



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

June 14, 2006

MEMORANDUM TO: ACRS Members

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

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE
MEETING ON THE MONTICELLO NUCLEAR GENERATING PLANT
LICENSE RENEWAL APPLICATION, MAY 30, 2006 - ROCKVILLE,
MARYLAND

The minutes of the subject meeting were certified on June 13, 2006, as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment: J. Larkins
A. Thadani
M. Snodderly
S. Duraiswamy



UNITED STATES
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WASHINGTON, DC 20555 - 0001

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

FROM: Mario Bonaca, Chairman
ACRS Plant License Renewal Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE
MEETING ON THE MONTICELLO NUCLEAR GENERATING PLANT
LICENSE RENEWAL APPLICATION, MAY 30, 2006 - ROCKVILLE,
MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting
on May 30, 2006, are an accurate record of the proceedings for that meeting.

_____/RA/_____/6/13/06_____
Mario Bonaca, Date
Plant License Renewal Subcommittee Chairman



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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WASHINGTON, DC 20555 - 0001

June 13, 2006

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

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

SUBJECT: WORKING COPY OF THE MINUTES OF THE ACRS SUBCOMMITTEE
MEETING ON THE MONTICELLO NUCLEAR GENERATING PLANT
LICENSE RENEWAL APPLICATION, MAY 30, 2006 - 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
A. Thadani
M. Snodderly
S. Duraiswamy

DRAFT Issued 6/13/06
CERTIFIED by M. Bonaca on 6/13/06

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MINUTES OF ACRS PLANT LICENSE RENEWAL SUBCOMMITTEE MEETING
MONTICELLO NUCLEAR GENERATING PLANT
MAY 30, 2006
ROCKVILLE, MARYLAND**

On May 30, 2006, the Plant License Renewal Subcommittee held a meeting in Room T2B3, 11545 Rockville Pike, Rockville, Maryland, to review the Monticello Nuclear Generating Plant (MNGP) 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 4:10 pm on May 30, 2006.

ATTENDEES:

ACRS MEMBERS/STAFF

Mario Bonaca, Chairman
John Sieber, Member
Graham Wallis, Member
Cayetano Santos Jr., ACRS Staff

William Shack, Member
Otto Maynard, Member
Joseph Armijo, Member

NRC STAFF/PRESENTERS

D. Merzke, NRR
J. Raval, NRR
R. Goel, NRR
J. Davis, NRR
J. Fair, NRR
H. Ashar, NRR
R. Hernandez, NRR
J. Storch, OIG
K. Hsu, NRR
D. Nguyen, NRR
R. Auluck, NRR
K. Chang, NRR
N. Dudley, NRR
J. Ayala, NRR
R. Subbaratnam, NRR
R. Wolfgang, NRR
M. Hartzman, NRR
P. Wen, NRR

R. DeLaGarza, NRR
D. Ashley, NRR
J. Zimmerman, NRR
D. Wrona, NRR
K. Tanabe, NRR
A. Ziedonis, NRR
J. Medoff, NRR
J. Davis, NRR
L. Tran, NRR
A. Pal, NRR
B. Elliot, NRR
J. Ma, NRR
J. Rajan, NRR
T. Ford, NRR
N. Iqbal, NRR
M. Heath, NRR
P. Kuo, NRR

OTHER ATTENDEES

P. Burke, NMC
J. Pairitz, NMC

J. Broschak, NMC
M. Aleksey, NMC

R. Dennis, NMC
S. Bernhoft, NMC
R. Siepel, NMC
S. Hammer, NMC
W. Zobats, NMC
M. Cimock, NMC
C. Custer, FENOC
L. Seamaws, NMC
C. Myer, Southern Nuclear

D. Potter, NMC
J. Grubb, NMC
J. Rootes, NMC
D. Turner, NMC
J. Kneeland, NMC
B. Vincent, NMC
R. Rucker, FENOC
E. Patel, ATL
J. Nickolaus, 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. 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 the LRA for Monticello submitted by the Nuclear Management Company (NMC) and the associated draft SER prepared by the staff.

