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ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Before Administrative Judges:  
E. Roy Hawken, Chair  
Dr. Paul B. Abramson  
Dr. Anthony J. Baratta

In the Matter of

AMERGEN ENERGY COMPANY, LLC

(License Renewal for the Oyster Creek  
Nuclear Generating Station)

)  
) August 18, 2006

)  
) Docket No. 50-0219-LR

**CITIZENS' REPLY TO AMERGEN'S ANSWER TO THE PETITION  
TO ADD A NEW CONTENTION AND SUPPLEMENT THERETO**

**PRELIMINARY STATEMENT**

In its Answer to the Petition to Add a New Contention (the "New Petition") filed by Nuclear Information and Resource Service, Jersey Shore Nuclear Watch, Inc., Grandmothers, Mothers and More for Energy Safety, New Jersey Public Interest Research Group, New Jersey Sierra Club, and New Jersey Environmental Federation (collectively "Citizens" or "Petitioners"), AmerGen Energy Co. LLC ("AmerGen") lays down a smoke screen of conclusory, unsupported, inconsistent and occasionally false statements to obscure the real issue raised by Citizens; AmerGen has failed to design an aging management program that will ensure that the Oyster Creek Nuclear Generating Station (the "Plant") will remain safe during any extended period of licensed operation.

Although AmerGen complains that many of Citizens' allegations are not based on new information, AmerGen appears to forget that when the initial Petition was submitted, AmerGen proposed to rely solely upon visual inspection to monitor for further corrosion of the already severely degraded drywell shell. After three amendments to the proposed aging management regime for the drywell shell, it has now proposed a monitoring program that includes a mixture of monitoring for corrosive conditions and ultrasonic ("UT") testing. Because Citizens' allegations all relate to the newly proposed testing regime, they are necessarily timely. Furthermore, all but one of the exhibits Citizens submitted to support the new contention were obtained after AmerGen made its new commitments on April 4, 2006. These new exhibits contain a wealth of new information upon which Citizens based their new Contention.

AmerGen's second main complaint is that Citizens are contesting issues that are not related to UT testing. This is totally inconsistent with the assertion of AmerGen's technical staff who have emphasized that the testing regime must be taken as an integrated whole. In this regard, AmerGen's technical staff are correct, while its lawyers are trying to obscure an inconvenient truth; each element of the testing regime interacts with the other elements. For example, in trying to argue that its testing regime is sufficiently adaptive in terms of frequency, AmerGen concedes that it must do a statistical analysis of the UT results and justify operation to the next inspection. This raises issues concerning the methods employed to carry out statistical analysis, the permissible uncertainty in the results, and what results would be regarded as acceptable to allow continued operation. Thus, determining whether the monitoring regime is sufficiently adaptive in terms of frequency raises issues about statistical techniques, sampling size, and acceptance criteria. AmerGen's technical staff understand what AmerGen's lawyers

ignore; the testing program is an integrated whole that cannot be parsed into elements that are related to UT testing and elements that are unrelated to UT testing.

The Atomic Safety and Licensing Board ("ASLB" or "Board") must look beyond the smoke screen to the heart of the matter. Citizens have crafted a contention that raises technically valid and highly significant safety issues based on material new information provided by AmerGen since the original Petition was admitted. The contention satisfied all the technical pleading requirements. Furthermore, the public interest requires that this issue be dealt with in an open forum. Anything less will further undermine the public's trust in the ability of the Nuclear Regulatory Commission to ensure that the nation's aging nuclear power plants can be operated safely for twenty years beyond their originally licensed operating period. Thus, the ASLB should admit Citizens' new contention.

#### **BACKGROUND**

This proceeding concerns AmerGen's ability to ensure that the drywell shell, which forms the primary containment system at the Plant, does not decay to beyond acceptable safety margins during any extended period of licensed operation beyond 2009, when the Plant is currently scheduled to close. There is no dispute that the containment system is a safety critical component whose failure could lead to a nuclear accident.

Earlier this year, the ASLB admitted a contention pertaining to the need for ultrasonic ("UT") testing of the drywell shell in the sand bed region, an area where sand had been removed in an attempt to stop corrosion that had caused loss of up to 47% of the thickness of the steel shell. In the Matter of AmerGen Energy Company (License Renewal for Oyster Creek Nuclear Generating Station), LBP-06-07 (slip op. at 39-40) LBP-06-07, 63 NRC 188 (2006). The ASLB recently found that a new commitment made by AmerGen on April 4, 2006 to use UT testing to

verify the thickness of the drywell shell in the sand bed region every ten years had rendered the initial contention moot, but also invited Citizens to submit a new contention concerning the adequacy of AmerGen's newly proposed UT testing regime for the sand bed region. LBP-06-16 (June 6, 2006) at 9. On June 20, 2006, AmerGen submitted a new letter enclosing a discussion of the UT testing program for the drywell and new commitments to carry out certain additional testing. Letter from Michael P. Gallagher, AmerGen, to NRC, dated June 20, 2006.

On June 23, 2006, Citizens submitted a new contention addressing the issues raised by AmerGen's newly proposed testing regime for the sand bed region as presented in the new commitment of April 4, 2006. Citizens also submitted a motion asking leave to supplement the new contention so as to take into account AmerGen's June 20, 2006 commitment letter. The Board granted Citizens' motion, with instructions that the supplement should be limited to discussion of issues raised by the June 20, 2006 commitment, and that the supplement should be a self-contained document. Order (Granting NIRS's Motion for Leave to Submit a Supplement to its Petition), ASLBP No. 06-844-01 at 3 (July 5, 2006) (unpublished).

