Mr. Young replied that operating experience has shown that underground pipes are excavated every 5 to 10 years and inspected at that time. Mr. Young added that excavating a pipe has the potential to damage its external coating. In response to a question from Member Sieber, the applicant stated that no inspections are performed on the inside of buried pipes because other AMPs are credited for managing corrosion on these interior surfaces.

Consultant Leitch asked about the schedule for implementing new AMPs and suggested that this information be discussed at the Full Committee meeting. The applicant stated that the new AMPs will be phased in such that they will all be in place at least 2 years before the 40th year of operation. A detailed implementation schedule will be developed after the renewed license has been issued.

Several Members asked questions regarding the staff's review of the quality of the AMPs. The headquarters staff and audit team assess the quality of the programs while the regional inspection team verifies that the programs are implemented as described. In determining the effectiveness of current AMPs, the staff considers operating experience, performs walkdowns, and examines Condition Reports.

Member Ford asked about the inspection program for reactor vessel internals. The staff responded that the reactor vessel internals programs have not been finalized but the applicant has committed to submitting these programs for staff review 2 years before entering the period of extended operation.

Member Ford asked if corrosion of carbon steel pipes could clog up the nozzles in the fire protection systems. The applicant responded that if this clogging occurred, it would be identified during the periodic flushing performed as part of the AMP for the fire protection systems.

Members Ford and Rosen asked about the aging management of inaccessible concrete. The most recent tests of groundwater chemistry indicate that the below grade environment is not aggressive. Since well water is no longer available for periodic monitoring, the applicant chose to use the Structures Monitoring Program to manage the effects of aging. Under this program concrete exposed to lakewater will be periodically inspected. Since the chemistry of lakewater and ground water are similar, these inspection results will be representative of underground concrete exposed to groundwater.

Member Rosen asked if the root cause of the discrepancies in the Structures Monitoring - Masonry Wall Program was identified. The applicant stated that some of these discrepancies were simply the result of the wrong date used in determining the time for the next inspection.

TLAAs

The TLAAs for reactor vessel embrittlement assumed a constant capacity factor of 80% for 60 years resulting in 48 EFPY. Consultant Leitch and Member Rosen questioned the basis for this assumption and asked if the USE and PTS requirements could still be met at 54 EFPY. The applicant stated that the basis for this assumption was that the LRA for ANO1 assumed 48 EFPY and that operating experience to date has shown an 80% capacity factor for ANO2. The staff stated that at 54 EFPY the RT_{PTS} value for the limiting beltline material increases by only 2 degrees and would continue to meet the PTS screening criterion. The staff added that the Reactor Vessel Integrity Program will ensure that fluence values are updated as needed.

Several Members and Consultant Leitch asked why cumulative usage factors greater than 1 are acceptable for some components. The staff stated that these analyses are conservative and the actual number of cycles are much lower than those used in these analyses. The staff added that if the usage factor of a component exceeds 1, the licensee would have to repair the component, replace the component, refine the analysis, or implement an aging management program. The applicant added that fatigue calculations are updated every fuel cycle to verify that cumulative usage factors won't exceed 1 during the next cycle.

Member Wallis asked what data was used to analyze the loss of prestress in concrete containment tendons. The applicant stated that data from the containment of ANO1 was extrapolated to 60 years and is above the minimum requirements.

Staff Commitments

The staff will calculate the USE of the limiting beltline material at 54 EFPY and report the results to the Committee.

Subcommittee Decisions and Follow-up Actions

The Subcommittee will summarize the discussions to the full Committee during the December 2004 ACRS meeting.

Background Materials Provided to the Committee

1. License Renewal Application for Arkansas Nuclear One Unit 2, October 14, 2003

2. NRC Inspection Report 05000368/2004-06, License Renewal Scoping and Screening Inspection Report, April 19, 2004
3. Information Systems Laboratories, Inc., Audit and Review Report for Plant Aging Management Reviews and Programs, Arkansas Nuclear One Unit 2, July 29, 2004
4. Draft Safety Evaluation Report Related to the License Renewal of the Arkansas Nuclear One, Unit 2, dated November 2004

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 (e-mail).

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 December 1, 2004, 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, December 1, 2004—1 p.m. until 4:30 p.m.

The purpose of this meeting is to review the License Renewal Application and associated Draft Safety Evaluation Report (SER) related to the License Renewal of the Arkansas Nuclear One, Unit 2. The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff, Entergy Operations, Inc., 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. Cayetano Santos (telephone 301/415-7270) 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. (e.t.). 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: November 9, 2004.

John H. Flack,

Acting Branch Chief, ACRS/ACNW.

[FR Doc. 04-25508 Filed 11-16-04; 8:45 am]

BILLING CODE 7590-01-P

OFFICE OF MANAGEMENT AND BUDGET

Public Availability of Year 2004 Agency Inventories Under the Federal Activities Inventory Reform Act of 1998 (Pub. L. 105-270) ("FAIR Act")

AGENCY: Office of Management and Budget Executive Office of the President.

ACTION: Notice of public availability of agency inventory of activities that are not inherently governmental and of activities that are inherently governmental.

SUMMARY: In accordance with the "Federal Activities Inventory Reform Act of 1998" (Pub. L. 105-270) ("FAIR Act"), agency inventories of activities

that are not inherently governmental are now available to the public from the agencies listed below. The FAIR Act requires that OMB publish an announcement of public availability of agency inventories of activities that are not inherently governmental upon completion of OMB's review and consultation process concerning the content of the agencies' inventory submissions. After review and consultation with OMB, agencies make their inventories available to the public, and these inventories also include activities that are inherently governmental. This is the first release of the 2004 FAIR Act inventories. Interested parties who disagree with the agency's initial judgment can challenge the inclusion or the omission of an activity on the list of activities that are not inherently governmental within 30 working days and, if not satisfied with this review, may demand a higher agency review/appeal.