Staff Introduction

Mr. Zimmerman, NRR, introduced several members of the staff including Mr. Merzke (License Renewal Program Manager), Ms. Loughheed (Inspection Team Leader), and Mr. Chang (Branch Chief Responsible for On-site Audits). Mr. Zimmerman stated that since the Monticello LRA was of high quality and 95% consistent with the Generic Aging Lessons Learned (GALL) Report, the staff issued only 113 requests for additional information (RAIs) during its review. Since there are no open items in the draft SER, the staff is attempting to complete this review in 20 months instead of 22 months. The staff has requested that the ACRS accelerate its review of this LRA to support this schedule.

Monticello License Renewal Application

Mr. Burke, NMC, introduced himself, Mr. Grubb (Director of Engineering), Mr. Pairitz (License Renewal Project manager), and other members of NMC staff in attendance. The presentation by NMC described the MNGP, highlights of its operating history, the license renewal project, the application of the GALL Report, industry topics, and the commitment tracking process.

Monticello Nuclear Generating Plant Description

Mr. Grubb, NMC, stated that MNGP is located 30 miles northwest of Minneapolis, Minnesota on the banks of the Mississippi River. The plant is a General Electric (GE) BWR-3 reactor in a Mark I containment. The licensed power level is 1775 MWt or 600 MWe. The plant is owned by Northern States Power Company (a subsidiary of Xcel Energy) and operated by NMC. The

average capacity factor over the last three years is 93%. It has been more than 1500 days since the last scram from power, and the unit has been online for over 400 days. All NRC performance indicators for this plant are green, and there are no NRC inspection findings greater than green.

Operating History

Mr. Burke, NMC, stated that the NRC issued the full-term operating license for MNGP in January 1981, and commercial operation began in 1971. The current operating license expires in September 2010. NMC submitted the LRA on March 16, 2005.

Mr. Burke, NMC, also described several activities that addressed intergranular stress corrosion cracking (IGSCC). In 1984 all of the recirculation piping was replaced with low carbon stainless steel material that is resistant to IGSCC. This included risers, supply headers, suction piping, and safe-ends. These new pipes were also subjected to induction heating stress improvement and electro-polishing. In 1986 the core spray safe ends and related piping were also replaced with IGSCC resistant material. A moderate hydrogen water chemistry program was initiated at the plant in 1989.

In 1997 the emergency core cooling system suction strainers in the suppression pool were replaced. The new strainers had significantly larger surface area. In 1998 a 6.3% power uprate was implemented increasing power to 1775 MWt. In 2005, six Severe Accident Mitigation Alternatives (SAMAs) were implemented to reduce overall plant risk. In the future the feedwater heaters, recirculation pump motors, service water pumps, and transformers will be replaced.

License Renewal Project

The license renewal project team consists of a core group of NMC employees supplemented with on-site contractors experienced in license renewal. GE was contracted for support with time-limited aging analyses (TLAAs) and aging management reviews (AMRs) associated with the reactor pressure vessel and internals. The license renewal team was involved with industry working groups, provided comments on the revision to the GALL Report, and performed peer reviews of other license renewal applications. The team also reviewed RAIs for other LRAs.

The scoping methodology involved identifying system and component functions based on reviews of the updated safety analysis report, design basis documents, drawings, and the plant equipment database. System boundaries were based on the results of component-level scoping. A "spaces" approach was used for the scoping of non safety-related components affecting safety-related components. For the aging management review, materials and environments were determined using plant data and walkdowns. The LRA describes 36 aging management programs (AMPs) credited for license renewal.

Application of the GALL Report

The LRA is 75% consistent with the original version of the GALL Report. The LRA is 95%

consistent with Revision 1 to the GALL Report. This high level of consistency increased the efficiency of the staff's review of this LRA.

Industry Topics

The presentation by Mr. Pairitz, NMC, described three industry topics.

The first industry topic was drywell shell corrosion. The MNGP drywell design has three drain paths to prevent water accumulation behind the drywell shell as well as a sealed metal barrier over the sand pocket area. Extensive ultrasonic (UT) inspections were performed on the drywell shell as a result of Generic Letter 87-05. Visual inspections are also performed on the air gap and the sand-pocket drain outlets. Aging of the drywell shell is managed by the Primary Containment Inservice Inspection Program. This program will be revised to address the proposed interim staff guidance (ISG) regarding an aging management program for inaccessible areas of BWR Mark I containment drywell shells, but no UT inspections of the shell are planned.

