

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**Before the Commission**

In the Matter of:	)	November 17, 2008
AmerGen Energy Company, LLC	)	
(License Renewal for Oyster Creek Nuclear Generating Station)	)	Docket No. 50-219

**UPDATED COMMISSION NOTIFICATION**

In accordance with its obligation to inform the Commission in a timely fashion of new information that may be relevant and material to the pending appeal of the Atomic Safety and Licensing Board's ("Board") initial decision in LBP-07-17,<sup>1</sup> AmerGen Energy Company, LLC ("AmerGen") hereby provides this Updated Notification of the results of its 2008 refueling outage-related investigations. The pending appeal disputes the Board's rejection of a contention challenging the adequacy of the aging management program ("AMP") for the drywell shell in the sand bed region at Oyster Creek Nuclear Generating Station ("Oyster Creek"). As discussed below, AmerGen concludes that the AMP for the drywell shell in the sand bed region remains adequate, the new information does not raise a significant safety issue, and this information provides no basis to reconsider the Board's earlier rejection of a contention challenging the adequacy of the AMP.

**I. Background**

On November 6, 2008, AmerGen notified the Commission and the parties to the Oyster Creek license renewal proceeding that, during scheduled inspections as part of the 2008 refueling

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<sup>1</sup> See *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 & 2), ALAB-143, 6 AEC 623, 625 (1973); *Metro. Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-774, 19 NRC 1350, 1359 (1984).

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outage, "AmerGen's contractor identified [in Bay 11 of the drywell shell in the sand bed region] a six-inch long rust stain and a small, isolated area where the epoxy coating was blistered at the top of the rust stain." Commission Notification (Nov. 6, 2008) at 1 ("Notification"). In its Notification, AmerGen also stated that it had "reviewed the 'as left' video recording of the external surface of Bay 11 during the 2006" refueling outage, and had found "an indication that, at this time, AmerGen believes to be the same Bay 11 rust stain . . . ." *Id.* at 2. Further, AmerGen notified the Commission of "several cracks in the moisture seal at the drywell shell interface with the exterior floor" at one location in Bay 3. *Id.* Finally, AmerGen stated that it was "taking action to assess the significance of this information with respect to its inspection and corrective action programs, and will keep the NRC informed of its findings." *Id.* at 3. AmerGen initiated an investigation into the items identified in the November 6 Notification.

## II. Additional Findings

AmerGen has made the following additional findings:

### A. Cause of the Sand Bed Bay 11 Blistered Area

Samples of the isolated blistered area and rust stain on the epoxy coating system in Bay 11 were removed, examined, and the corrosion byproduct analyzed. The analysis identified trace amounts of chlorine in the corrosion byproduct, which AmerGen believes originated as a soluble salt (chloride) contaminant in the sand that formerly filled the sand bed region. The exterior drywell shell surface was cleaned with a solvent, followed by high pressure hydrolazing prior to coating in 1992. Those preparation activities would have removed the bulk of soluble salts, but it appears that very small deposits of soluble salts may have remained on the steel surface of the drywell, in small crevices in the steel surface or in the steel grain boundaries themselves.

Soluble salts can draw moisture through the coating via osmosis, and AmerGen believes that this

is the most likely corrosion mechanism that caused the blistered area, because no pinholes were identified in the blister samples when viewed under a stereoscope.<sup>2</sup>

The corrosion under the blistered area in the epoxy coating in Bay 11 does not raise a significant safety issue. Based on the measured thickness of the corrosion byproducts recovered from the underside of the blistered area, only 3.4 mils of drywell shell metal is calculated to have been lost to corrosion. This suggests that, even when corrosion occurs under the epoxy coating over a long period of time, the attendant wastage of metal is of no engineering significance. Dynamic-scan ultrasonic testing (“UT”) from the inside of the drywell in the areas behind and around the blistered area showed a minimum thickness of 750 mils, which meets all applicable acceptance criteria.

AmerGen has confirmed that the 6-inch rust stain on the epoxy coating in Bay 11 identified in visual inspections during the 2008 refueling outage is the same stain visible in an “as left” video recording of Bay 11—taken for informational purposes, and not as part of the visual inspection—at the end of the 2006 outage.

The affected area of the epoxy coating in Bay 11 has been repaired and restored.