The Office of Federal Procurement Policy has made available a FAIR Act User's Guide through its Internet site: <http://www.whitehouse.gov/OMB/procurement/fair-index.html>. This User's Guide will help interested parties review 2004 FAIR Act inventories, and gain access to agency inventories through agency Web site addresses.

Joshua B. Bolten,

Director.

Attachment

FIRST FAIR ACT RELEASE 2004

Armed Forces Retirement Home	Mr. Steve McManus, (202) 730-3533 www.afrrh.com .
Chemical Safety Board	Ms. Bea Robinson, (202) 261-7627 www.csb.gov .
Commission on Fine Arts	Mr. Frederick Lindstrom, (202) 504-2200 www.cfa.gov .
Committee for Purchase from People Who are Blind or Severely Disabled.	Mr. Leon Wilson, 703-604-7740 www.jwod.gov .
Consumer Product Safety Commission	Mr. Edward Quist, (301) 504-7655 www.cpsc.gov .
Council on Environmental Quality	Mr. Ted Boling, (202) 395-3449 www.whitehouse.gov/ceq .
Department of Energy	Mr. Dennis O'Brien, (202) 586-1690 www.doe.gov .
Department of Health and Human Services	Mr. Michael Colvin, (202) 690-7887 www.hhs.gov/ogam/oam/fair/ .
Department of Transportation	Mr. David Litman, (202) 366-4263 www.dot.gov .
Department of Transportation (IG)	Ms. Jackie Weber, (202) 366-1495 www.oig.dot.gov .
Federal Communications Commission IG	Mr. Charles Willoughby, (202) 418-0472 www.fcc.gov/oig .
Federal Energy Regulatory Commission	Ms. Kimberly Fernandez, (202) 208-1298 www.ferc.gov .
Federal Mine Safety and Health Review Commission	Mr. Richard Baker, (202) 434-9905 www.fmshrc.gov .
Holocaust Museum	Ms. Helen Shepherd, (202) 314-0396 www.ushmm.gov .
Institute of Museum and Library Services	Ms. Teresa LaHaie, (202) 606-8637 www.imls.gov .
International Trade Commission	Mr. Stephen McLaughlin, (202) 205-3131 www.usitc.gov .
Japan-United States Friendship Commission	Ms. Margaret Mihori, (202) 418-9800 office.justfc.gov/commissn/FAIRAct.htm .
Kennedy Center	Mr. Jared Barlage, (202) 416-8731 www.kennedy-center.org .
National Aeronautics and Space Administration	Mr. Kenneth Sateriale, (202) 358-0491 www.nasa.gov .
National Commission on Libraries and Information Sciences	Ms. Madeleine McCain, (202) 606-9200 www.nclis.gov .
National Council on Disability	Ms. Ethel Briggs, (202) 272-2004 www.ncd.gov .
National Gallery of Art	Mr. William Roache, (202) 842-6329 www.nga.gov .
National Labor Relations Board	Mr. Emil George, (202) 273-1966 www.nlr.gov .
National Labor Relations Board (IG)	Mr. Emil George, (202) 273-1966 www.nlr.gov/ig/igindex.htm .
National Science Foundation	Mr. Joseph Burt, (703) 292-5034 www.nsf.gov .
Nuclear Regulatory Commission	Ms. Kathryn Greene, (301) 415-7305 www.nrc.gov .
Nuclear Regulatory Commission (OIG)	Mr. David Lee, (301) 415-5930 www.nrc.gov/insp-gen.html .
Occupational Safety and Health Review Commission	Ms. Ledia Bernal, (202) 606-5390 www.oshrc.gov .



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

November 9, 2004

MEMORANDUM TO: John H. Flack, Acting Branch Chief, ACRS/ACNW

FROM: *Cayetano Santos Jr.*
Cayetano Santos, Senior Staff Engineer

SUBJECT: FEDERAL REGISTER NOTICE REGARDING THE
MEETING OF THE ACRS SUBCOMMITTEE ON
PLANT LICENSE RENEWAL, DECEMBER 1, 2004,
ROCKVILLE, MARYLAND

Attached is a Federal Register Notice regarding the subject meeting. Please have this Notice transmitted for publication as soon as possible.

Attachment:
FR Notice

cc with Attachment:
M. Bonaca, ACRS
J. Larkins, ACRS
J. Szabo, OGC
A. Bates, SECY
R. Tadesse, OEDO
S. Burnell, OPA
R. W. Borchardt, NRR
D. Matthews, NRR
P. Kuo, NRR
T. Liu, NRR
PMNS
Public Document Room

NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING OF THE SUBCOMMITTEE ON PLANT LICENSE RENEWAL

Notice of Meeting

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The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Wednesday, December 1, 2004 - 1:00 p.m. until 4:30 p.m.

The purpose of this meeting is to review the License Renewal Application and associated Draft Safety Evaluation Report (SER) related to the License Renewal of the Arkansas Nuclear One, Unit 2. The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff, Entergy Operations, Inc., 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. Cayetano Santos (telephone 301/415-7270) 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.