The second industry topic was shroud cracking. Inspection coverage of the shroud has increased from 50% to 75%. Indications were found in 27% of the inspected region of horizontal weld, H3. The H1 weld showed indications in 16% of its inspected area. For circumferential welds, inspection results indicate that the inspection frequency can remain at the maximum interval of 10 years. For the vertical welds, the inspection frequency is determined by the inspection coverage. Previously identified flaws have exhibited no significant crack growth. The moderate hydrogen water chemistry has contributed to the mitigation of crack growth. Aging of the shroud will continue to be managed through the BWRVIP program.

The third industry topic was steam dryer cracking. The steam dryers are within the scope of license renewal for Monticello. The dryers are of the square hood design. A 1998 inspection noted an indication near a jacking bolt tack weld that was not structurally significant. Another inspection in 2001 found no change in the indication at this location. No additional indications were found. A comprehensive inspection in 2005 examined areas where steam dryer failures had occurred at other plants. Indications were found on the dryer shell behind three lifting lugs. These indications were determined to be acceptable. Another inspection is planned for 2007. Aging of the steam dryers will be managed through the BWRVIP program.

Commitment Tracking

60 commitments have been identified in the MNGP License Renewal Updated Safety Analysis Report Supplement. These commitments have been entered into the plant's corrective action program. Each commitment has been assigned an owner and a due date.

SER Overview

The presentation by Mr. Merzke, NRR, and Ms. Lougheed, Region III, provided an overview of the staff's SER. They described the staff's review of activities associated with scoping, screening, aging management, and time-limited aging analyses.

Mr. Merzke, NRR, stated that the draft SER was issued on April 26, 2006 with no open or confirmatory items. It contains three proposed license conditions. The staff issued 113 RAIs and 260 audit questions during this review. The application is 95% consistent with Revision 1 to the GALL Report. The staff's audits and inspections were conducted between June 2005 and February 2006.

Scoping and Screening

As a result of the staff's review, several minor components were brought into scope of license renewal. These components included stored steel plates, stored hatch covers, HVAC piping, a steam trap, floor drain piping, a motor control center, and 480 V load center breakers. The motor control center and breakers were subsequently screened out. The staff concluded that the applicant's scoping and screening results included all structures, systems, and components within the scope of license renewal and subject to an AMR.

Onsite Inspection Results

Ms. Loughheed, Region III, described the inspections performed by the Region to support NRR's review of this LRA. A team of six inspectors conducted a two-week inspection in accordance with Inspection Procedure 71002.

The scoping and screening portion of the inspection emphasized physical walkdowns of the plant and concentrated on non safety-related systems whose failure could impact safety-related systems. Only minor discrepancies were identified. The applicant submitted clarifications to more clearly define out-of-scope components. The inspection concluded that the electrical, structural, and mechanical systems were appropriately scoped.

The aging management portion of the inspection reviewed 33 AMPs and two TLAA programs. Some minor inconsistencies were identified which required either a revision to the LRA or documentation in the corrective action program. The AMPs were found to be adequate for the period of extended operation. The inspection concluded that the existing AMPs were implemented as described in the LRA and that enhancements/exceptions to the AMPs were acceptable. The inspection also confirmed that commitments were captured in a tracking database.

Monticello is in the licensee response column of the NRC Action Matrix. The NRC does not have any open cross-cutting issues at Monticello. All performance indicators for this plant are green. Ms. Loughheed concluded her presentation by stating that the staff has determined that the optional third license renewal inspection is not required for Monticello.

Aging Management Program Review and Audits

Mr. Merzke, NRR, described the staff's evaluation of some of the AMPs and aging management reviews for MNGP. Of the 36 AMPs credited for license renewal, 29 are existing programs and

7 are new programs. 34 of the AMPs are consistent with the GALL Report and two are plant-specific.