B. *Damaged Moisture Seal in Sand Bed Bay 3*

The small area that exhibited “several cracks in the moisture seal at the drywell shell interface with the exterior floor” in Bay 3, Notification at 2, has been removed, evaluated, and analyzed. While removing the affected area of the caulk, a wet, “goeey” material was found beneath the hard upper surface of the moisture seal. The caulk is a two-component caulking material. Laboratory analyses determined the “goeey” material to be consistent with uncured

<sup>2</sup> In AmerGen’s Rebuttal Testimony (Exh. C, Part 5, A.12, Aug. 17, 2007), one of AmerGen’s expert witness stated that, “[w]ithout . . . continuous immersion, osmotic diffusion and blistering [of the epoxy coating system] cannot occur.” This statement omits the potential for the presence of soluble salts which, when subjected to an intermittent wetted condition, can lead to osmosis and subsequent corrosion. AmerGen now believes that this soluble salt osmosis-induced corrosion was the cause of the Bay 11 blistered area.

epoxy caulk, which could have been caused by mis-mixing (*i.e.*, mixing the two components in the wrong ratio) or incomplete mixing (*i.e.*, not mixing the components sufficiently) at the time of application in 1992.

AmerGen's corrosion expert has determined that the uncured caulk will not have any adverse impact on the integrity of the drywell shell because the concentrations of the impurities identified through laboratory analysis are too low to raise corrosion concerns for the carbon steel drywell.

The affected area of the moisture barrier also has now been repaired.

C. Chips in the Epoxy Coating System in Sand Bed Bays 3, 5, and 7

AmerGen also discovered small chips in the epoxy coating in Bays 3, 5, and 7. None of the chips was bigger than the size of a dime. The most likely cause of this minor chipping is mechanical damage during inspection and repairs performed during this outage.

The chipped areas also have now been repaired.

D. Water in Sand Bed Bays 11, 13, 15, and 17

Non-destructive Examination ("NDE") personnel discovered water in the sand bed region many days into the outage. In accordance with its license renewal commitments, AmerGen identified the cause of the water leakage as de-lamination of one area of the strippable coating applied to the reactor refueling cavity. Prior to the de-lamination, no water had been identified in the sand bed region during this outage. Two days after the de-lamination was reported, water was first identified in the sand bed region.

As a result of the de-lamination of the strippable coating, water overflowed the reactor cavity leakage collection trough and traveled down to four bays (*i.e.*, Bays 11, 13, 15, and 17) in the sand bed region. After the reactor cavity was drained towards the end of the outage, and after water was cleaned up from the affected sand bed bays, AmerGen re-inspected the drywell shell

epoxy coating and moisture seal and confirmed that no coating or shell degradation occurred as a result of the water leakage.

### III. Conclusions

Based on the investigations discussed above, AmerGen has concluded that:

#### A. Epoxy Coating Condition

The epoxy coating system on the external drywell shell in the sand bed region remains in good condition, and it continues to serve its designed function of protecting the underlying metal drywell shell. The small, isolated chips in the coating and the single, isolated area of the affected coating in Bay 11 are of no engineering significance. These affected areas of the coating have been repaired.

#### B. Moisture Seal Condition

The moisture seal continues to perform its designed function. During this outage, AmerGen has repaired those limited areas that exhibited cracking. The uncured caulk identified in Bay 3 has been in place since 1992, and has not, and will not have any adverse impact on the integrity of the drywell shell.

#### C. Presence of Water in the Sand Bed Region

AmerGen identified that the source of the water in the sand bed region during this refueling outage was unexpected de-lamination of the strippable coating in the water-filled reactor cavity. There is no concern that water will enter the sand bed region during normal operations because the reactor cavity is drained at those times. AmerGen will investigate the cause of the de-lamination and evaluate permanent remedies for leakage from the reactor cavity, consistent with prior commitments to the ACRS.

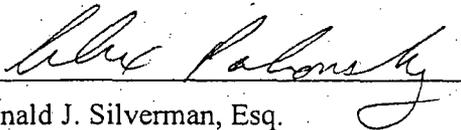
D. AmerGen's Aging Management Program

AmerGen's AMP for the drywell shell in the sand bed region remains adequate. In particular, AmerGen's license renewal commitments, including continued visual inspections of the drywell shell in the sand bed region at a four-year interval, provide reasonable assurance that any coating degradation will be detected and corrected before significant corrosion of the underlying drywell shell can occur.

E. Significance

For the reasons set forth in Sections III.A through III.D, above, the findings described in the Notification and this Updated Notification do not raise a significant safety issue, and provide no basis to reconsider the Board's earlier rejection of a contention challenging the adequacy of the drywell AMP.

Respectfully submitted,



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Dated in Washington, D.C.  
this 17th day of November 2008

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**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

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**CERTIFICATE OF SERVICE**

I hereby certify that copies of AmerGen's "UPDATED COMMISSION NOTIFICATION" were served this day upon the persons listed below, by e-mail and first class mail.

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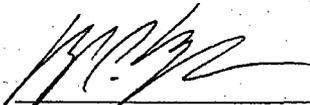
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