Date 11/9/04



John H. Flack, Acting Branch Chief, ACRS/ACNW

**Advisory Committee on Reactor Safeguards
Plant License Renewal Subcommittee Meeting
Arkansas Nuclear One - Unit 2
December 1, 2004
Rockville, MD**

-PROPOSED SCHEDULE-

Cognizant Staff Engineer: Cayetano Santos Jr. CXS3@NRC.GOV (301) 415-7270

	<u>Topics</u>	<u>Presenters</u>	<u>Time</u>
I	Opening Remarks	M. Bonaca, ACRS	1:30 pm - 1:35 pm
II	Staff Introduction	P.T. Kuo, NRR	1:35 pm - 1:40 pm
III	ANO-2 License Renewal Application	G. Young Entergy Operations, Inc.	1:40 pm - 2:40 pm ^{2:20 pm}
	A. Application Background		
	B. Description of ANO-2		
	C. Operating History		
	D. Scoping Discussion		
	E. Application of GALL		
	F. Commitment Process		
IV	SER Overview	G. Suber, NRR R. Nease, Region IV L. Smith, Region IV	^{2:20 pm} 2:40 pm - ^{3:10 pm} 3:00 pm
	A. Scoping and Screening Methodology Results		
	B. Onsite Inspection Results		
	BREAK		^{3:10 pm} 3:00 pm - ^{3:25 pm} 3:15 pm
V	Aging Management Program Review and Audits	G. Suber, NRR G. Cranston, NRR	^{3:25 pm} 3:15 pm - 4:00 pm ^{4:15 pm}
VI	Time Limited Aging Analyses (TLAAs)	G. Suber, NRR	^{4:15 pm} 4:00 pm - 4:30 pm ^{5:15 pm}
VII	Subcommittee Discussion	M. Bonaca, ACRS	^{5:15 pm} 4:30 pm - 5:00 pm ^{5:45 pm}
VIII	Adjourn	M. Bonaca, ACRS	5:00 pm ^{5:45 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

December 1, 2004
Date

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<u>NAME</u>	<u>AFFILIATION</u>
GARRY YOUNG	ENERGY NUCLEAR
Mark Rinckel	AREVA
Matthew Miller	AREVA
BOB KALINOWSKI	AEP
MIKE STROUD	ENERGY NUCLEAR
David Wooten	Dominion
Roger Rucker	Energy Nuclear
David J. Lach	Energy
Ted S. Ivy	Energy Nuclear
Neil Haggerty	AEP
ALAN COX	Energy Nuclear
DOUGLAS JOHNSON	NUCLEAR MANAGEMENT COMPANY
REZA AHRAHIAN	ENERGY
Paul Aitken	DOMINION
James Snorr	NMC-LLC
Malcolm Peterson	METAMORPH
Kim Green	ISL, Inc.
Richard Grumbir	AEP - D.C. Cook Plant
Paul Schoepf	AEP - D.C. Cook Plant
Steve Pope	ISL, Inc.

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AFFILIATION

DIANE MLYNARCZYK

18C, INC.

K. C. PRASAD

ISL, INC

K. Robert HSU

NRC/DRIP/RLFP

ROBERT VINCENT

NMC

Ken Chang

NRC / RLEP

$\rho_T \propto \nu_0$

NRC/RLFP

Take Zimmerman

WRC / RLEP

Y.C. (Renee) Li

NRC / NRR / DE / ZMERB

J. S. Ma

NRC/NRR/DZ/EMER

P. S. Kang

NBS / OBr / MBR.

Thomas Cheng

NRE / DE / GMEB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL

December 1, 2004
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NRC STAFF SIGN IN FOR ACRS MEETING

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<u>NAME</u>	<u>NRC ORGANIZATION</u>
Jonathan Rawley	NRR/DRIP/RLEP-A
RICHARD DIFERT	NRR/DSSA/SPLB
Lambros Cors	NRR(DSSA/SRXB)
JUAN AYALA	NRR/DRIP/RLEP-A
JAMES MEDOFF	NRR/DE/EMCB
KURT COZENS	NRR/DRIP/ NRR RLEP
PIERCEA NEASE	REGION IV/DRS/PEB
GREG CRANSTON	NRR/DRIP/RLEP-B
George Georgiev	NRR/DE/EMCB-B
Duc Nguyen	NRR/DE/EEIB
Richard McNally	NRR/DE/EMEB
GREGORY SUBER	NRR/DRIP/RLEP-A
SAM LEE	NRR/DRIP/RLEP
DAN MEIZKE	NRR/DRIP/RLEP
Mark Lintz	NRR/DRIP/RLEP-B
L. Tran	NRR/DRIP/RLEP-B
Jin-Sien Guo	NRR/DSSA/SPLB
Chang Li	NRR/DSSA/SPLB
Toung Le	NRR/DRIP/RLEB
Steve Hoffman	NRR/DRIP/RLEP

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Arkansas Nuclear One – Unit 2

License Renewal Presentation to ACRS Subcommittee

Garry G. Young
Entergy Nuclear
December 1, 2004



Introduction

- Application Background
- Description of ANO-2
- Operating History
- Scoping Discussion
- Application of GALL
- Commitment Process

Dec. 1, 2004

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Application Background

- Application submitted October 15, 2003
- Original license expiration:
 - Unit 2 – July 17, 2018
- New Process
 - Consistent with GALL Audits

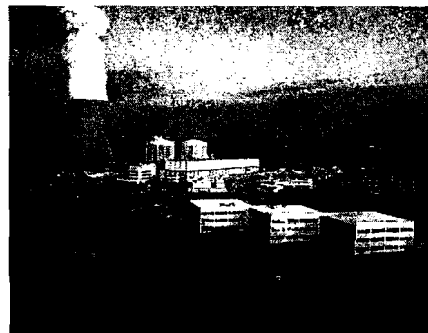
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Description of ANO-2

- Combustion Engineering PWR
- Bechtel – Architect / Engineers
- Initial Ops: 1978
- Capacity: 3026 MWt - 1023MWe



Dec. 1, 2004

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Operating History

- Upgraded: Unit 2 – 2002
 - 7.5% power upgrade
 - Increased capacity by 210 MWt
- SGs replaced in 2000
 - Westinghouse Delta 109 U-tube

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ANO-2 Scoping Method

- Scoping applied on a plant system basis
 - System scoping per
 - Safety-related – 10CFR 54.4(a)(1)
 - Non-safety that could affect safety function – 10CFR 54.4(a)(2)
 - Criteria for Regulated Events – 10CFR 54.4(a)(3)
- Screening per 10CFR 54.21(a)(1)

