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

March 1, 2011

MEMORANDUM TO: ACRS Members

FROM: Kathy Weaver, Senior Staff Engineer ***/RA/***
Reactor Safety Branch – A
Advisory Committee on Reactor Safeguards

SUBJECT: CERTIFICATION OF THE MINUTES OF ACRS SUBCOMMITTEE ON PLANT LICENSE RENEWAL REGARDING HOPE CREEK GENERATING STATION ON NOVEMBER 3, 2010, IN ROCKVILLE, MARYLAND

The minutes for the subject meeting were certified on February 16, 2011. Along with the transcripts and presentation materials, this is the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment: E. Hackett
C. Santos
A. Dias
Y. Diaz

cc w/ Attachment: ACRS Members

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

MEMORANDUM TO: Michael Benson, Staff Engineer
Reactor Safety Branch A, ACRS

FROM: William J. Shack, Chairman
Plant License Renewal Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE MEETING OF THE SUBCOMMITTEE ON PLANT LICENSE RENEWAL ON NOVEMBER 3, 2010

I hereby certify, to the best of my knowledge and belief, that the Minutes of the subject meeting held on November 3, 2011 are an accurate record of the proceedings for that meeting.

/RA/ ***February 16, 2011***

William J. Shack, Chairman Date
Plant License Renewal Subcommittee

Certified by: William J. Shack
Certified on: February 16, 2011

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
Plant License Renewal Subcommittee Meeting Minutes
November 3, 2010
Rockville, MD

INTRODUCTION

The Advisory Committee on Reactor Safeguards (ACRS) Subcommittee on Plant License Renewal met on November 3, 2010 at 11545 Rockville Pike, Rockville, MD, in Room T2-B1. The purpose of the meeting was to review and discuss the license renewal application and associated Safety Evaluation Report (SER) with Open Items for the Hope Creek Generating Station (HCGS). The Subcommittee will hear presentations from Public Services Enterprise Group (PSEG) Nuclear, LLC and the Nuclear Regulatory Commission (NRC) staff. The Subcommittee gathered information, analyzed relevant information and facts, and formulated proposed positions, as appropriate, for deliberation by the full ACRS. The entire meeting was open to the public. Mr. Michael Benson was the Designated Federal Official for this meeting. The Subcommittee received no written comments or requests for time to make oral statements from any members of the public regarding this meeting. The meeting was convened at 1:30 pm and adjourned at 3:59 pm.

ATTENDEES

ACRS

William J. Shack, Chairman
J. Sam Armijo
John Stetkar
Joy Rempe
John D. Sieber

John J. Barton, Consultant

Michael Benson, Designated Federal Official

Other attendees are listed in the attached document.

SUMMARY OF MEETING

Opening Remarks

Chairman Shack called the meeting to order and introduced the attending Members. Mr. Holian introduced the speakers and presentation topics.

[pp. 6-9 in the transcript]

PSEG Nuclear, LLC – Hope Creek Generating Station

Description of Site and Plant Operating History

Mr. Sosson said that the Hope Creek and Salem reactors share a common protected area. HCGS is a General Electric boiling water reactor (BWR) operated by PSEG Nuclear, LLC. Operation began on December 20th, 1986. The generator step-up transformers and the low-pressure turbine rotors were replaced in 2004. In 2006, a recirculation pump rotating assembly

was replaced, and the initial noble metals treatment was completed. The high-pressure turbine rotor was replaced in 2007, along with a recirculation pump rotating assembly. After power uprates, the licensed thermal power at HCGS was 3,840 MWt. HCGS operates on an 18-month cycle, with a 92.3 % capacity factor. The license renewal application was submitted on August 18, 2009, and the current operating license expires on April 11, 2026.

[pp. 11-19 in transcript, slides 3-4 in presentation]

License Renewal Application Overview

Mr. Stavely said there are 47 total aging management programs, with 33 existing programs and 14 new programs. There are 53 license renewal commitments that are tracked in a database. Staff positions are created to ensure that commitments are implemented.