In its commitment letter of June 20, 2006, AmerGen laid out a monitoring plan that takes into account the importance of monitoring for conditions conducive to corrosion in the drywell. Letter from Michael P. Gallagher, AmerGen, to NRC, Enclosure 2 ("June 2006 Commitments") at 3-4. (June 20, 2006). AmerGen's proposed monitoring procedures called for daily monitoring of the drains from the sand bed region during refueling outages and quarterly monitoring of the drains during the plant operating cycle. Id. The proposed procedures include steps to be taken to determine the source of any leakage. Id. However, the proposal does not suggest continuous monitoring or monitoring of moisture in the drywell proper.

AmerGen's most recent commitment also describes proposed procedures for monitoring the epoxy coating. Id. The proposed procedure calls for visual inspection of the epoxy coating if leakage is found during drain monitoring. Id. If the leakage is found during refueling, the coating is to be visually inspected during that outage. Id. If, however, the leakage is detected during the operating cycle, the epoxy is not to be inspected at all until the next refueling cycle. Id. The proposal does not lay out an objective standard for determining whether the coating is degraded, and it does not call for objective testing of the coating.

AmerGen also submitted a considerable amount of new information on engineering and other issues in response to a Request for Additional Information from NRC Staff and in support of the June 2006 Commitments. Letter from Michael P. Gallagher, AmerGen, to NRC, dated June 20, 2006, Enclosure 1 ("New Information"). The New Information discussed, among other things, the use of engineering code sections to generate the acceptance criteria, the problems with the UT results taken in 1996, the UT testing frequency for the sand bed region, and details of proposed corrective measures to be taken if water is detected in the sand bed drains. Id. AmerGen explained that its monitoring regime continues to be based on, among other things, an assumption that corrosion is best modeled as a continuing linear decrease in mean thickness of the drywell shell over time. Id. at 3. In interpreting this model, measurements showing a statistically significant slope on the plot of mean thickness versus time trigger a calculation of the uncertainty in the measurements in order to determine the time at which there is a 5% chance that certain acceptance criteria could be exceeded. Id. However, as before, if the measurements do not show a statistically significant slope, AmerGen will not estimate a confidence interval, but will assume instead that no corrosion is occurring or will occur. Id.

AmerGen also expressed its belief that there are no practical methods available to replace the current technique of using ASME Code Section III, Subsection NE-3213.10 to extrapolate from computer modeling done in 1991 by General Electric to real conditions. Id. AmerGen further claimed a minimum measured drywell thickness of 0.800 inches in the sand bed region, id. at 5, which stands in contrast to its reported measurements taken in several bays showing areas with average thickness at 0.703 inches, Ex. NC 2 at 13, and the thinnest individual measurement of 0.603 inches, Ex. NC 1 at 7. While recognizing that this Code Section is not directly applicable to randomly thin areas caused by corrosion, AmerGen asserted that the Code Section is applicable to the severely corroded areas based on, among other things, its belief that no further significant corrosion will occur in the sand bed. New Information at 5-6.

Based on new information and the June 2006 Commitments, on July 25, 2006 Citizens submitted a Supplement to their New Petition (the "Supplement"). In return, AmerGen submitted its answer to the New Petition and the Supplement on August 11, 2006.

## ARGUMENT

### **I. Undisputed Issues**

AmerGen candidly concedes that "[p]roperly pled issues related to new information could, in theory, serve as the basis for a new or amended contention." AmerGen Ans. at 13. In addition, AmerGen makes no mention of the scope of the proceeding, Citizens' standing, and the need for a specific statement of the contention. Thus, there is no dispute that Citizens have standing, that the contention is within the scope of this proceeding, and that it was properly stated in the Petition and Supplement.

Furthermore, AmerGen correctly states that the contention contains seven separate, but related, allegations. Id. at 6. For five of the seven allegations, AmerGen does not dispute the adequacy of the basis stated or the materiality of the disputes raised. Id. at 7-13. The only

allegations that AmerGen questions in this regard are those relating to inadequate acceptance criteria and the frequency of the UT testing. Id. at 13-16. Thus, AmerGen has conceded that the other five allegations are well pled in terms of basis and materiality. Finally, AmerGen has conceded that the allegation about the frequency of the UT testing is based on the New Commitments and concerns the UT testing program. Thus, there is no dispute that this allegation comes within the terms of the Board's invitation to submit a new contention:

## **II. The Allegation Regarding UT Monitoring Frequency Was Properly Pled**

Amergen attempts to assert that there is no material dispute about the UT monitoring frequency and that Citizens do not have a sufficient basis for this allegation. This is completely incorrect. Most obviously, AmerGen's effort to show a lack of a material dispute about whether the monitoring frequency is sufficiently adaptive actually shows precisely the opposite.

AmerGen directly contradicts Citizens' allegation by stating that "Citizens' assertion that AmerGen's program is 'not sufficiently adaptive to possible future narrowing of the safety margins' is *patently incorrect*." AmerGen Ans. at 15 (emphasis added). Further, AmerGen states that Citizens claims about monitoring frequency "do not make any sense." Id. at 14. These assertions merely serve to confirm that there is a genuine material dispute about the ability of the monitoring program to adapt sufficiently to potential changes in conditions.