Dec. 1, 2004

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GALL Comparison

- ANO-2 focused on consistent with GALL
- Some material/environment/program combinations not addressed in GALL
- Plant-specific programs used as needed
- Past precedent table provided separate from application

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Consistent with GALL

- 33 total aging management programs
- 15 programs consistent with GALL and with enhancements
- 7 programs consistent with exceptions
- 11 programs not consistent with GALL and plant specific
- 1 AMP added – One Time Inspection

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Commitment Tracking

- Commitments

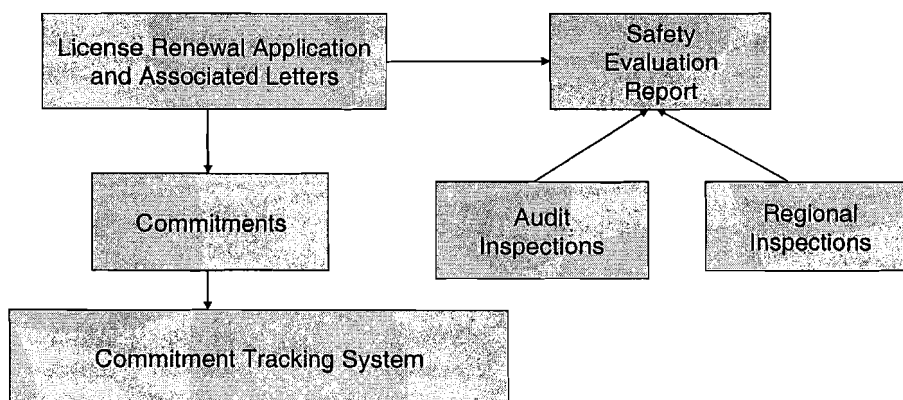
- Commitments documented in the LRA and revised as needed during audit / inspection process
- Tracked with ANO Licensing Commitment Tracking System

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Commitment Tracking System



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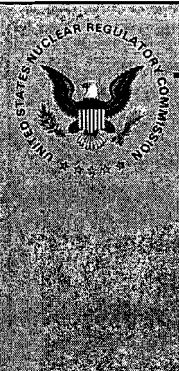
Closing Remarks



-
- New process with audit team was thorough and rigorous
 - Consistent with GALL process and past precedent added new opportunity for process efficiency

Dec. 1, 2004

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ACRS License Renewal Subcommittee

Arkansas Nuclear One, Unit 2 License Renewal Application

**Draft Safety Evaluation Report
December 01, 2004**

**Gregory F. Suber
Project Manager**

NRC Review Highlights

- No Open Items
- No Confirmatory Items
- Brought into scope and subjected to AMR
 - Five (5) components/commodities
- 1 new AMP – One-Time Inspection

NRC Review Highlights

- Three (3) License Conditions
 - Update FSAR upon issuance of the renewed license
 - Complete future activities described in the FSAR Supplement prior to entering the period of extended operation
 - Reactor Vessel Surveillance Program
 - Remove and test capsule in accordance with ASTM E 185-82
 - Obtain NRC approval prior to changing capsule withdrawal schedule or changing storage requirements

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Arkansas Nuclear One, Unit 2

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NRC Audits and Inspections

- Aging Management Programs Audit
 - December 1 - 5, 2003
- Scoping and Screening Methodology Audit
 - January 20 – 22, 2004
- Aging Management Review Audit
 - February 9 - 13, 2004
- Scoping and Screening Inspection
 - March 1 – 5, 2004
- Aging Management Program Inspection
 - November 1 - 19, 2004

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Section 2 – Structures & Components Subject to an AMR

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
- Staff audit determined that the applicant's methodology satisfies the rule.

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Section 2 – Structures & Components Subject to an AMR

Section 2.2 – Plant Level Scoping Results

- Staff reviewed Section 2.2 to determine if any systems, structures, and components required to be within scope were omitted.
- Three (3) components brought into scope
 - Feedwater Outboard Block Valve
 - Intake Canal Structure
 - Power Transmission Conductors

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Section 2 – Structures & Components Subject to an AMR

Section 2.3 – Scoping and Screening of Mechanical Systems

- Includes the following systems:
 - Reactor Coolant System
 - Engineered Safety Features Systems
 - Auxiliary Systems
 - Steam and Power Conversion Systems
- One (1) Component added by NRC Staff Review:
Feedwater Outboard Block Valve

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Section 2 – Structures & Components Subject to an AMR

Section 2.4 – Structures and Structural Components

- Describes structures and structural components
 - Containment
 - Auxiliary Building, Turbine Building, Yards Structures
 - Intake Canal and Emergency Cooling Pond
 - Bulk Commodities
- One (1) Component brought into scope by NRC
Staff Review: Intake Canal Structure

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Section 2 – Structures & Components Subject to an AMR

Section 2.5 – Electrical and Instrumentation and Controls

- Structures and Component/Commodities
 - Electrical cables
 - Electrical connectors
 - High voltage transmission conductors and insulators
- One (1) Component added by NRC Staff Review:
Power Transmission Conductors

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License Renewal Inspections

- Scheduled to Support Pilot Review Program
- Scoping and Screening Inspection
(March 2004)
- Aging Management Review Inspection
(November 2004)
- Third Inspection – Optional

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License Renewal Inspection Program Implementation

- License Renewal Manual Chapter—MC2516
- Inspection Procedure—IP 71002
- Site-specific Inspection Plan

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License Renewal Inspections

Scoping and Screening Inspection

- Objective: to confirm that the applicant has included SSCs in the scope of license renewal as required by the rule
- Resources: 3 regional inspectors
1 resident inspector
- One week in length: March 1 – 5, 2004

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License Renewal Inspections

Scoping and Screening Inspection Results

- Conclusion: Scoping and screening process was successful in identifying those SSCs requiring an aging management review.
- Two items brought into scope:
 - Spent Fuel Pool Cooling Pumps
 - Switchyard Control House

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License Renewal Inspections

Aging Management Review Inspection

- Objective: to confirm that applicant has implemented or plans to implement AMPs to manage aging effects for in-scope SSCs
- Two weeks: November 1–5 and 15–19, 2004
- Results will be summarized in a future report.