The ASME Section XI Inservice Inspection Subsections IWB, IWC, and IWD Program is consistent with the GALL Report with exceptions. The LRA did not consider code cases and relief requests to be exceptions to the GALL Report. The staff requested that the applicant reevaluate all code cases and relief requests. The applicant removed references to relief requests from the LRA and identified three code cases that were exceptions to the GALL Report. These code cases are N-307-2 (ultrasonic testing for Class 1 bolting), N-526, (requirements for successive inspections) and N-613-1 (examination volume of welded nozzles). The staff found these code cases acceptable because they are endorsed in Regulatory Guide 1.145.

The Bolting Integrity Program is consistent with the GALL Report with enhancements. This program will incorporate guidance for visual bolting inspections from EPRI technical reports. Closure bolting in all engineered safety feature, auxiliary, and steam and power conversion systems will be managed for loss of preload.

The Buried Piping and Tanks Inspection Program is consistent with the GALL Report with enhancements. Inspections will be performed every 10 years with credit taken for opportunistic inspections. Operating experience will be reviewed to determine susceptible locations. An internal inspection will also be performed on the diesel fuel oil storage tank. Ultrasonic and visual inspections performed in 1999 and 2003 did not detect any degradation or aging effects.

The BWR Vessels Internals Program is consistent with the GALL Report with exceptions and enhancements. The exception is that the water chemistry guidelines of BWRVIP-130 will be used instead of BWRVIP-20 as recommended in the GALL Report. The staff found this acceptable because BWRVIP-139 is an updated version of these guidelines. The enhancement is that the BWRVIP guidelines will be used for inspection, evaluation, and repair to the maximum extent possible. The SER contains commitments for inspections of the top guide grid, in-core monitoring dry tubes, steam dryers, and core spray piping welds. If inspections of the core plate hold-down bolts aren't performed before entering the period of extended operation, the applicant will install wedges for lateral load resistance.

The Flow-Accelerated Corrosion Program is an existing program consistent with the GALL Report. This program will be revised to use 87.5% of the nominal wall thickness as a criterion for performing an engineering evaluation for non safety-related piping.

The Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 EQ Requirements Program is a new AMP that will be implemented prior to entering the period of extended operation. This program will involve inspections for water in manholes every two years. Cable testing will also be performed under this program.

The Reactor Head Closure Studs Program is an existing program consistent with the GALL Report. The staff identified two exceptions to the GALL Report in this program. The first

involves the use of Code Case N-307-2 (UT examination volume). The second exception deals with the use of studs with ultimate tensile strengths greater than 170 ksi. The staff found this acceptable because cracking in the studs is managed using the preventive measures of Regulatory Guide 1.65 and inspections are conducted every 10 years.

During the aging management review of auxiliary systems, it was determined that the System Condition Monitoring Program and One-Time Inspection Program would be used to manage aging of elastomers.

Aging of the drywell shell will be managed through the use of the ASME Section XI, Subsection IWE Program. Ultrasonic inspections of the sand-pocket region performed in 1986 and 1987 did not identify any degradation. Each refueling outage, water leakage is monitored from the refueling seal bellows, the drywell air gap drains, and the sand-pocket drains. The refueling seal is within the scope of license renewal.

The below-grade environment of inaccessible concrete is non-aggressive based on the pH, chloride levels, and sulfate levels. Periodic tests of ground water will be performed as part of the Structures Monitoring Program.

For the Electrical and Instrumentation & Control components, a new program will be implemented prior to entering the period of extended operation that is consistent with the Electrical Cable Connections Not Subject to 10 CFR 50.49 EQ Requirements Program in the GALL Report.

Time Limited Aging Analyses (TLAAs)

Mr. Merzke, NRR, described the staff's evaluation of TLAAs associated with neutron embrittlement, metal fatigue, irradiation-assisted stress corrosion cracking, environmental qualification of electrical equipment, and stress relaxation of rim hold-down bolts.