More specifically, Citizens contend, supported by expert evidence, that the commitment to perform an operability determination and to justify operation until the next inspection based on detection of "statistically significant deviations from prior UT results" is not sufficient for a host of reasons. First, the operability determination and justification for operation until the next inspection are required irrespective of the detection of a statistically significant deviation. This is because conditions could become corrosive after the monitoring occurs and, if corrosive conditions are present, the required UT inspection frequency is less than one year. Petition at 8-

10, Supplement at 9. This high frequency could be avoided if corrosive conditions were properly monitored. Supplement at 9-10. However, the proposed monitoring for corrosive conditions was inadequate, Supplement at 8, 10-12, and the response to such conditions was also inadequate, Supplement at 12. This means that the proposal to leave a four year gap between rounds of UT testing if no statistically significant corrosion is found could allow corrosion beyond the safety margins to go undetected for at least 3 years initially. Indeed, the passage quoted by AmerGen on page 14 of its Answer to try to illustrate that Citizens misunderstand the aging management regime actually makes this entirely valid point. Supplement at 9.

Second, in making its justification for continued operation, AmerGen proposes to erroneously assume linear corrosion, make inappropriate use of Gaussian statistics at a 95% confidence level, and to make various other statistical errors. New Petition at 11-12. Third, because the current acceptance criteria are not rigorously derived, the operability determination cannot be made. Petition at 7-8, Supplement at 9, 17-22. Fourth, because the spatial scope of the measurements is too narrow, an operability determination based on the measurements could fail to take account of additional corrosion beyond the safety margins, and the proposed testing would not measure the total area thinner than 0.736 inches, a parameter that, according to AmerGen, is required to test operability. New Petition at 10. Thus, the dispute about the ability of the monitoring program to adapt sufficiently to changing conditions to ensure safety is integrally related to material disputes about other issues whose existence AmerGen has not even tried to deny.

Moving on to basis, although AmerGen purports to dispute the basis of this part of the contention, it actually fails to raise any arguments about why the expert support provided and cited in the relevant parts of the New Petition and the Supplement does not provide an adequate



basis for the contention. See Memorandum of Dr. R. Hausler, dated June 23, 2006; Memorandum of Dr. R. Hausler, dated July 25, 2006; and Letter from Stress Engineering, Inc., dated July 15, 2006. Indeed, AmerGen misunderstands the contention completely when it suggests that Citizens have ignored the commitments AmerGen has made to adjust the periodicity of the measurements. AmerGen Ans. at 15. This is completely incorrect. Part of Citizens contention is about whether the UT testing regime proposed by AmerGen is *sufficiently* adaptive. Citizens contend, supported by expert opinion and careful analysis, that it is not.

Citizens' conclusion on monitoring frequency is also supported by NRC Staff who stressed the importance of having an adaptive UT testing program that would require UT testing whenever water leakage is detected. Ex. NC 4 at 59:18-22. Thus, NRC Staff have confirmed that the proposal cited by AmerGen in its Answer, which requires "statistically significant deviations from the prior UT results" before any action is taken, is inadequate.

Finally, AmerGen's assertion that Citizens are "patently incorrect" on this issue is merely conclusory hyperbole that highlights the existence of a sharp material dispute about monitoring frequency and most of the other issues raised by the contention. Citizens have also shown that, contrary to AmerGen's conclusory assertion, they had ample expert support providing a sufficient basis for this allegation. Because AmerGen did not allege that Citizens had failed to meet any of the other requirements for an admissible contention, the Board should admit this part of the contention. Further, if the Board admits this allegation, it should admit the whole contention, because the other allegations are closely inter-related.

### **III. The Allegation That Acceptance Criteria Are Inadequate Was Properly Pled**

AmerGen suggests that there are deficiencies in the way Citizens pled the allegation about acceptance criteria based on a lack of material dispute, compliance with the Board's Orders of June 6, 2006 and July 5, 2006, and timeliness. AmerGen Ans. at 7-10. That there is a

material dispute is obvious from AmerGen's own inconsistent statements regarding the availability of better methods to derive acceptance criteria. Having justified its use of the old acceptance criteria, by saying in the June 20, 2006 commitment letter that no better methods are available for this purpose, New Petition at 19, AmerGen now concedes "new techniques may be available." AmerGen Ans. at 8. Thus, AmerGen has already repudiated one of its main arguments for using the old methods.

In addition, AmerGen fails to note that the analysis by Stress Engineering not only establishes the availability of better techniques, it also finds that the assumption of axial symmetry in the structural modeling was not warranted and could have led to a failure to model anti-symmetric buckling. New Petition Supplement at 19. This could be the most critical buckling mode. AmerGen tried to adopt a legalistic approach to this safety issue by saying its methods are compliant with the requirements of the code and the NRC. AmerGen Ans. at 8. However, it has conceded elsewhere that the engineering codes it is using are not directly applicable to the problem at hand, illustrating that the codes do not supply a complete solution. New Petition Supplement at 19. This issue is itself a material dispute. Citizens have alleged that the most critical failure mode could have been missed in the modeling, while AmerGen presumably disputes this, because it is continuing to assert that its analysis is adequate.

Furthermore, Citizens' engineering expert states straightforwardly that the most modern techniques are the most accurate. Id. at 18. It is surprising that AmerGen believe that it is not essential to use the most accurate techniques on a vessel which is within 0.02 inches of violating safety standards. Citizens contend that the acceptance criteria must be based on the best techniques available at any given moment. This is another material dispute.