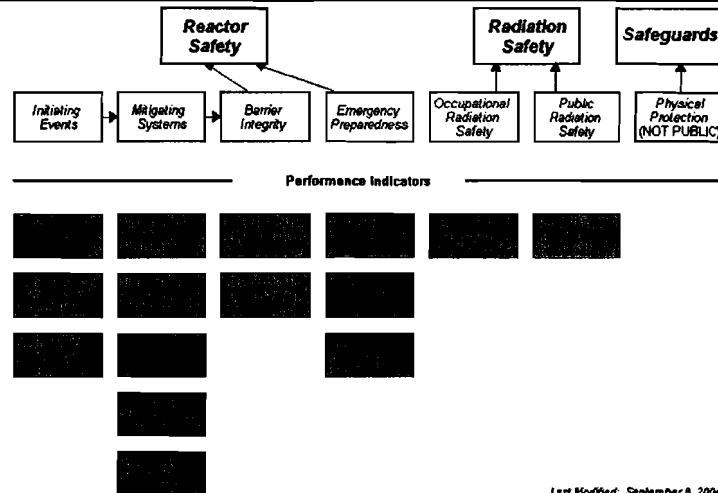
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ANO-2

3Q/2004 Performance Summary



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Last Modified: September 8, 2004

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ANO-2

Performance Summary

- Midcycle Performance Review (August 30, 2004)
- Licensee is in the Regulatory Response Column of the NRC's Action Matrix due to a white finding in the area of fire protection (issued April 7, 2004).
- Annual Assessment Letter (dated March 3, 2004) identified a substantive cross-cutting issue concerning PI&R.

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Scoping and Screening Summary

- Scoping and screening methodology is adequately described and justified in the LRA and satisfies the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).
- Scoping and screening review results found that the SSCs within the scope of license renewal, as required by 10 CFR 54.4(a) and those subject to an AMR, as required by 10 CFR 54.21(a)(1), have been identified.

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Section 3 – Aging Management Review

- Aging Management Program
- Aging Management Review Results

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Section 3 – Aging Management Review

- Reactor Vessel, Internals, and Reactor Coolant System
- (Section 3.1)
- Engineered Safety Features Systems (Sections 3.2)
- Auxiliary Systems (Section 3.3)
- Steam and Power Conversion Systems (Section 3.4)
- Containments, Structures and Component Supports (Section 3.5)
- Electrical and Instrumentation and Controls (Section 3.6)

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Section 3 – Aging Management Review

Section 3.1 – Reactor Vessel, Internals and Reactor Coolant Systems

- One License Condition
- Three commitments to submit programs for NRC review and approval

Section 3.2 – Engineered Safety Features System

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Section 3 – Aging Management Review

- Section 3.3 – Auxiliary Systems
 - One-Time inspection to supplement System Walkdown AMP
 - Fire Protection
- Section 3.4 – Steam and Power Conversion Systems

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Section 3 – Aging Management Review

Section 3.5 – Containment, Structures, and Component Supports

- Intake canal structure was added to the scope of license renewal, and the aging effects will be managed by the Structures Monitoring Program.

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Aging Management of In-Scope Inaccessible Concrete

	Aggressive Limit	ANO-2
pH	< 5.5	7.23
Chlorides	> 500 ppm	<5 ppm
Sulfates	> 1500 ppm	20.3 ppm

- Below grade soil/water environment non-aggressive
- Use of Structural Monitoring Program to manage aging as if the environment were aggressive

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Section 3 – Aging Management Review

Section 3.6 – Electrical and Instrumentation and Controls

- Power transmission conductors were added to the scope of license renewal, however, there were no aging effects requiring management and no AMP was required.

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AGING MANAGEMENT PROGRAM CATEGORIES

- CONSISTENT WITH GALL
- CONSISTENT WITH GALL, WITH EXCEPTIONS
- CONSISTENT WITH GALL, WITH ENHANCEMENTS
- PREVIOUSLY-APPROVED STAFF POSITIONS

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NRC APPROVED PRECEDENTS

- PRECEDENT INFORMATION
 - Supplementary information voluntarily provided
 - Roadmap, reviewers aid
 - Not a part of LRA
 - Basis must be verified
- AUDUT TEAM DETERMINES
 - Applicability of previously-approved staff position
 - Program bounded by the conditions for which the staff position was evaluated and approved
 - Plant program contains the SRP-LR program elements (or attributes)

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LRA AMP CONSISTENT WITH GALL AMP

- LRA AMP
 - B.1.10.2, Structures Monitoring - Masonry Wall
 - Existing program
- GALL AMP
 - XI.S5, Masonry Wall Program
- AUDIT TEAM IDENTIFIED PROGRAM DISCREPANCIES
 - Initial baseline examinations not properly documented.
 - First 5 year re-exam not performed
 - Qualifications for structural walkdown personnel not established
- APPLICANT GENERATED CONDITION REPORT TO IDENTIFY AND CORRECT DEFICIENCIES.