The first confirmatory item involves including inaccessible low-voltage power cables in the relevant aging management program. Maximum testing and inspection frequencies were reduced. The submittal is currently under NRC staff review. The second confirmatory item entails the selection of locations for environmentally-assisted fatigue calculations. PSEG will confirm that identified limiting locations are indeed bounding. The only open item involves the buried piping program. PSEG believes that its latest submittal will satisfy staff's concerns.

[pp. 19-34 in transcript, slides 5-8 in presentation]

Buried Pipe Program (Open Item)

Mr. Melchionna stated that the buried pipe program includes all buried piping systems at HCGS, including those in scope for license renewal. Buried pipe is risk ranked according to susceptibility and consequence of failure. Susceptibility factors include cathodic protection, coating, physical considerations, materials, and corrosion parameters. Consequence factors include nature of the effluent, power production, and plant safety. Inspection activities are formulated based upon the risk ranking results. In the case degradation is found, root cause evaluations are performed and corrective actions are developed. Extent-of-condition evaluations are performed, and the need for additional inspections is considered. Industry operating experience is considered for applicability to HCGS. PSEG Nuclear is participating in industry initiatives on buried piping.

The five materials of in-scope buried pipe are carbon steel, gray cast iron, ductile cast iron, pre-stressed concrete, and stainless steel. At least one excavation and inspection of each material group will occur at a 10-year interval, beginning 10 years prior to entering into the period of extended operation. The open item on buried piping relates to how PSEG Nuclear will incorporate recent industry-wide operating experience into the program. Supplementary information on the program was submitted to the NRC to close the open item.

Mr. Melchionna said that the HCGS buried piping program is robust and effective.

[pp. 34-50 in transcript, slides 9-14 in presentation]

Mark I Containment

Mr. Sosson stated that PSEG Nuclear performed ultrasonic thickness measurements on the drywell shell in 2007 and 2009. Inspection results have shown that the drywell is in good condition. A reactor cavity leak was discovered in 2009. Inspections of the drywell in 2010 revealed an area of interest to be managed by the corrective action system, according to license renewal commitments.

The containment consists of a drywell shaped as an inverted lightbulb and a toroidal-shaped suppression chamber. A 2-in. air gap separates the drywell from the concrete shield wall. There is no sand bed. Four drainlines are equally spaced around the perimeter of the drywell to prevent water from accumulating in the air gap. The exterior of the drywell shell is coated with inorganic zinc for corrosion prevention. The reactor cavity has a bellows seal for refueling operations.

Mr. Sosson described the probable leak path. It is not a leak in containment, but it has the potential to wet the exterior of the drywell. The leak was identified at penetration sleeve J13, as it formed a puddle on the torus room floor. Penetration J13 is one of six instrument penetrations. The leakage was coming directly out of the penetration sleeve. The leak stopped when the reactor cavity was drained.

Ultrasonic examination, leakage monitoring, and drainline inspection/testing will be implemented in order to identify the leakage source and repair it. During a refueling outage, the air gap was inspected with a boroscope. No obstructions were observed in the air gap. A small amount of water along the shield wall bypassed the penetrations. Water was not trapped against the drywell shell, and the inspected penetrations were in good condition. Water was not leaving the air gap drains. Inspections showed that the drainlines were blocked. The blockage likely occurred during construction.

Mr. Sosson said that ultrasonic testing (UT) was performed on the drywell shell. The locations included (a) around the instrumentation penetration where water entered the torus room, (b) 25 feet above the instrument penetrations, (c) the top platform of the drywell, (d) the area between the instrument penetrations and the drywell floor, and (e) near the floor around the entire circumference of the drywell. All results, except in the area directly below the instrument penetrations, showed greater than nominal wall thickness. The seal plate, bellows, and reactor cavity liner were all visually inspected. The source of the leak was not discovered.

The ultrasonic examinations provide baseline wall thickness for future measurements. At the 120-ft elevation, a total of 44 thickness measurements were made. All the readings were nominal. Twenty UT measurements were made at the 97-ft elevation, with the average reading being above nominal. Eighty-four measurements were made around the J13 penetration area, and each reading was above nominal. The lowest thickness measurements were found at the plate that stretches from the J13 penetration to the drywell floor. While these readings were within tolerance, this plate has been identified as an “area of interest.”

