

UNITED STATES NUCLEAR REGULATORY COMMISSION

Draft License Renewal Interim Staff Guidance LR-ISG-2009-01:

Staff Guidance Regarding Plant-Specific Aging Management Review and Aging Management

Program for the Neutron-Absorber Material in the Spent Fuel Pool Associated with License

Renewal Applications

Solicitation of Public Comment

[NRC-2009-0521]

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Solicitation of Public Comment

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) requests public comment on a proposed draft License Renewal Interim Staff Guidance, (LR-ISG) LR-ISG-2009-01, "Staff Guidance Regarding Plant-Specific Aging Management Review and Aging Management Program for Neutron-Absorbing Material in Spent Fuel Pools." This LR-ISG provides guidance to address the potential loss of material and loss of neutron-absorbing capability in spent fuel pools during the period of extended operation. This draft LR-ISG contains a proposed aging management program that can address this issue. The draft LR-ISG is located in the Agencywide Documents Access and Management System (ADAMS) ML091590539.

DATES: Comments may be submitted by (insert 30 days after publication in the *Federal Register*). Comments received after this date will be considered, if it is practical to do so, but the Commission is able to ensure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any one of the following methods. Please include Docket ID **NRC-2009-0521** in the subject line of your comments. Comments submitted in writing or in electronic form will be posted on the NRC website and on the Federal rulemaking

website Regulations.gov. Because your comments will not be edited to remove any identifying or contact information, the NRC cautions you against including any information in your submission that you do not want to be publicly disclosed.

The NRC requests that any party soliciting or aggregating comments received from other persons for submission to the NRC inform those persons that the NRC will not edit their comments to remove any identifying or contact information, and therefore, they should not include any information in their comments that they do not want publicly disclosed.

Federal Rulemaking Website: Go to <http://www.regulations.gov> and search for documents filed under Docket ID **NRC-2009-0521**. Address questions about NRC dockets to Carol Gallagher 301-492-3668; e-mail Carol.Gallagher@nrc.gov.

Mail comments to: Michael T. Lesar, Chief, Rulemaking and Directives Branch (RDB), Division of Administrative Services, Office of Administration, Mail Stop: TWB-05-B01M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by fax to RDB at (301) 492-3446.

You can access publicly available documents related to this notice using the following methods:

NRC's Public Document Room (PDR): The public may examine and have copied for a fee publicly available documents at the NRC's PDR, Public File Area O1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland.

NRC's Agencywide Documents Access and Management System (ADAMS): Publicly available documents created or received at the NRC are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this page, the public can gain entry into ADAMS, which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the

documents located in ADAMS, contact the NRC's PDR reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov.

Federal Rulemaking Website: Public comments and supporting materials related to this notice can be found at <http://www.regulations.gov> by searching on Docket ID: **NRC-2009-0521**.

FOR FURTHER INFORMATION CONTACT: Mr. Ian Spivack, Project Manager, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; telephone 301-415-2564 or by e-mail at ian.spivack@nrc.gov.

The NRC staff is issuing this notice to solicit public comments on the proposed LR-ISG-2009-01. After the NRC staff considers any public comments, it will make a determination regarding issuance of the proposed LR-ISG.

Dated at Rockville, Maryland this 23rd day of November, 2009.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Samson S. Lee, Deputy Director
Division of License Renewal
Office of Nuclear Reactor Regulation

DRAFT LICENSE RENEWAL INTERIM STAFF GUIDANCE,
LR-ISG-2009-01: STAFF GUIDANCE REGARDING PLANT-SPECIFIC AGING
MANAGEMENT REVIEW AND AGING MANAGEMENT PROGRAM FOR
NEUTRON-ABSORBING MATERIAL IN SPENT FUEL POOLS

INTRODUCTION:

This draft license renewal interim staff guidance (LR-ISG)-2009-01, "Staff Guidance Regarding Plant-Specific Aging Management Review and Aging Management Program for Neutron-Absorber Material in Spent Fuel Pools," provides guidance as to one acceptable approach for managing the effects of aging during the period of extended operation for neutron-absorbing material in spent fuel pools within the scope of the License Renewal Rule [Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."] This draft LR-ISG proposes an aging management program (AMP) to address the potential loss of material and loss of neutron-absorbing capability in spent fuel pools during the period of extended operation. An applicant may reference this proposed program in a license renewal application to demonstrate that the programs at the applicant's facility are acceptable until this guidance is implemented into the next update of the Generic Aging Lessons Learned (GALL) Report, NUREG-1801, Revision 1 (Ref. 1).

This LR-ISG does not apply to Boraflex for which Section XI.M22 of the GALL report describes adequate AMP characteristics.