It is also surprising that AmerGen chooses to emphasize that the engineering analysis was “cursory.” Amergen Ans. at 8. If the engineering experts were able to identify such fundamental deficiencies based on only a cursory analysis, it is likely that they would be able to identify many more problems at a more detailed level if they carried out a comprehensive review.

Moreover, AmerGen completely ignores the disputes raised in the New Petition itself. Citizens alleged that part of the reason the acceptance criteria are inadequate is that the small area acceptance criterion is based on one area in each bay being thinner than 0.736 inches, while the measurements in 1992 showed that there were nine such areas in bay 13. It also alleged that the requirement for total area thinner than 0.736 inches was also a misinterpretation of the modeling results because the modeling only looked at square areas thinner than 0.736 inches and did not investigate other geometries, which could be more critical. Thus, Citizens raised material disputes about the adequacy of the acceptance criteria in the New Petition and then amplified and expanded this dispute in the Supplement.

AmerGen’s other alleged deficiencies are equally without merit. Sections IV-VI below show that the allegation regarding acceptance criteria complies with the Board’s Order of June 6, 2006. Sections V and VII also show generally that all allegations were made in a timely manner. More specifically, AmerGen now suggests that there is no material difference between knowledge that several areas in bays 1 and 13 were thinner than 0.736 inches and knowledge that over 20 areas were thinner than 0.736 inches. AmerGen Ans. at 9. This is of course nonsense. “Several” is defined as “being of a number more than two or three but not many.”<sup>1</sup> Even AmerGen would find it hard to state with a straight face that 20 is not many.

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<sup>1</sup> <http://www.thefreedictionary.com/several>

Finally, the most significant new information to emerge is not the number of areas thinner than 0.736 inches, but how AmerGen derived the acceptance criteria for those areas. As shown in Section VII, Citizens only recently gained knowledge of what the local area acceptance criteria are and how they were derived.

#### **IV. Citizens Complies With The Board's Order of June 6, 2006**

With regard to compliance with the Board's Order of June 6, 2006, AmerGen first raised this argument in its Answer to Citizen's Motion For Leave To Supplement the Petition. AmerGen stated that the new proposed contention raised issues that were beyond the scope of the Order such as "the adequacy of the acceptance criteria . . . , the spatial 'scope' of AmerGen's monitoring efforts, AmerGen's quality assurance program for UT measurements, and its statistical analysis methods for analyzing the UT measurement results." Ans. to Citizen's Motion For Leave To Supplement the Petition at 3. It therefore requested the Board to exclude these issues from any further filings by Citizens. *Id.* at 2-3. However, the Board's Order of July 5, 2006, granting Citizens' Motion to Supplement, made no such limitation.

Thus, AmerGen has already requested the Board to exclude the allegations that it is now complaining about once more. The Board implicitly rejected the same complaint about the same allegations. AmerGen is now merely attempting to take a second bite at the apple without making any new arguments in the hope it will now get a more palatable ruling than before. To avoid inconsistency, the Board should once more ignore or reject these complaints.

#### **V. All New Allegations Are Based on the New Commitments**

Information which fills a prior omission, by its nature, is information not previously available, and is materially different from information previously available. Entergy Nuclear Vermont Yankee, L.L.C. (Vermont Yankee Nuclear Power Station), LBP-05-32, 62 NRC 813 (2005). The Board in Vermont Yankee first admitted a contention of omission challenging an

applicant's failure to perform structural and seismic analyses. Id. at 820. After the applicant later performed structural and seismic analyses, the Board granted the applicant's motion to dismiss the contention as moot, and permitted the petitioner to file a new contention within 20 days. Id. The petitioner then filed a new contention challenging the adequacy of the structural and seismic analyses. Id. The Board held that the new contention "clearly met" the requirements of 10 C.F.R. 2.309(f)(2)(i) and (ii). Id. It found that, because the analyses "filled a prior omission," they "necessarily constitute 'information . . . not previously available,'" and that, "since something is obviously different than nothing," the analyses were "also 'information . . . materially different than information previously available.'" Id.; 10 C.F.R. §2.309(f)(2)(i)-(ii).

The facts of the present case directly parallel those of Vermont Yankee, with one minor inconsequential complication; here two new commitments were made rather than one. Citizens' originally admitted contention challenging AmerGen's failure to provide a plan for periodic UT testing in the sand bed region of the drywell—determined by the Board to be a contention of omission—was dismissed as moot after AmerGen docketed, on April 4, 2006, a commitment to adopt certain aging management procedures that included performing visual coating integrity monitoring and UT testing every 10 years over the 20-year relicensing period. Just as it did in Vermont Yankee, when the Board granted AmerGen's motion to dismiss Citizens' contention of omission as moot, it invited Citizens to file a new substantive contention within 20 days.

On June 20, 2006, AmerGen docketed another commitment letter setting out an integrated monitoring plan for the sand bed region which included components to monitor moisture and coating integrity, and responses to wet conditions and coating failure. The plan also discussed the intended acceptance criteria and methods of statistical analysis. Like the

structural and seismic analyses in Vermont Yankee, the new components of AmerGen's aging management regime for the sand bed region provided in the commitments filled the prior omission of a plan for periodic UT testing in the sand bed region, leading the Board to dismiss Citizens' contention of omission. As the Vermont Yankee Board found Entergy's structural and seismic analyses to "necessarily constitute" information not previously available and materially different than previously available information upon which contentions may be based, the new elements of AmerGen's aging management regime proposed by AmerGen's April 4 and Jun 20 commitments also "necessarily constitute" information not previously available and materially different from previously available information. Id. at 820. As illustrated below, Citizens base their new contention and allegations on these new elements of AmerGen's monitoring plan for the sand bed region.