Mr. Sosson concluded by saying the drywell is in good condition. Corrosion allowances are adequate to ensure design margin remains during the period of extended operation. The reactor cavity leak is managed through the corrective action program. The aging management programs will ensure safe operation of the containment.

[pp. 50-81 in transcript, slides 14-23 in presentation]

NRC Staff

Mr. Holian introduced NRC staff members important to the preparation of the SER with Open Items. The slow response to water in the manholes (see Committee Discussion) was of concern to NRC staff. The staff's reaction was to (a) issue Requests for Addition Information (RAI), (b) coordinate with the Regional Office, and (c) coordinate with the Nuclear Energy Institute. Industry believes the safety significance of the issue may be low, since cable failure rates are low. The industry at one point believed they may be able to qualify the cables for underwater service. NRC audits have served to inform the industry that the issue of water in manholes is important for license renewal. NEI's "regulatory issue resolution protocol" was initiated to address the problem of submerged cables. While the leaking reactor cavity is not an open item, the applicant may still receive some RAI on that issue.

[pp. 95-100 in transcript]

SER Overview

Ms. Brady said that the license renewal application was received on August 18, 2009 and that the review process has stayed on schedule. The SER was presented to the applicant on September 30, 2010. It has one open item and two confirmatory items, both of which have arisen from operating experience.

[pp. 101-104 in transcript, slides 1-5 in presentation]

Scoping and Screening Results

Section 2 of the SER is on scoping and screening. No open items regarding scoping and screening were identified.

[pp. 104-105 in transcript, slide 6 in presentation]

Onsite Inspection Results

Mr. Modes said that three weeks of inspection covered the HCGS and Salem license renewal applications. The inspection on 54.4(a)(2), regarding nonsafety systems affecting safety systems, requires assessing the potential three-dimensional interactions among systems. The Boral program was considered, in order to review the applicant's implementation of an Interim Staff Guidance. The inspectors considered the feed and condensate system to determine how aging management programs would function for a particular system. Several systems were walked down by inspectors.

The inspectors discovered that HCGS components were degrading due to selective leaching. This discovery led to revisions to the application.

[pp. 105-107 in transcript, slide 7-9 in presentation]

Aging Management Review

Ms. Brady said that, in Section 3.0 of the SER, staff determined whether the applicant's aging management programs were acceptable. Staff reviewed over 5,000 line items, most of which followed GALL recommendations. The open item on buried piping and tanks inspection arose from staff's review of operating experience. Staff has issued a generic RAI to all applicants concerning site-specific and industry-wide buried piping failures. A follow-up RAI on buried piping will be reviewed.

The confirmatory item on inaccessible low-voltage cables originated with the issuance of Generic Letter 2007-01, which asked licensees to provide data on cable failures over a wide range of voltages. After reviewing the submitted information, staff has asked license renewal applicants to add low-voltage cables into their medium-voltage cable program and to increase the frequency of cable testing. The NRC has received the applicant's commitment on this issue.

Ms. Brady explained that, during the review of the American Society of Engineers (ASME) Section XI IWE program, the staff issued more RAI on the reactor cavity leakage than any other topic. The number of enhancements to the IWE program increased from six to 10, as a result of the staff's review. PSEG Nuclear committed to monitor and repair the penetration sleeve and to continue the root-cause evaluation. The staff is pleased that their review has lead to progress on this issue.

[pp. 107-117 in transcript, slide 10-14 in presentation]

Time Limited Aging Analyses

Ms. Brady said that the applicant used the suggested locations in NUREG/CR-6260 for its metal fatigue analysis. Staff discovered, however, that some components had higher cumulative usage factors than those selected as limiting locations. Staff, therefore, asked the applicant to confirm that the selected locations were indeed bounding.

[pp. 117-119 in transcript, slides 15-16 in presentation]

Ms. Brady concluded by saying, pending resolution of the open and confirmatory items, the staff determines that the requirements of 10 CFR 54.29(a) have been met.

[p. 119 in transcript, slides 17 in presentation]

COMMITTEE DISCUSSION

PSEG Nuclear, LLC – Hope Creek Generating Station

Description of Site and Plant Operating History

Member Sieber pointed out that HCGS has a high power rating with a Mark I containment. Mr. Sosson stated that this situation does not pose any unusual aging management issues. Member Sieber asked about the steam separator. Mr. Sosson said that the dryer and separator were inspected for extended power uprate and that follow-up inspections have revealed no degradation.