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LRA AMP CONSISTENT WITH GALL AMP WITH EXCEPTIONS

- LRA AMP
 - B.1.7, Diesel Fuel Monitoring
 - New Program
- GALL AMP
 - XI.M30, Fuel Oil Chemistry Program
- PROGRAM EXCEPTIONS
 - Fewer additives
 - ASTM standard D 1796 used; D 2709 not used
 - Smaller filter pore size
 - No ultrasonic measurements of tank bottoms
- BASIS FOR ACCEPTING
 - Use vendor recommended additive package, including biocide and oxidation inhibitor ; proven successful from operating experience
 - ASTM D 1796 applies to viscosity of fuel oils used at ANO-2; D 2709 does not apply
 - Smaller filter pore size acceptable
 - Tank bottom sealed to above ground, concrete foundation preventing water intrusion.
 - Accessible tank external surfaces & internal surfaces periodically, visually inspected
 - ANO2 operating experience shows no tank bottom or wall thinning problems

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LRA AMP CONSISTENT WITH GALL AMP WITH ENHANCEMENTS

- LRA AMP
 - B.1.10.2, Fire Water System
- GALL AMP
 - XI.M27, Fire Service Water
- PROGRAM ENHANCEMENT
 - Sprinkler head inspections revised to be consistent with NRC Interim Staff Guidance (ISG) 04
- BASIS FOR ACCEPTING ENHANCEMENT
 - ISG 04 revised GALL AMP XI.M27 criteria. Applicant consistent with ISG-4 and using the guidance of NFPA 25

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LRA AMP BASED ON PREVIOUSLY-APPROVED STAFF POSITION CHANGED TO CONSISTEN WITH GALL AMP

- LRA AMP
 - B.1.5, Cast Austenitic Stainless Steel (CASS)
 - New Program – submitted based on NRC previously-approved staff position
- PROGRAM AUDIT EVALUATION
 - Applicant originally cited previously-approved staff position to only do external, visual inspections based on an approved code case
 - Application of code case rejected by Audit Team as not applicable to ANO-2.
- Applicant revised LRA AMP to be consistent with GALL
 - XI.M12, Thermal Aging Embrittlement of Cast Austenitic Stainless Steel

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LRA AMP – PREVIOUSLY-APPROVED STAFF POSITION

- **LRA AMP**
 - B.1.29, Wall Thinning Monitoring
- **PREVIOUSLY-APPROVED STAFF POSITION**
 - ANO-2 Plant Specific AMP based on NRC previously-approved staff position for ANO-1
- **PROGRAM REVIEW CRITERIA**
 - AMP reviewed by Audit Team against AMP elements in SRP-LR, Appendix A, and ANO-1 approved program

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Aging Management Review Summary

- Aging management review found that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation, as required by 10 CFR 54.21(a)(3).

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Section 4 – Time-Limited Aging Analyses (TLAA)

- Reactor Vessel and Internals Neutron Embrittlement
- Metal Fatigue
- Environmental Qualification
- Loss of Prestress in Concrete Containment Tendons
- Containment Liner and Penetration Fatigue Analysis
- Other Plant-Specific TLAAs

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Arkansas Nuclear One, Unit 2

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Section 4 – TLAA

Section 4.1 – Identification of TLAAs

- Five TLAAs were identified from Table 4.1-2 Potential List of Time-Limited Aging Analyses in NUREG-1800.
- Five Other Plant-Specific TLAAs were identified by the applicant.

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Section 4 – TLAA RVI

Section 4.2 – Reactor Vessel and Internals Neutron Embrittlement

- Three analyses affected by irradiation embrittlement identified as TLAAAs
 - Upper Shelf Energy
 - Pressurized Thermal Shock
 - Pressure Temperature Limits

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Arkansas Nuclear One, Unit 2

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Section 4 - TLAA on Upper Shelf Energy (USE)

Section 4.2 – Reactor Vessel and Internals Neutron Embrittlement

Limiting Material For USE	USE Acceptance Criterion	Calculated 48 EFPY USE value	Conclusion
Intermediate Axial Weld 2-203A	50 ft-lb	Staff: 54 ft-lb Entergy: 54 ft-lb	Criterion is met for 48 EFPY

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Arkansas Nuclear One, Unit 2

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Section 4 - TLAA on Upper Shelf Energy (USE)

- Calculation of USE values for 48 effective full power years (EFPY) identified as a time limited aging analysis (TLAA) for license renewal
- Applicant performed updated USE values calculations of the reactor vessel (RV) beltline materials as projected through 48 EFPY.
- Staff performed independent calculations of the USE values for the RV beltline materials through 48 EFPY.
- Both the applicant and staff's calculations demonstrate the USE acceptance criterion for the limiting beltline material will be met through 48 EFPY. TLAA analysis meets the requirements of 10 CFR Part 50, Appendix G, and the acceptance criterion in 10 CFR 54.21(c)(3)(ii).

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Arkansas Nuclear One, Unit 2

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Section 4 - TLAA on Pressurized Thermal Shock (PTS)

Section 4.2 – Reactor Vessel and Internals Neutron Embrittlement

Limiting Material For PTS	Screening Criterion	Calculated 48 EFPY RT _{PTS} value	Conclusion
Lower Shell Plate C-8010-1	270°F	Staff: 122.6°F Entergy: 122.6°F	Screening Criterion is met

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Arkansas Nuclear One, Unit 2

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Section 4 - TLAA on Pressurized Thermal Shock (PTS)

- Calculation of RT_{PTS} values for 48 effective full power years (EFPY) identified as a time limited aging analysis (TLAA) for license renewal
- Applicant performed updated RT_{PTS} values calculations of the reactor vessel (RV) beltline materials as projected through 48 EFPY.
- Staff performed independent calculations of the RT_{PTS} values for the RV beltline materials through 48 EFPY.
- Both the applicant and staff's calculations demonstrate the applicable screening criterion for the limiting beltline RV material will be met through 48 EFPY. TLAA analysis meets the requirements of 10 CFR 50.61 and the acceptance criterion for in 10 CFR 54.21(c)(3)(ii).