AmerGen mistakenly asserts that Citizens' allegation that the proposed acceptance criteria are inadequate is not based on the April 4 or June 20 commitments. AmerGen's Answer at 7. In doing so, AmerGen claims that "there is nothing in AmerGen's April 4 or June 20 commitments that adds to, or modifies, the acceptance criteria that have been in effect for years and have been used to assess" UT results. Id. AmerGen's reasoning misapprehends the basis of this allegation. Citizens do not challenge the acceptance criteria AmerGen has applied during the existing maintenance regime. Citizens challenge AmerGen's proposed usage of these inadequate acceptance criteria as part of the monitoring plan for the drywell shell in the future. When Citizens filed their original contention, AmerGen's aging management regime did not provide acceptance criteria. In its April 3 and April 5 responses to NRC Staff Requests for Additional Information, AmerGen discussed the application of its existing acceptance criteria. Ex. NC 1 at 7-8; Ex. NC 2 at 5. AmerGen then formally adopted the old acceptance criteria for

use in the future monitoring in its June 20 commitments when it stated that "UT results will be evaluated per the existing program." Letter from Gallagher to NRC, dated June 20, 2006, Enclosure 2 at 3. AmerGen's June 20 commitment adopting this obsolete acceptance criteria filled the prior omission of acceptance criteria, and it is at the heart of this allegation.

Three allegations from Citizens' June 23 petition remained unchanged by their Supplement: 1) the scope of the UT monitoring is insufficient to systematically identify and sufficiently test all the degraded areas of the shell in the sand bed region, 2) the quality assurance for the measurements is inadequate, and 3) the methods proposed to analyze the UT results are flawed. All three allegations are based on new components added to the testing regime by AmerGen's new commitments.

AmerGen asserts that, because the new procedures set forth in its April 4 commitments provide that future UT is to be conducted using the same spatial scope used in tests performed in 1992, 1994 and 1996, Citizens' allegation regarding AmerGen's proposed scope of monitoring is not related to new program commitments or based upon any material new information. First, it is important to note that AmerGen does not dispute the section of Citizens' allegation asserting that the scope must include another type of UT testing. Citizens' Petition at 10; AmerGen's Answer at 11-12. Second, AmerGen misunderstands the new information requirement. It is not relevant that the scope AmerGen chose to use in the future had also been used in the past. Because the April 4, 2006 commitments filled the omission of a specified spatial scope in AmerGen's monitoring plan for the future, it is materially different new information regarding the aging management regime that would be employed for any operations after the existing license expires.

AmerGen erroneously contends that Citizens' allegation that the quality assurance for the measurements is inadequate is not based on new information, but on AmerGen's anomalous 1996 data. AmerGen's Answer at 11-12. AmerGen fails to note that it consistently refused to provide the 1996 data to Citizens and Citizens only obtained this information from AmerGen's April 5, 2006 submission to the NRC. Ex. NC 1. Because AmerGen were relying on the 1996 results to make its safety case in that submission, Citizens discovered in April 2006 that the quality assurance techniques were inadequate. This discovery was later confirmed by AmerGen's admission in the June 20, 2006 commitments that the 1996 results were anomalous and commitments to do more quality assurance.

AmerGen next asserts that because its UT measurement data will be analyzed using statistical techniques it had employed in past testing, Citizens allegation is not based on new or materially different information. AmerGen's Answer at 12. As AmerGen observes, the statistical technique to be used was not set forth in the April 4 commitments; rather, it was delineated in AmerGen's response to the NRC Staff's Request for Additional Information, dated April 3, 2006, which was sent to NRC Staff by email dated April 24, 2006 (Ex. NC 2 at 1-2) and then specified formally in the June 20, 2006 Commitments. Neither NRC Staff, nor Citizens knew what statistical technique AmerGen would employ to analyze the future UT measurements until that date, because AmerGen's then-proposed regime failed to specify how this would be done. The specification of statistical technique filled an omission and is therefore necessarily materially different new information.

Further, AmerGen incorrectly states that this allegation does not challenge its new periodic UT measurement commitments because it "instead challenges the adequacy of the statistical methods used to assess the data *from* the UT measurements." AmerGen's Answer at



12. Here, AmerGen's argument is incomprehensible. In fact, Citizens challenge the adequacy of the statistical method AmerGen has proposed to assess its UT measurements as part of its UT measurement program for the sand bed region, which is an integrated part of its aging management regime. UT measurements would be meaningless without analysis. The statistical analysis of UT measurements is an essential part of the UT monitoring regime. AmerGen's attempt to distinguish between the taking of the results and their analysis is utterly specious.

Citizens set forth two new allegations in their Supplement based on new elements proposed by AmerGen's June 20 commitments: 1) the monitoring for moisture and coating integrity is inadequate and 2) the response to wet conditions and coating failure is inadequate. AmerGen keenly observes that these new allegations were not included in Citizens' Petition responding to the April 4, 2006 commitments. This is hardly surprising because these two allegations are based on procedures that were not part of AmerGen's UT testing program until they were included in AmerGen's June 20 commitments in a way that was linked to UT testing.