Member Armijo asked whether operating with hydrogen water chemistry has produced benefits for the applicant. Mr. Barton questioned whether the hydrogen was injected at a rate that would protect the internals. Mr. Schmidt said that hydrogen water chemistry did not fully protect the internals and that noble metals were added to protect them. Member Armijo asked whether the water chemistry programs have been successful. Mr. Schmidt said that intergranular stress corrosion cracking (IGSCC) has occurred in dissimilar metal welds attached to the reactor vessel. Some minor IGSCC has occurred in the internals. Chairman Shack asked about the core shroud. Mr. Schmidt said that five indications are less than 2 in. and one is 4.3 in.

Chairman Shack pointed out that, despite extensive mitigation effort, there are 386 components inspected according to Generic Letter 88-01. Mr. Schmidt said he would respond later.

Mr. Schmidt said that no repairs have been made on the steam dryer. Nine indications are due to IGSCC. No indications are due to fatigue. Member Sieber asked about vibration monitoring.

Mr. Davison said that testing revealed no evidence of pulsations transmitting to the steam dryer or reactor vessel. Chairman Shack pointed out that PSEG Nuclear has found stress corrosion cracks.

[pp. 13-19 in transcript, slide 4 in presentation]

License Renewal Application Overview

Member Sieber asked about manhole level detectors and automatic pumping. Mr. Stavely said that neither was in place. Mr. Barton asked about the frequency of inspecting the vaults. Mr. Stavely responded that the maximum frequency was once a year. Member Sieber asked whether the cables are qualified for underwater service. Mr. Stavely said they were not. Mr. Huk said that they monitor the vaults weekly and that they find water each week. They are sealing as required and considering automatic pumping systems. PSEG Nuclear will extend inspection frequencies only when dry cables are consistently found. Rainwater and ground water levels are correlated with water levels in the vaults.

[pp. 22-24 in transcript, slide 8 in presentation]

Member Stetkar pointed out that HCGS has had more problems with water in cable ducts than other applicants. Action should be taken to solve the problem, rather than simply monitoring and pumping. In June of 2009, HCGS found submerged cables in the manholes for a service water train. The vaults for a different train were not inspected until September, with water found there. Water was found in the remaining vaults for service water two months after that. Mr. Huk stated that the service water vaults are difficult to access. Boroscope inspections and additional sealing constitute the next step in the process, thereby preventing water ingress. These particular vaults can be entered only during service water pump outages. Mr. Kopchick described some of the difficulties accessing the vaults. A design change was implemented to install an access port on top of the heavy lids. Member Stetkar asked about the source of the water. Mr. Kopchick replied that it was likely infiltration from storms, since no salt intrusion has been detected. The design changes necessary to stop the water intrusion are either (a) repair the conduit or (b) repair the transition pieces. Member Stetkar pointed out that the original design called for sump pumps at the manholes, but they were never installed.

Member Stetkar said that there are cable ducts with cables required for station blackout mitigation. The inspection points for these cables may not be at the low points, due to accessibility issues. Member Stetkar asked how the applicant ensures that the cables in the low points are dry. Mr. Huk stated that they (a) inspect vaults to the extent practical and (b) conduct electrical testing to ensure operability. Currently, tanδ testing occurs every 36 months, when the transformer is taken out of service.

[pp. 24-32 in transcript, slide 8 in presentation]

Chairman Shack asked about the approach to selecting the limiting locations for fatigue analysis. The varying degree of conservatism different engineers used in analyses creates uncertainty in the knowledge of true limiting locations. Mr. Quintenz agreed and said that the determination of the limiting locations was based upon the design calculations.

[pp. 32-34 in transcript, slide 8 in presentation]

Buried Pipe Program (Open Item)

Chairman Shack asked why the inside diameter of the pipe is not inspected as the outside diameter is. Mr. Melchionna said that the water is treated. Mr. Keating stated that fire water and fresh water is taken from a below-grade aquifer. The brackish Delaware River water is only

used for service water and cooling tower makeup. Member Armijo asked about inspection results. Mr. Melchionna said that guided wave ultrasonic examinations have revealed no issues in the condensate storage tank system or fire protection system piping. Opportunistic inspections have revealed no degradation. Member Armijo asked about the cathodic protection system. Mr. Melchionna replied that it has been available 90% of the time over the last five years.