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Section 4 – TLAA Metal Fatigue

Section 4.3 – Metal Fatigue

- Two analyses affected by Metal Fatigue
 - ASME Class 1 Components (RCS)
 - Remains valid under 10 CFR 54.21(c)(1)(i)
 - ASME Non-Class 1 Piping
 - Remains valid under 10 CFR 54.21(c)(1)(i)
 - ASME Non Class 1 Components
 - Fatigue evaluations are not required for these components.

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Arkansas Nuclear One, Unit 2

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Section 4 – TLAA EQ

Section 4.4 – Environmental Qualification

- Applicant has adequately identified the TLAA for EQ components.
- Applicant's EQ Program is consistent with GALL X.E1.
- 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).

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Arkansas Nuclear One, Unit 2

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Section 4 – TLAA Concrete Tendons

Section 4.5 – Concrete Containment Tendon Prestress

- Based on the applicant's commitment, the staff concludes the effects of aging on the intended functions will be adequately managed for the extended period of operation in accordance with 10 CFR 54.21(c)(1)(iii).

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Arkansas Nuclear One, Unit 2

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Section 4 – TLAA Containment Liner Plate and Penetrations

Section 4.6 – Containment Liner Plate and Penetrations

- Remains valid in accordance with
10 CFR 54.21(c)(1)(i)

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Arkansas Nuclear One, Unit 2

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Section 4 – TLAA Plant-Specific

Section 4.7 – Other Plant-Specific TLAAs

- Licensee-Identified TLAAs
 - RCS Leak-Before-Break
 - RCP Code Case N-481
 - Steam Generator Tubes – Flow-Induced
Vibration
 - Alloy 600 Nozzle Repair
 - High Energy Line Break Analyses
 - RCP Flywheel

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Arkansas Nuclear One, Unit 2

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Section 4 – TLAA Plant-Specific

■ Section 4.7 – Other Plant-Specific TLAA ALLOY 600 Nozzle Repair

- Projected through the period of extended operation under 10 CFR 54.21(c)(1)(ii)

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Section 4 – TLAA Plant-Specific

■ Section 4.7 – Other Plant-Specific TLAA Reactor Coolant Pump Code Case N-481

- Use of alternative inspection method in code case requires flaw tolerance (crack growth) which is a time-limited effect
- Remains valid in accordance with 10 CFR 54.21(c)(1)(i)

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Arkansas Nuclear One, Unit 2

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Section 4 – TLAA Plant-Specific

■ Section 4.7 – Other Plant-Specific TLAAs RCS Piping Leak Before Break (LBB)

- LBB is a TLAA and requires that growth of postulated flaws should meet a safety factor of two (2) on critical crack size. The thermal aging of CASS piping components can reduce critical crack size.
- Cycles in fatigue growth analysis were determined to be bounding for 60 years. Critical crack size used in the analysis were determined to be bounding for saturated thermally-aged CASS material.
- Remains valid in accordance with 10 CFR 54.21(c)(1)(i)

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TLAA Summary

- The applicant has identified the appropriate TLAAs and has demonstrated that the TLAAs:
 - Will remain valid for the period of extended operation,
 - Have been projected to the end of the period of extended operation.or
 - The aging effects will be adequately managed for the period of extended operation.

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Staff Conclusions

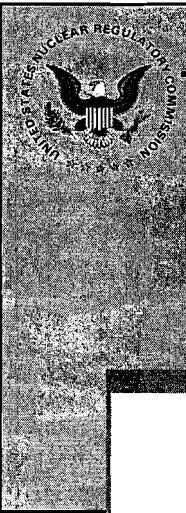
The Applicant has met the requirements for license renewal, as required by 10 CFR 54.29:

- Actions have been identified and have been or will be taken such that there is reasonable assurance that activities will continue to be conducted in the renewal term in accordance with the current licensing basis.

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ACRS License Renewal Subcommittee

Arkansas Nuclear One – Unit 2 Nuclear Power Plant License Renewal Application

Draft Safety Evaluation Report
December 1, 2004

Gregory F. Suber
Project Manager

BACKUP SLIDES

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Excerpt from ANO-2 LRA Table 1 for Reactor Coolant System

Table 3.1.1: Reactor Coolant System, NUREG 1801 Vol. 1

Item Number	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-1	Reactor coolant pressure boundary components	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA	Cracking due to fatigue is an aging effect applicable to reactor coolant pressure boundary items subject to aging management review. Because of the uniform applicability of this effect, the effect and the comparison to the associated NUREG-1801 line items have not been listed in the Class 1 tables (3.1.2-1 through 3.1.2-5) below. The metal fatigue TLAA associated with Class 1 components is addressed in Section 4.3.
3.1.1-2	Steam generator shell assembly	Loss of material due to pitting and crevice corrosion	Inservice inspection; water chemistry	Yes, detection of aging effects is to be further evaluated	This grouping includes the steam generator shell assembly and attached components, and components of the secondary side internals. The concerns of IN 90-04 are not applicable to ANO-2 since the steam generators were replaced in 2000 and pitting corrosion of the steam generator shell is not known to currently exist. ANO-2 credits the water chemistry control program and the inservice inspection program for managing loss of material due to pitting and crevice corrosion on the internal surfaces of the steam generator shell. For further evaluation, see Section 3.1.2.2. Inservice inspection is a plant-specific program for ANO-2.
3.1.1-3	BWR only				

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Excerpt from ANO-2 LRA Table 2 for Reactor Coolant System

Table 3.1.2-3 Class 1 Piping, Valves, and Reactor Coolant Pumps

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes	Precedent Code
RCP driver mount assembly	Pressure boundary	Carbon steel	Air (external)	Loss of material	Boric acid corrosion prevention	IV.C2.5-u	3.1.1-38		
					System walkdown			101	CA-1g
				Cracking (fatigue)	TCAA-metal fatigue	IV.C2.5-t	3.1.1-1		