AmerGen's assertion that Citizens' allegation regarding monitoring for moisture and coating integrity is not based on any new information contained in AmerGen's June 20 commitment is flatly incorrect. In its June 20 commitments, AmerGen proposed procedures to visually monitor the sand bed drains "daily during refueling outages," and "quarterly during the plant operating cycle," Letter from Gallagher to NRC, dated June 20, 2006, Enclosure 2 at 3-4. This is in contrast with the procedure set forth in its April 4 commitments, which proposed to monitor the sand bed drains "periodically" and did not link that monitoring to UT testing. Letter from Gallagher to NRC, dated April 4, 2006 Enclosure at 2. Certainly, unspecified periodic monitoring without any follow up is a far cry from daily monitoring during refueling outages and quarterly monitoring during normal operations with a specified response. Further, AmerGen's

June 20 commitments proposed a complete visual inspection of the coating at every other refueling outage and, if water is detected in the sand bed drains, before exiting the refueling outage. New Commitments at 3-4. This is markedly different from the procedure proposed in its April 4 commitments, where AmerGen proposed to perform a visual inspection of the coating at a fixed periodicity. Letter from Gallagher to NRC, dated April 4, 2006 Enclosure at 1.

Therefore, the allegations about the adequacy of the June 20 commitment to visually monitor the sand bed drains, visually monitor the coating in response to wet conditions, and carry out UT testing in response to wet conditions and coating failure, were based on new and materially different information in the June 20, 2006 commitments.

Further, AmerGen offers nothing more than a mere conclusory statement in its contention that Citizens' allegation regarding its response to wet conditions and coating failure is not based on any new information contained in AmerGen's June 20 commitment. AmerGen's Answer at 11. Contrary to this assertion, AmerGen, in its June 20 commitments, proposed to perform UT testing on "any area in the sand bed region where visual inspection indicates the coating is damaged and corrosion has occurred." New Commitments at 3-4. Citizens based their allegation on this new commitment. Prior to this June 20 commitment, AmerGen's monitoring regime did not contemplate such action. Accordingly, the allegation about the response to the new commitments to monitor moisture and coating integrity contained in the June 20 Commitment were based new and materially different information.

In summary, all of the allegations in the new contention are based on the new commitments. The two new commitments added many new measurements and responses to the previous aging management regime, and clarified what methods would be employed to carry out the testing and analysis that had previously been omitted. Citizens' contention is firmly based

upon the new commitments, as required by the Board's most recent Orders. Furthermore, because all of this information filled prior omissions in the monitoring regime it is necessarily new, materially different information. Citizens' contention therefore satisfies 10 C.F.R. § 2.309(f)(2)(i) and (ii), contrary to AmerGen's assertions.

## **VI. All New Allegations Relate to the UT Testing Program**

As anticipated, AmerGen has argued that some of the allegations stray beyond the confines of the Board's instructions. However, this is incorrect, because AmerGen has stressed that the commitments regarding the aging management of the drywell liner in the sand bed region form an "integrated package." Ex. NC 4 at 55:23-27.<sup>2</sup> The veracity of this statement is confirmed when AmerGen tries to argue that its testing regime is sufficiently adaptive in terms of frequency. AmerGen Ans. at 13-16. AmerGen admits that it must do a statistical analysis of the UT results, check operability, and justify operation to the next inspection. *Id.* at 15. This at least raises the issues of how the statistical analysis of the results should be done, how much uncertainty is permissible in the results, and what will be regarded as acceptable, and how potential corrosion will be projected forward. AmerGen thus effectively concedes that allegations about statistical analysis, spatial scope, acceptance criteria, and the potential for corrosive conditions to occur are implicitly raised by the allegation regarding monitoring frequency, which as discussed above is properly pled.

Furthermore, in discussing the material disputes that underlie the allegation about UT monitoring frequency in this submission, Citizens referred to all the other allegations in the contention except for the allegation about quality assurance. Thus, Citizens have explicitly included in the contention disputed issues that are implicit in the allegation regarding monitoring

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<sup>2</sup> Ironically AmerGen misquotes itself when it discusses the "integrated package" issue in footnote 7 of its Answer. The integrated package referred to was in fact the suite of measures that are applicable to the sand bed region, not the whole vessel.

frequency. Even AmerGen does not dispute that the monitoring frequency allegation is related to the UT testing program. All the implicit issues are therefore also related to the UT testing program. Indeed, it would make no sense to admit the allegation regarding UT monitoring frequency, but then deny the others, because the others are necessarily raised by the monitoring frequency allegation. They are therefore just as closely related to the UT testing program as the frequency issue.

Moreover, most of the other allegations in the contention are, on their face, about the UT testing program. The allegation about scope concerns where to take UT tests, the allegations about statistical analysis and acceptance criteria concern how to interpret the results from the UT tests, and the allegation about quality assurance concerns how to ensure the UT tests are accurate.

In addition, Citizens have shown that without any monitoring for corrosive conditions, UT measurements would have to be infeasibly frequent to ensure that safety margins continue to be met. E.g. Supplement at 11. Tacitly acknowledging this fact, AmerGen has proposed to monitor for corrosive conditions and adapt its UT testing program to the results of the corrosive conditions monitoring. However, as the allegation regarding frequency states, if the monitoring of and response to corrosive conditions is inadequate, UT measurements will be taken too infrequently to maintain safety margins. Thus, because the monitoring and response to corrosive conditions are an essential part of the UT testing program, the adequacy of the corrosive conditions monitoring and response is an appropriate topic for this submission.