Member Sieber asked whether condenser tube leaks have allowed salt water in the internal systems. Mr. Kopchick described the off-normal procedures for dealing with these leaks. Titanium is the condenser tube material.

Chairman Shack asked about the service water line that had to be repaired with Weco seals. Mr. Melchionna explained that open cycle loop inspections revealed blistering of the coating inside the pipe. Where the joint could not be repaired, PSEG Nuclear installed the Weco seals.

[pp. 37-43 in transcript, slides 10-11 in presentation]

Member Sieber asked about inspection of the cathodic protection system. Mr. Melchionna explained that they check volts and amperes every two weeks. Every two months, they perform rectifier walkdowns, along with annual on/off and instant-off potential tests.

[pp. 45-46 in transcript, slide 12 in presentation]

Member Stetkar asked about the ground water level at the site. Mr. Seibold stated that ground water levels are 5-10 ft below grade, with site grade being 12 ft above sea level. Mr. Melchionna said that excavations of carbon steel pipe showed the pipe in excellent condition. Mr. Seibold said the chloride levels were 80 to 11,000 parts per million.

Chairman Shack asked about AL-6X. Mr. Melchionna explained that sigma phase formation may lead to some corrosion.

[pp. 47-49 in transcript, slide 13 in presentation]

<u>Mark I Containment</u>

Chairman Shack asked whether the air gap contained material. Mr. Sosson replied that the 2-in. air gap was truly an air gap, without any insulation or fill material.

[pp. 51 in transcript, slide 16 in presentation]
Member Armijo asked whether sand was used during construction. Mr. Sosson responded that sand was used during forming operations, but it was all removed. Chairman Shack asked whether there was a seal around the bottom of the air gap. Mr. Seibold replied that no seal was provided.

[pp. 52-53 in transcript, slide 16 in presentation]

Member Armijo asked about the size of the reactor cavity leak. Mr. Sosson estimated 100 drops per minute. The leak was discovered in 2009.

Member Stetkar asked whether PSEG Nuclear was confident that the reactor cavity seal rupture drainlines are free of blockage. Mr. Sosson stated that the cavity drainlines are tested by an instrument. Mr. Seibold said that the system is completely welded and designed to handle radioactive waste. PSEG Nuclear is implementing a design change to provide a port to assure them that the drainage is open. In response to a question by Member Stetkar, Mr. Stavely said that they have not blown air or pushed water through the drainlines. Mr. Stavely stated that they

currently do not have access to the drainline, so the port is being installed to provide access for that kind of testing. Mr. Seibold said that installation of the port is part of their license renewal commitments.

[pp. 55-57 in transcript, slide 18 in presentation]

Member Sieber pointed out that the water was not coming out of the design drainline. Member Armijo asked whether PSEG Nuclear knew where the leak was in the seal area. Mr. Stavely stated that, through boroscope inspections, they found that the leak span was within 210° and 240° azimuthal angles. This area corresponds to a weld at the seal plate. Member Stetkar asked whether there were methods of ensuring that the air gap drainlines were not blocked.

[pp. 59-60 in transcript, slide 19 in presentation]

Member Sieber asked about the timeline for unblocking the drainlines. Mr. Sosson said that the timing is uncertain because of the amount of scaffolding that is required. Mr. Davison said that the source of the leak should be terminated after 20 days. Heatup during operation of the plant should evaporate any trapped water.

Mr. Barton asked whether a moisture barrier would be installed at the juncture of the floor and drywell. Mr. Sosson replied that one will be installed.