Neutron embrittlement effects TLAAs associated with upper shelf energy (USE), relief from inspections of reactor vessel circumferential welds, and the probability of reactor vessel axial weld failure. 10 CFR 50 Appendix G requires a minimum USE of 50 ft-lbs throughout the life of the vessel. The USEs for the limiting reactor vessel beltline plate, weld, and forging all exceed this criterion. The acceptance criterion for the limiting circumferential weld is a mean reference temperature less than 70.6 °F. The acceptance criterion for the limiting axial weld is a mean reference temperature less than 114 °F. The mean reference temperatures for the limiting circumferential and axial welds in the reactor vessel are 47.4 °F.

Metal fatigue is managed by the Fatigue Monitoring Program. The acceptance criterion for metal fatigue is a cumulative usage factor less than 1.0 for all components through the period of extended operation. The staff accepted the applicant's evaluations of these TLAAs.

Irradiation-assisted stress corrosion cracking is managed by several programs: ASME Section XI ISI, Subsections IWB, IWC, and IWD; the BWR Vessels Internals Program; and the Plant

Chemistry Programs. NMC has committed to supplement the requirements of BWRVIP-26 with inspections of the top guide grid using enhanced visual inspections at high fluence locations. The staff accepted the applicant's evaluation of this TLA.

The applicant's environmental qualification of electrical equipment program is consistent with the GALL Report. The staff found that this program is adequate to manage the effects of aging on the intended functions of electrical components.

GE performed an analysis of stress relaxation in the Monticello core plate rim hold-down bolts. This analysis demonstrates that the bolt stresses are bounded by the results approved in BWRVIP-25 or ASME allowables. The staff found this acceptable.

Mr. Merzke concluded the presentation by stating that the requirements of the license renewal rule have been met.

Member Comments

General

In response to a question from Member Wallis, the applicant stated that nearest Minneapolis suburb is Maple Grove. It is approximately 18 to 20 miles from the plant.

In response to a question from Member Shack, the applicant stated that the plant operates on a two-year fuel cycle.

Member Sieber noted that all recent inspection findings were green or less but asked if there were any trends or problem areas in these reports. The applicant stated that recent focus has been to improve specific program areas such as fire protection and environmental qualification. Member Sieber also noted several operator errors during surveillance testing and asked if there was a high turnover at the plant. The applicant stated that there has not been a lot of turnover in the operations area and new operators are being brought in. To address the surveillance testing errors, the plant is emphasizing operational leadership and responsibility at the station as well as the use of and adherence to procedures.

Member Sieber asked how the material condition of Monticello compared to other plants. The applicant was unable to make a comparison with other plants but stated that the material condition of MNGP is very good. Member Sieber cautioned the applicant to not be isolated from the rest of the industry.

Members Shack and Armijo asked about water chemistry. The applicant stated that Monticello uses a moderate hydrogen water chemistry with zinc additions. The plant has had very good fuel reliability and is evaluating the use of noble metals.

Member Shack noted that Monticello had implemented six SAMAs discussed in the Environmental Impact Statement and asked what criteria the staff uses to determine if a SAMA

is required. The staff responded that a recommendation to implement SAMAs is made based on the cost-benefit analyses, but the applicant is not required to implement them.

Chairman Bonaca asked what was the core damage frequency (CDF) of the plant. The applicant stated that the CDF for internal events is 4.37×10^{-5} , but after implementing SAMAs the CDF decreased to 5.99×10^{-6} .

Member Sieber asked if any additional power uprates are planned. The applicant responded that there was not much additional margin to increase the plant's power and that the costs associated with the necessary equipment replacement would be significant.