**VII. All Allegations Are Timely And Any Allegations That Are Outside The Scope Of The Board's Order Are Otherwise Admissible**

AmerGen has acknowledged that the allegation regarding UT testing frequency in the contention is within the scope of the Board's Orders of June 6, 2006 and July 5, 2006. AmerGen

Ans. at 6. Thus, there is no dispute that Citizens have properly complied with those Orders, at least in part. The main dispute is whether the other allegations come within the terms of those Orders. Citizens have pleaded the other allegations in the good faith belief that they are within the terms of the Board's most recent Orders. However, even if the Board decides that the other allegations are not admissible within the terms of those Orders, they would still be admissible as new contentions because they are otherwise admissible pursuant to 10 C.F.R. § 2.309(f).

The Board decided to hold this proceeding open to allow Citizens to submit a revised contention based on the adequacy of AmerGen's UT testing program. AmerGen does not dispute that Citizens have tried to do precisely that. However, because the proceeding remains open, Citizens may also submit collateral issues outside the scope of the Board's invitations, provided they meet the requirements of 10 C.F.R. § 2.309(f). Although AmerGen appears to question this logic, it offers little beyond a conclusory assertion in this regard. AmerGen Ans. at 4-5. All AmerGen succeeds in showing is that the standard for proper pleading of contentions, irrespective of whether a contention is inside or outside the terms of the Board's invitations, is governed by 10 C.F.R. § 2.309(f). This is hardly a surprise and is irrelevant to the issue at hand.

For all the allegations in the contention, Citizens properly pleaded that they met the requirements of 10 C.F.R. § 2.309(f). For five of the six allegations that AmerGen asserts are outside the scope of the Board's invitations, AmerGen does not even allege any pleading deficiency beyond timeliness and compliance with the Board's most recent Orders. Having discussed compliance with those Orders above, the only remaining issue is whether these allegations are timely even if they are outside the scope of the Orders.

Petitioners may add or amend contentions after filing their initial petition, so long as they act in accordance with 10 C.F.R. § 2.309(f)(2). See Entergy Nuclear Vermont Yankee, L.L.C.

(Vermont Yankee Nuclear Power Station), LBP-05-32, 62 NRC 813 (2005). The Commission's regulations allow for a new or amended contention to be filed upon a showing that:

- (i) The information upon which the amended or new contention is based was not previously available;
- (ii) The information upon which the amended or new contention is based is materially different than information previously available; and
- (iii) The amended or new contention has been submitted in a timely fashion based on the availability of the subsequent information.

10 C.F.R. § 2.309(f)(2)(i)-(iii).

When the initial Petition was submitted, AmerGen proposed to rely solely upon visual inspection to monitor for further corrosion of the already severely degraded drywell shell. After three amendments to the proposed aging management regime for the drywell shell, it has now proposed a monitoring program that includes a mixture of monitoring for corrosive conditions and ultrasonic ("UT") testing. Because Citizens' allegations all relate to the newly proposed testing regime, which did not exist at the time the initial petition was filed, they are necessarily timely. Furthermore, all but one of exhibits submitted to support the new contention were obtained after April 4, 2006, when AmerGen amended its monitoring regime. All of the new exhibits also contain material, new information which Citizens have used to formulate their new contention.

There can be no doubt that Citizens could not have made the new contention at the time they filed the initial contention, because AmerGen had not proposed any UT testing in the License Renewal Application. Citizens could hardly contend that the procedures for a program that did not exist were inadequate. In AmerGen's response to the initial petition, AmerGen

undertook to carry out one round of UT measurements before the existing operating license expired, but did not specify how many points would be sampled, where the measurements would be carried out, what acceptance criteria would be used, or how the results would be statistically analyzed to determine if corrosion had indeed occurred. AmerGen Initial Ans., dated December 12, 2005, at 26. Citizens replied by stating that a single round of measurements was not sufficient because it could not ensure that the safety margins would be met throughout any extended operating period.

The ASLB subsequently interpreted the contention as a contention of omission about the lack of UT measurements during any extended operating period. Thus, Citizens could not have previously contended that the methods to be employed for the UT measurements during any extended operating period were inadequate, simply because no such measurements were proposed. Measurements in that timeframe were formally proposed for the first time on April 4, 2006 and the procedures for the measurements were modified on June 20, 2006. Thus, all the information about the way in which these newly proposed measurements will be taken and interpreted is new and material and makes the contention timely with regard to actions that may occur after the end of the current license.

Even for the proposed 2006 measurements, Citizens had no detailed information about AmerGen's proposal at the time they replied. AmerGen merely stated that the program would involve UT measurements and it would be done once before the end of the current license. Since the initial Petition was admitted, Citizens have received much more information about the UT testing proposal and now better understand the deficiencies of AmerGen's approach. Thus, the new contention is much more specific and raises issues concerning the adequacy of the program, not its omission.

More specifically, on May 15, 2006 and June 2, 2006 AmerGen provided Citizens with thousands of documents through the document disclosure process. Citizens have also obtained copies of recent AmerGen's submissions to the NRC regarding issues relevant to the contention and have obtained other materials from the NRC. The documents obtained from AmerGen during the document disclosure process, such as Exhibits NC 3 and NC 5, are Bates stamped.