DISCUSSION:

The Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants NUREG-1800, Revision 1, (SRP-LR, Ref. 2), provides guidance to the U.S. Nuclear

ENCLOSURE

Regulatory Commission (NRC or the staff) reviewers performing safety reviews of applications to renew nuclear power plant licenses in accordance with 10 CFR Part 54. Additionally, pursuant to 10 CFR 54.21, a license renewal applicant is required to demonstrate that the effects of aging on structures and components subject to an aging management review (AMR) will be adequately managed so that the intended function will be maintained consistent with the current licensing basis (CLB) for the period of extended operation. Section 3.3 of the SRP-LR addresses auxiliary systems subject to an AMR and the associated aging management program (AMP) for license renewal, including spent fuel storage. Specifically, as discussed in Section 3.3.2.2.6 of SRP-LR, the neutron-absorber materials used in spent fuel pools are subject to an AMR.

There are many neutron-absorbing materials used by licensees in spent fuel pools, including Boraflex, Boral, Metamic, boron steel, and Carborundum. The GALL Report describes adequate AMP characteristics for Boraflex monitoring in Section XI.M22 and thus is excluded from this ISG. Management of the aging effects of the other materials has generally not been adequately addressed in current guidance.

Recent operating experience has documented several instances of degradation and/or deformation of the neutron-absorbing materials in the spent fuel pools of operating reactors as described in Information Notice 2009-26, "Degradation of Neutron-Absorbing Materials in the Spent Fuel Pool," October 28, 2009 (Ref. 3).

Carborundum

In July 2008, the Palisades Nuclear Plant licensee discovered (Ref. 4) that the region 1 spent fuel pool storage racks contained less neutron-absorbing material than assumed in the spent fuel pool criticality analysis of record resulting in noncompliance with the spent fuel pool criticality requirements in Palisades Technical Specification (TS) 4.3.1.1.b. In response to this concern, on July 15, 2008, the licensee performed “blackness testing” of the region 1 spent fuel pool racks to validate that the racks continue to perform neutron attenuation as credited in the licensee’s criticality analysis of record and to satisfy regulatory requirements and renewed license commitments.

The licensee performed in situ Boron-10 Areal Density Gauge for Evaluating Racks (BADGER) testing of approximately 2 percent of the storage locations, which revealed that the Boron-10 areal density of the spent fuel pool racks was, at a minimum, approximately one-third of its original design value. The neutron-absorbing material, Carborundum, which is relied on to maintain subcriticality in the spent fuel pool, was much less effective than assumed in the criticality analysis. Therefore, region 1 of the spent fuel pool no longer met 10 CFR 50.68, “Criticality Accident Requirements,” or TS 4.3.1.1.b, which require that K-effective (K_{eff}) for region 1 fuel racks be less than or equal to 0.95 if fully flooded with unborated water.

The licensee determined that the apparent cause of the degradation of the Carborundum B_4C plates was the environment of the spent fuel pool. The exact degradation mechanism or mechanisms are not clearly understood but likely involve changes in the physical properties of the Carborundum B_4C plates that occur during prolonged exposure to the spent fuel pool environment. The swelling of the racks, which prevents fuel assemblies from being inserted or

removed, indicates a potential problem with neutron-absorbing capacity. The swelling in the racks could result from dimensional changes of the Carborundum, which may be replaced by a gas-filled space, and could challenge the assumptions of the criticality analysis. This degradation may have been occurring as early as 1988 when the first impedance to inserting a fuel assembly was documented at Palisades. Since there was no surveillance of the neutron-absorbing capacity of the material, the start of the degradation and the degradation rate are unknown.

Boral

A license renewal application supplement dated January 19, 2009 (Ref. 5), indicated that licensee inspections of the Boral neutron-absorber material coupons at the Beaver Valley Power Station in 2007 identified numerous blisters of the aluminum cladding, while only a few small blisters were identified in 2002. In region 1 fuel storage racks, blisters can displace water from the flux traps between storage cells and challenge dimensional assumptions used in the criticality analysis. Based on these inspections, the licensee determined that the Boral aluminum cladding blistering was an aging effect and that it would credit the existing Boral Surveillance Program with management of this aging.

A license renewal application letter dated May 13, 2009 (Ref. 6), indicated that the licensee at the Susquehanna Steam Electric Station identified a significant bulge in a poison can wall. Although the licensee has not definitively determined the cause of the bulge, the licensee's letter states that it may be the result of hydrogen gas generation from either moisture contained in the Boral at the time of manufacture or a leaking seal weld in the poison can. This bulge prevented the placement of a blade guide into the deformed cell.

Similarly, the spent fuel pool water chemistry program at Vogtle documented an increase in the concentration of aluminum, which indicates loss of material from the Boral neutron absorbing material (Ref. 7). Further, blistering of the Boral neutron-absorbing material has also been observed at Seabrook (Ref. 8).

Electric Power Research Institute Report TR1013721 (Ref. 9), states the following concerning Boral:

“Similarly, in-pool blistering of BORAL™ has, to date, proved to be primarily an esthetic effect; however, the potential effects on fuel assembly clearance and the reactivity state of Region 1 racks have been noted. In addition, it has been noted that, in a few instances, rack cell wall deformation has occurred making it difficult to remove fuel. With plant life extension now the norm at most [light water reactors] LWRs in the US, some BORAL™, which originally had a design service life of 40 years, will be in service more than 60 years. This suggests a prudent course is continued vigilance and surveillance so that onset of any degradation can be detected early and appropriate mitigation measures applied.”