There was an extensive discussion regarding drywell shell corrosion. The applicant described plant design features that prevent corrosion of the drywell shell. There are three separate drain paths that prevent water accumulation behind the shell. The first drain line is located near the refueling bellows at the top of the drywell. This drain line contains a flow switch that is set to alarm at flows greater than 3 gpm. The second drain line is a 4" pipe located below the air gap but above the sand pocket region. The third drain line is a 2" pipe located below the sand pocket area. The Monticello drywell also contains a barrier to the sand pocket area constructed of 18 gauge sheet metal. Member Armijo asked if these features were typical of BWR-3 designs. The applicant stated that these design features depend on the architect-engineering firm. Member Maynard noted that 3 gpm is a high flow rate for a drain line. The applicant stated that any leakage past the refueling bellows would be detected. Member Wallis noted that corrosion of the shell could occur if the air in the gap between the shell and concrete is humid. The applicant responded that a primer was applied to the surface of the shell and the environment in this air gap is similar to the reactor building. The shell is also much warmer than the air in the gap. Member Maynard asked if any water has been found in the drain pipes. The applicant described one instance in which 3.5 oz. of water was found in the standpipe to the sand pocket drain line. It was determined that this water came from the torus room. Member Armijo asked about the function of this standpipe. The applicant responded that the sand drain is full of sand and the standpipe keeps the sand from spilling on the floor. Member Armijo asked what was done to confirm that there was no water in the sand-pocket region. The applicant stated that the sand was removed from the drain lines and no water was found. The thickness of the drywell liner was measured in 1986 and 1987 in response to a Generic Letter 87-05. These measurement results were compared to the original material specifications and no wall thinning was detected. In response to a question by Member Armijo, the applicant stated that the inspection points for the sand-pocket region are still accessible. As a result of Generic Letter 87-05 a leakage monitoring program was also instituted to detect water leakage past the refueling seal and water in the drain lines. The ASME IWE program will be used to manage aging of the drywell but no additional ultrasonic inspections of the shell are planned. Chairman Bonaca noted that other plants are required to perform ultrasonic inspections of the drywell shell and asked what criteria the staff uses to determine when ultrasonic inspections are needed. Mr. Ashar, NRR, responded that if there are no indications of water leakage or corrosion, ultrasonic inspections are not needed. Chairman Bonaca expressed his concern that there be a consistent approach in addressing this issue. Ms. Loughheed, Region III, added that the Region is not concerned with the integrity of the drywell liner at Monticello.

Members Wallis and Sieber asked several questions regarding the steam dryers. The applicant stated that the dryers at Monticello are similar to the square hood design used at Dresden, Quad Cities, and Vermont Yankee; however, the dryers at Monticello have not experienced similar flow induced vibration failures. The steam line velocity at Monticello is less than the velocity at Dresden and Quad Cities at their extended power uprate conditions.

In response to a question by Member Sieber, the applicant stated that a schedule has been established for implementing license renewal commitments, and the resources are available.

Chairman Bonaca noted that some non safety-related components are important for certain sequences and asked how plants are treating these components. Ms. Loughheed, Region III, responded that in general, licensees are aware of what components are shown to be risk significant from PRAs and they tend to pay more attention to them.

Scoping and Screening

Members Sieber and Maynard noted that the Inspection Report described errors in license renewal boundary drawings and asked if the applicant was confident that the drawings had captured everything within scope. The applicant stated that as part of the corrective action program, other drawings were examined to determine the extent of condition. Additional mistakes were found in the other drawings. The applicant added that in some instances the components were in scope but the drawings were not properly labeled. Chairman Bonaca noted that in other instances the inspection resulted in additional components being brought into scope of license renewal.

Member Shack asked about the electronic maintenance planning system used for scoping. The applicant stated that the CHAMPS database, which is used for work management, was the starting point for the scoping process. Passive components were added to create the ALEX database used for scoping and screening.

Member Sieber asked why the condensate storage tank was not within the scope of license renewal. The applicant stated that the tanks are not credited for mitigating any design basis events.

Aging Management

Chairman Bonaca noted that the inspection report described corrosion of lugs in the diesel driven fire pump. The applicant stated that this corrosion was originally identified by plant personnel and entered into the corrective action program for replacement. The component was not replaced before the NRC inspection.

Member Shack asked about the condition of the core shroud. The applicant stated that the MNGP shroud is better than most in the industry. The most cracked weld is horizontal weld, H3, with indications in 27% of the inspection area. The last inspection was an ultrasonic inspection that covered approximately 75% of this weld. The shroud's vertical welds are located in areas

of relatively high fluence. Member Armijo asked about the effect of hydrogen water chemistry on crack initiation and growth in the shroud. The applicant stated that inspections performed in 1994, 1996, and 2005 have not shown substantial crack growth. Since the inspection coverage has increased from 1994 to 2005, many of the cracks that are being found are in areas that were not previously inspected.