At the individual Exhibit level, Exhibit NC 1 was sent to the NRC by AmerGen on April 5, 2006, one day after the first commitment letter, and obtained by Citizens thereafter. From this exhibit, among other things, Citizens learned the following for the first time:

- i) the results of the 1996 UT measurements were anomalous, but AmerGen had relied on the anomalous results to try to convince the NRC that corrosion had stopped;
- ii) average measured corrosion rates had exceeded 0.017 inches per year prior to 1992;
- iii) the thinnest local measurement taken was 0.603 inches from the inside and 0.618 inches from the outside;
- iv) AmerGen had not provided an estimate of how uncertain the prediction of zero corrosion was, and had not calculated a time at which new measurements would be required because of the uncertainty in the prediction;
- v) areas smaller than one square foot had to be thicker than 0.536 inches;
- vi) no contiguous area thinner than 0.736 inches in each bay should exceed one square foot;
- vii) the acceptance criterion for the total area thinner than 0.736 inches was derived from a model that assumed only one square 12 inch by 12 inch area per bay was thinner than 0.736 inches and also assumed axial symmetry; and



viii) the acceptance criterion for areas less than 2.5 inches in diameter is 0.49 inches.

Similarly, Exhibit 2, sent by AmerGen to the NRC on April 24, 2006, and obtained by Citizens thereafter showed for the first time that:

- i) AmerGen had not been able to calculate how close two areas of less than 0.736 inches thick could be before buckling could occur, therefore AmerGen had applied an acceptance criterion that the total area thinner than 0.736 inches should be less than one square foot;
- ii) over 20 areas thinner than 0.736 inches have been identified and their total area was estimated at 0.68 square feet;
- iii) AmerGen provided neither an analysis of the uncertainty in this estimate, nor an estimate of the probability that the total area thinner than 0.736 inches is greater than one square foot.

Exhibit NC 3, received in May in the first set of document disclosures, showed for the first time that the areas that AmerGen could test from the inside of the drywell could not extend to all the areas that were severely corroded. Thus, the proposal to measure a number of 6 inch by 6 inch areas from the inside of the shell could not find the total area below 0.736 inches, even though that total area is required to test operability. Using the information in Exhibit NC 3 Citizens were able to provide an estimate of how close the vessel was to failing the one square foot acceptance criterion and showed that the vessel was within 0.02 inches of that safety margin.

Exhibit NC 4, dated June 1, 2006, showed Citizens for the first time that AmerGen acknowledged that the 1996 results were anomalous. It also showed that NRC technical staff shared the concerns of Citizens about the adequacy of the monitoring program.

Exhibit NC 5, obtained from AmerGen in the document disclosure process, showed Citizens that AmerGen's statistical approach was inappropriately based on two-side Gaussian statistics, that AmerGen was inappropriately assuming linear corrosion over time, that the estimates of future corrosion were based on 5% uncertainty being acceptable, and that at least 4 measurements over time were required to make an estimate of the uncertainty in the corrosion rate.

Exhibit NC 6, also received as part of the document disclosure process, showed that as a result of the error in its choice of statistical models, AmerGen was not including the thinnest measured values in the averages that it was reporting. It also showed that the standard error of UT measurements in some areas was over 0.02 inches, showing that the UT measurement program was not accurate enough to detect whether safety margins of 0.02 inches or less were already being exceeded.

Exhibits NC 7 and NC 8, also received as part of the document disclosure process, provided more details on the statistical analysis and the physical dimensions of the vessel and the configuration of the concrete inside the vessel. Finally, Exhibit NC 9, also received as part of the document disclosure process, showed that corrosion rates as high as 0.035 inches per year had been observed. From this, Citizens concluded that the 0.02 inch safety margin, even if present, could be violated within a year.

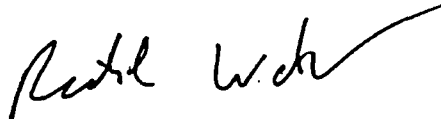
All of these pieces of information are highly material and form part of the basis of the new contention. Thus, the new contention is not only based on the new commitments made by AmerGen on April 4, 2006 and June 20, 2006, it is also based on a wealth of new information received by Citizens since April 4, 2006. There can be no doubt that the contention satisfies the requirements of 10 C.F.R. § 2.309(f)(2)(i) and (ii) because that new information was highly

material, as demonstrated above. Furthermore the Petition was submitted in a timeframe ordered by the ASLB for response to AmerGen's April 4, 2006 commitment. Because of the other new information cited in support of the new contention was received by Citizens after that date, there can be no doubt that the new contention was timely submitted and meets the requirements of 10 C.F.R. § 2.309(f)(2)(iii) in that regard.

### CONCLUSION

For the foregoing reasons, the ASLB should admit the proposed new contention and grant Citizens a hearing on the issues raised.

Respectfully submitted



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Dated: August 18, 2006

UNITED STATES OF AMERICA  
BEFORE THE NUCLEAR REGULATORY COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of	)	
	)	Docket No. 50-0219-LR
AMERGEN ENERGY COMPANY, LLC	)	
	)	ASLB No. 06-844-01-LR
(License Renewal for the Oyster Creek	)	
Nuclear Generating Station)	)	August 18, 2006
	)	

CERTIFICATE OF SERVICE

I hereby certify that I caused the foregoing reply Brief to be sent this 18th day of August, 2006 via email and U.S. Postal Service, as designated below, to each of the following:

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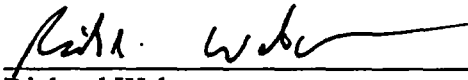
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