[p. 63 in transcript, slide 21 in presentation]

Member Stetkar asked about the possibility that additional, undetectable leakage is occurring. Mr. Sosson explained that any water accumulating between the drywell and the concrete should come out through the gap in the drywell. A total of 320 gallons of water would be necessary for water to spill out. Member Armijo pointed out that the gap region is inspectable. Mr. Seibold stated that the air gap region is inaccessible. The construction reports indicate that the outside of the drywell shell was coated with inorganic zinc, but it cannot be inspected. Mr. Stavely explained the limitations of the boroscope. Member Sieber said that it may be difficult to locate where the air gap actually ends. Mr. Stavely stated that PSEG Nuclear may try to lower a camera into the air gap to obtain photographs. Water samples have shown that the pH is 8.3-8.5, so the water at the bottom would have similar chemistry. Mr. Seibold said that the air gap and drywell floor are coincidentally the same. Further evidence for this fact is found where the outer skirt of the drywell is designed to hold up the drywell shell.

[pp. 63-69 in transcript, slide 21 in presentation]

Member Rempe asked about the accuracy of the ultrasonic technique. Mr. Roberts replied that the accuracy was +/- 0.01 in. Member Armijo asked about possible interference with the support skirt during the UT. Mr. Seibold said that interference from the support skirt was not a problem.

Member Stetkar asked whether UT was performed in any other area than below the penetration assembly. Mr. Sosson explained that they performed the measurements 360° around the drywell, at 1-ft intervals and at floor elevation. In response to a question from Chairman Shack, Mr. Sosson said that, while most measurements were above 1.5 in., the plate just below the penetration seems to be uniformly thinner than the other areas tested. This plate has been identified as an area of interest for future monitoring. Member Sieber asked whether UT readings were taken above the instrument line penetration. Mr. Sosson replied that no readings were taken in the upper containment cylinder. However, baseline measurements in the upper cylinder were made prior to the discovery of the leak.

Mr. Barton asked about the need to install a moisture barrier. He also asked about the possibility that water came between the concrete and drywell. Mr. Stavely said that a visual inspection of the joint in 2009 revealed no corrosion issues. The inspection was performed in order to understand the surface before installing the moisture barrier. Member Stetkar asked about the possibility that water has seeped into an inaccessible portion of the joint at the lower part of the drywell. Mr. Seibold said that the joint was probed with a feeler gauge. No indication of water or deterioration was discovered at the joint. Chairman Shack asked about the frequency of inspection for that joint. Mr. Seibold replied that visual inspections were completed in accordance with ASME code requirements. A license renewal commitment requires PSEG Nuclear to inspect the moisture barrier, after it is installed. Mr. Barton asked whether the plant owners would be able to inspect the joint when the concrete is removed for moisture barrier installation. Mr. Stavely said that no concrete will be removed for installation of the moisture barrier. Only a portion of the moisture barrier is currently being installed, in order to better prepare for complete installation and effectively manage worker radiation dose.

[pp. 74-77 in transcript, slide 22 in presentation]

Mr. Barton asked about the need to install a moisture barrier. He also asked about the possibility that water came between the concrete and drywell. Mr. Stavely said that a visual inspection of the joint in 2009 revealed no corrosion issues. The inspection was performed in order to understand the surface before installing the moisture barrier. Member Stetkar asked about the possibility that water has seeped into an inaccessible portion of the joint at the lower part of the drywell. Mr. Seibold said that the joint was probed with a feeler gauge. No indication of water or deterioration was discovered at the joint.

Chairman Shack asked about the frequency of inspection for that joint. Mr. Seibold replied that visual inspections were completed in accordance with ASME code requirements. A license renewal commitment requires PSEG Nuclear to inspect the moisture barrier after it is installed. Mr. Barton asked whether the plant owners would be able to inspect the joint when the concrete is removed for moisture barrier installation. Mr. Stavely said that no concrete will be removed for installation of the moisture barrier. Only a portion of the moisture barrier is currently being installed, in order to better prepare for complete installation and effectively manage worker radiation dose.

[pp. 78-81 in transcript, slide 23 in presentation]

Member Stetkar pointed out that a large number of structures were added to PSEG Nuclear's structures monitoring program. He wondered if the condensate storage tank foundation was included in that program. Mr. Sosson stated that it was. Member Stetkar pointed out that the structures monitoring program was enhanced to include wooden components. He asked where wood was used for structural members in components in scope for license renewal. Mr. Seibold responded that the intake structure has wooden ice barriers. Mr. Barton asked whether there were plans to fix underwater corrosion found near the river. Mr. Seibold stated that a structural engineer will inspect those supports when the bays are de-watered for maintenance operations. An enhancement to the structural monitoring program requires general inspections of the de-watered bay.