Generic notes

- A. Consistent with NUREG-1801 item for component, material, environment, aging effect and aging management program. AMP is consistent with NUREG-1801 AMP.
- B. Consistent with NUREG-1801 item for component, material, environment, aging effect and aging management program. AMP has exceptions to NUREG-1801 AMP.
- C. Component is different, but consistent with NUREG-1801 item for material, environment, aging effect and aging management program. AMP is consistent with NUREG-1801 AMP.
- D. Component is different, but consistent with NUREG-1801 item for material, environment, aging effect and aging management program. AMP has exceptions to NUREG-1801 AMP.
- E. Consistent with NUREG-1801 material, environment, and aging effect but a different aging management program is credited.
- F. Material not in NUREG-1801 for this component.
- G. Environment not in NUREG-1801 for this component and material.
- H. Aging effect not in NUREG-1801 for this component, material and environment combination.
- I. Aging effect in NUREG-1801 for this component, material and environment combination is not applicable.
- J. Neither the component nor the material and environment combination is evaluated in NUREG-1801.

Plant-specific notes

101. The material and environment combination is in NUREG-1801 but neither the plant component, nor a reasonable substitute, exists.

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Excerpt from ANO-2 LRA Precedent Reference Table

Precedent Reference Table For Systems

Line Number	Material	Environment	Aging Effect Mechanisms	Program(s)	Precedence Reference	LRA Reference	Program Comparison
CA-1b	Carbon Steel or Cast Iron	Air with Boric Acid (Ext Only)	Loss of Material:	Boric Acid Corrosion Prevention Inservice inspection System Walkdown	GALL IV.A2.8-b	n/a	n/a These programs are a conservative addition to the boric acid corrosion program
CA-1c	Carbon Steel or Cast Iron	Air with Boric Acid (Ext Only)	Loss of Material:	Boric Acid Corrosion Prevention Inservice inspection	GALL IV.A2.8-b	n/a	n/a This program is a conservative addition to the boric acid corrosion program
CA-1d	Carbon Steel	Air (ext)	Loss of material	Fire protection program	Plant A SER, Section 3.3.2.4.14	Plant A LRA, Table 3.3-2 row 93	Both ANO-2 and Plant A programs, with minor exceptions that do not affect management of aging, are consistent with GALL
CA-1e	Carbon Steel	Air (int/ext)	Loss of material	Periodic surveillance and preventive maintenance			None
CA-1f	Carbon Steel or Cast Iron	Air with Boric Acid (Ext Only)	Loss of Material:	Boric Acid Corrosion Prevention Periodic surveillance and preventive maintenance	GALL IV.A2.8-b	n/a	Note that his program is listed with the environment of untreated borated water This program is a conservative addition to the boric acid corrosion program also applied to these components
CA-1g	Carbon Steel	Air (ext)	Loss of material	System walkdown	Plant B SER, Section 3.0.3.11 for program and 3.3.2.2.5 for system	Plant B LRA, Table 3.3-1 line 5	See Program Comparison CA-1g

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ELEMENTS OF AN AGING MANAGEMENT PROGRAM FOR LICENSE RENEWAL

1	Scope of program	Scope of program should include the specific structures and components subject to an AMR for license renewal.
2	Preventive actions	Preventive actions should prevent or mitigate aging degradation.
3	Parameters monitored or inspected	Parameters monitored or inspected should be linked to the degradation of the particular structure or component intended function(s).
4	Detection of aging effects	Detection of aging effects should occur before there is a loss of structure or component intended function(s). This includes aspects such as method or technique (i.e., visual, volumetric, surface inspection), frequency, sample size, data collection and timing of new/one-time inspections to ensure timely detection of aging effects.
5	Monitoring and trending	Monitoring and trending should provide predictability of the extent of degradation, and timely corrective or mitigative actions.
6	Acceptance criteria	Acceptance criteria, against which the need for corrective action will be evaluated, should ensure that the structure or component intended function(s) are maintained under all CLB design conditions during the period of extended operation.
7*	Corrective actions	Audited by Division of Inspection Program Management
8*	Confirmation process	Audited by Division of Inspection Program Management
9*	Administrative controls	Audited by Division of Inspection Program Management
10	Operating experience	Operating experience of the aging management program, including past corrective actions resulting in program enhancements or additional programs, should provide objective evidence to support the conclusion that the effects of aging will be managed adequately so that the structure and component intended function(s) will be maintained during the period of extended operation.

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Aging Management Reviews

LRA Section	Total AMR	Assigned to RLEP-B		Assigned to Tech Staff
		GALL	Precedence	
3.1	580	47% (274)	16% (94)	37% (212)
3.2	235	30% (70)	36% (85)	34% (80)
3.3	667	53% (353)	9% (60)	38% (254)
3.4	160	45% (72)	18% (28)	37% (60)
3.5	124	51% (63)	9% (11)	40% (50)
3.6	6	2 (33%)	0 (0%)	4 (67%)
Total AMR		834	278	660
Total %		63%		37%

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S&S Inspection Results

■ Spent Fuel Pool Cooling Pumps

SFPC pump casing could fail and spray EFW Pump inlet iso valve and the bypass valve. This could interrupt steam to the TD EFW Pump.

Applicant agreed to include the SFPC pump casing.

■ Switchyard Control House

The applicant included the SUT bkr control cables; however, did not include the cables' supporting structure.

Applicant agreed to include the entire structure.

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AMR Insp Preliminary Results

■ Completed S&S wrt the SER

■ Verify all SSCs Considered in S&S Efforts

System Engr's Walkdown vs. ANO Component Database

SSEL vs. ANO Component Database

■ Three Areas Continuing Discussion

FP Equipment Staged/Stored for HSD and CSD Repairs

Cables Outside Containment in EQ Program

Cables in Flooded Manholes

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