In response to a question by Chairman Bonaca, the applicant stated that the cracks in the tack welds of the jet pump set screws are periodically monitored. The safety concern of these welds is minimal because their function is to prevent the screws from rotating out.

Chairman Bonaca noted that many of the underground cables at Monticello are not in conduits but are directly buried. Therefore, these cables cannot be inspected for water accumulation as part of an aging management program. The staff stated that as part of the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 EQ Requirements Program, the applicant will inspect for water collection and perform tests on cables. Those cables that cannot be inspected for water will be tested. The staff added that the applicant has not detected any water or moisture in any manholes.

TLAAs

Chairman Bonaca noted that many of the TLAAs associated with neutron embrittlement of the reactor pressure vessel required equivalent margins analyses. The staff stated that equivalent margins analyses were needed because only one of the four reactor pressure vessel plate materials had initial charpy energy data. For the other three plate materials, a lower bound value based on the entire BWR fleet was used to establish material properties. The staff added that many GE vessels have a similar problem with a lack of information on initial material properties. The methodology described in BWRVIP-86 has been reviewed and approved by the staff.

Chairman Bonaca asked about the procedure used to calculate the Cu and Ni contents of the reactor pressure vessel nozzle. The chemistry for the reactor vessel nozzle was calculated by taking the average Cu and Ni contents from nozzles of nine sister plants and adding one standard deviation. The staff stated that this procedure is acceptable because all of these nozzles were fabricated using equivalent methods.

Chairman Bonaca asked about the conditional circumferential weld failure probability criterion described in the draft SER. The staff stated that this was established as part of a review BWRVIP-05 to eliminate inspections of circumferential vessel welds. Inspections of circumferential welds were eliminated because the stresses applied to these welds are lower than the stresses applied to axial welds. Member Shack noted that inspection of 100% of the circumferential welds is not possible.

Staff Commitments

Member Shack asked how a change in methodology caused the shroud fluence to increase by a factor of 14 (3.0×10^{20} n/cm² to 3.8×10^{21} n/cm²). Member Shack added that this increase is significant because at a fluence of 3.0×10^{20} n/cm² the influence of irradiation on stainless steel is minimal, but at a fluence of 3.8×10^{21} n/cm² there is significant embrittlement. The staff stated that part of the increase is because the original calculation was performed using the original licensed power level and the revised calculation assumed a higher power level through the end of the license renewal period. Member Shack noted that a fluence of 3.8×10^{21} n/cm² on the core shroud is plausible. The staff committed to providing the Subcommittee with additional explanation regarding the reason for this large increase in fluence.

Member Armijo asked whether the ultrasonic examinations of the drywell shell were performed at the location of the drain lines or at a possible low point between the drain lines. The staff made a commitment to provide the specific ultrasonic inspection locations to the Subcommittee.

Subcommittee Discussion

Several Members commented that the LRA, draft SER, audit report, and inspection report were comprehensive and well done.

Member Shack stated that he was impressed with the applicant's decision to implement six SAMAs.

Member Maynard commented that the issue of drywell corrosion should be addressed generically and not as part of this LRA. Chairman Bonaca agreed and added that clear criteria are needed to determine when ultrasonic inspections of the drywell shell should be performed.

Chairman Bonaca expressed a generic concern that the aging management programs in place will not be able to address inaccessible components. This includes both the drywell liner and underground cables.

Subcommittee Decisions and Follow-up Actions

None of the Members recommended that an interim letter be issued. The Subcommittee Chairman will summarize the discussions at the June 2006 ACRS meeting.

Background Materials Provided to the Committee

1. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of the Monticello Nuclear Generating Plant," April 2006
2. Nuclear Management Company, "Application for Renewed Operating License, Monticello Nuclear Generating Plant," March 2005

3. Advanced Technologies and Laboratories International, Inc., "Audit and Review Report for Plant Aging Management Reviews and Programs," October 2005
4. U.S. Nuclear Regulatory Commission, "Monticello Nuclear Generating Plant NRC License Renewal Scoping, Screening, and Aging Management Inspection Report 05000263/2006006 (DRS)," March 30, 2006

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 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).