Mr. Barton asked about the sample size for the small bore Class 1 piping inspection. Mr. Cervenka said that the weld population is 60 welds. Member Armijo asked whether any of those welds had failed. Mr. Sosson said that high-cycle fatigue failures occurred in these welds early in plant life. Design changes were implemented to address the issue. Chairman Shack wondered whether the small bore piping inspection was periodic or a one-time inspection. Mr. Cervenka explained that the 60 welds will be inspected during the 10 years prior to the period of extended operation. Mr. Stavely said any indications would be placed in the corrective action program.

Member Stetkar stated that, in the fuel oil chemistry program, PSEG Nuclear is using a 3.0-μm filter instead of a 0.8-μm filter. While the larger filter size is consistent with the Generic Aging Lessons Learned (GALL) report, many applicants are using the smaller filter size recommended by the ASTM International standards. He wondered why PSEG Nuclear is using the larger filter size.

Member Sieber explained that, in a fuel oil tank, all the water goes to the bottom of the tank, with the sample line located about 6 in. from the bottom. Stainless steel has been used for the tank material, but that material is ineffective because of the concentration of chlorides at the bottom.

Mr. Barton asked about the Boral monitoring program. Mr. Stavely said that they monitor the testing results at other BWRs. Member Armijo asked if PSEG Nuclear does any evaluation themselves. Mr. Stavely replied that they monitor inspection results at other plants, operational problems in their spent fuel pool racks, and water chemistry. If they meet a "trigger" in their program, then they will test their own coupons. So far, the coupons have not been tested.

[pp. 81-91 in transcript, slide 24 in presentation]

Mr. Schmidt said that an earlier question was: what are the 386 welds in the IGSCC program and why so many? Chairman Shack clarified that many welds should have been removed from the list, due to mitigation efforts. Mr. Schmidt explained that the majority of the components are IGSCC resistant and are classified as Category A. Only 22 components are non-Category A.

Mr. Tamburro said that an earlier question was: what is the material of the diesel fuel tanks? They are all carbon steel. Another earlier question concerned using a 3.0-μm filter, instead of a 0.8-μm filter. Using the 3.0-μm filter is an improvement, since one can observe particles in a range of zero to 3.0 μm, as opposed to a range of zero to 0.8 μm. The sampling system is on the other side of the filters, so allowing a wider range of particle sizes through the filter improves the sampling process. Member Stetkar said that, according to the other applications, it is conservative to use the small filter size to trap more particulates. The sample is taken from the filter itself. Past applicants that used the 0.8-μm filters justified the exception to GALL by claiming the smaller filter size traps more particulates. In response to a question from Chairman Shack, Mr. Tamburro confirmed that the sampling method occurs downstream from the filter.

[pp. 91-95 in transcript]

NRC Staff

Onsite Inspection Results

Mr. Barton asked Mr. Modes about his overall impression of the interior condition of HCGS. Mr. Modes stated that the condition was very good.

[p. 106 in transcript, slide 8 in presentation]

Member Seiber observed that the application was clean. Mr. Holian stated that PSEG Nuclear, along with Exelon, implemented a team approach to license renewal.

[p. 107 in transcript, slide 9 in presentation]

Aging Management Review

Member Stetkar pointed out that the period of extended operation starts in 15 years and asked how the staff is currently following the low-voltage cable issue. Mr. Doutt replied that there was a violation issued for service water, with corrective actions being implemented. The current corrective actions should establish a baseline for testing frequency during license renewal. Member Stetkar asked about a proactive approach to keep the cables dry. Mr. Holian stated that this issue crosses Part 54 and Part 50. The Nuclear Energy Institute initiative is currently being reviewed. Inspectors now can look at the manholes, as part of the reactor oversight process. Mr. Mathew said an inspection procedure exists to look at manholes on a regular basis. The Regional Office has issued several findings on this subject. Part 50 requires that the cables must be maintained in the environment for which they were designed, so staff can enforce that requirement via inspection. In addition, the staff will issue in January a Regulatory Guide related to an acceptable condition monitoring program.

[pp. 111-115 in transcript, slide 13 in presentation]

Time Limited Aging Analyses

Chairman Shack asked the staff whether using design basis calculations is a good way to determine bounding locations. Dr. Hiser stated that the use of a bounding location must be rationalized. The concern is that there may exist plant-specific locations that are more bounding than those discussed in the NUREG. Ms. Brady stated that this question has been asked to Salem and will likely be asked to all future applicants.

[pp. 118-119 in transcript, slide 16 in presentation]
Dr. Hiser stated that the applicant has committed to testing one coupon prior to the period of extended operation. Subsequently, one coupon will be tested every 10 years. Member Armijo asked about the type of testing to be performed. Dr. Hiser explained that they would perform neutron attenuation measurements to confirm that the assumptions in their criticality calculations were correct.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON PLANT LICENSE RENEWAL

November 3, 2010
Date

NRC STAFF SIGN IN FOR ACRS MEETING

PLEASE PRINT

	NAME	NRC ORGANIZATION
1	Jose Ibarra	RES
2	ARTHUR CUNANAN	NRR
3	BENNETT BRADY	NRR
4	CLIFF DOVTT	NRR/DLR
5	Pat Purtscher	NRR/CVIB
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9	Bill Rogers	NRR/DLR
10	Andrew Johnson	NRR/DCI
11	William Holston	NRR/DLR
12	Jerry Dozier	NRR/DLR
13	Raj Anand	NRR/DLR
14	John Daily	NRR/DLR
15	Hansraj Ashar	NRR/DLR
16	Robert Sun	NRR/DLR
17	Bart Fu	NRR/DLR
18	M. Banic	NRR/DLR
19	James Medoff	NRR/DLR
20	Allen Hiser	NRR/DLR
21	Rui Li	NRR/DLR
22	Naeem IQBAL	NRR/DRA/AFPB
23	B Holian	NRR/DLR
24	Gladys Figueroa	RES
25	Roy Matthew	NRR
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
PLANT LICENSE RENEWAL SUBCOMMITTEE MEETING

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TODAY'S DATE: November 3, 2010

	NAME	AFFILIATION
1	John Hufnagel	Exelon
2	JEFF KEENAN	PSEG Nuclear LLC
3	A Thomas Roberts	PSEG Nuclear LLC
4	Christine Neely	PSEG Nuclear
5	Vincent Zabielski	PSEG Nuclear LLC
6	Ali FAKHAR	PSEG Nuclear LLC
7	PAUL CERVENKA	EXELON
8	W J Hopewick	PSEG Nuclear LLC.
9	AL FULVIO	EXELON
10	John Hildrith	PSEG Nuclear
11	ALBERT PIHA	Exelon
12	Tom Quintenz	Exelon
13	Joe Delmar	PSEG Nuclear
14	Dylan Cimock	Exelon
15	JAMES M STAVELY JR	PSEG NUCLEAR
16	James A Melchionna Jr	PSEG Nuclear.
17	Paul Davison	PSEG Nuclear
18	GREGORY SASSON	PSEG NUCLEAR
19	Alan Johnson	PSEG Nuclear.
20	Andrew Huk	PSEG Nuclear
21	Randal Schmidt	PSEG Nuclear
22	Casey Muggleston	Exelon
23	MIKE Gallagher	EXELON
24	ED KEATING	URS
25	George Scibold	PSEG Nuclear
26	Kevin Muggleston	PSEG Nuclear
27	Pete Tumburo	PSEG Nuclear
28	TOM JOYCE	PSEG NUCLEAR

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
PLANT LICENSE RENEWAL SUBCOMMITTEE MEETING

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TODAY'S DATE: November 3, 2010

	NAME	AFFILIATION
1	Robert L. Braun	PSEG Nuclear
2	John F. Perry	PSEG Nuclear
3	JOHN O'ROURKE	EXELON NUCLEAR
4	Miranda Tan	PG&E
5	Rigel Davis	Southern California Edison
6	Chalmer Myer	STARS/WorleyParsons
7	Terry Grebel	Pacific Gas & Electric
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