ACTION:

The recent instances of degradation and deformation of neutron-absorbing materials in spent fuel pools discussed above have lead the staff to re-evaluate the SRP-LR and GALL guidance for AMRs and associated AMPs in this area. Based on the operating experience and other industry information, the staff has identified that the current license renewal guidance documents do not provide sufficient guidance to address the information that should be included

in a LRA to demonstrate adequate management of the potential loss of material and loss of neutron-absorbing capability of the neutron-absorber material in spent fuel pools for the period of extended operation.

The staff has determined that existing guidance requires clarification to address that for each type of neutron-absorber material used in the applicant's spent fuel pool(s), the applicant should demonstrate in their specific spent fuel pool environment for their specific material(s) that degradation has not occurred in a manner that could adversely impact the material's intended function. A plant-specific AMP should be submitted that addresses each neutron-absorber material in order to detect and mitigate the aging of the material that could impact the neutron absorbing functionality during the period of extended operation. The applicant should consider both plant-specific and industry operating experience in its LRA. The applicant's plant-specific operating experience should be based on either data from on-going inspection and/or monitoring programs, or from other operational findings. The use of test data that does not bound the age of the material at the end of the period of extended operation is not sufficient since there is not sufficient evidence that extrapolation or accelerated testing is valid in these cases. For instance, the licensee for Palisades extrapolated data through the period of extended operation which projected that no significant degradation was to be expected, but a surveillance inspection revealed unexpected degradation of the neutron absorbing capacity of Carborundum. If the applicant has a surveillance program in place for the material, a description of the program and results can be applied to the AMR as operating experience. This program should provide reasonable assurance that the material has been properly managed and that future degradation will be detected in the period of extended operation.

The staff proposes that changes to the GALL Report are needed regarding the material description in GALL table line items, as well as the addition of a new AMP. The staff also proposes that changes are needed to Section 3.3.2.2.6 of the SRP-LR regarding the information that should be included in the AMP description. The staff proposes clarifications are made to state that continuation of an on-going coupon inspection program is adequate, but if there is no on-going coupon sample program, then the LRA will need to propose a new inspection program.

GALL Report ,Vol. 1

In Table 3 of NUREG-1801, Vol. 1, Rev. 1, for the “Component” for line item with “ID” of 13:

Current wording:

“Boral, boron steel spent fuel storage racks neutron-absorbing sheets exposed to treated water or treated borated water”

Revise to:

“Boral, boron steel and other materials (excluding Boraflex) spent fuel storage racks neutron-absorbing sheets exposed to treated water or treated borated water and radiation effects”

GALL Report, Vol. 2

Changes to Chapter VII, Section A2 Table (pages VII A2-2 and VII A2-5), see new italics text under columns “Material” and “Aging Effect/Mechanism.”

VII AUXILIARY SYSTEMS A2 Spent Fuel Storage							
Item	Link	Structure and/or Component	Material	Environment	Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
VII.A2-5 (A-88)	VII.A2.1-b	Spent fuel storage racks neutron-absorbing sheets – PWR	Boral, boron steel <i>and other materials (excluding Boraflex)</i>	Treated borated water	Reduction of neutron-absorbing capacity, <i>change in dimensions, and loss of material, due to the effects of the SFP environment</i>	Monitoring of Neutron Absorbing Materials Other than Boraflex	No
VII.A2-3 (A-89)	VII.A2.1-b	Spent fuel storage racks neutron-absorbing sheets – BWR	Boral, boron steel <i>and other materials (excluding Boraflex)</i>	Treated water	Reduction of neutron-absorbing capacity, <i>change in dimensions, and loss of material, due to the effects of the SFP environment</i>	Monitoring of Neutron Absorbing Materials Other than Boraflex	No

SRP-LR

Delete Section 3.3.2.2.6 of the SRP-LR.

In Table 3.3-1:

Line 13:

Current wording under “Component”:

“Boral, boron steel spent fuel storage racks neutron-absorbing sheets exposed to treated water or treated borated water”

Revise to:

“Boral, boron steel and other materials (excluding Boraflex) spent fuel storage pool neutron-absorbing materials exposed to treated water or treated borated water and radiation effects”

Current wording under “Aging Effect/Mechanism”:

“Reduction of neutron-absorbing capacity and loss of material due to general corrosion”

Revise to:

“Reduction of neutron-absorbing capacity, change in dimensions and loss of material due to the effects of the SFP environment”

BACKFITTING DISCUSSION:

This LR-ISG contains guidance as to one acceptable approach for managing the effects of aging during the period of extended operation for neutron-absorbing material in the spent fuel pool within the scope of license renewal. Set forth below is the staff's discussion on: (i) whether this LR-ISG addresses “newly identified” systems, structures, or components (SSCs) subject to aging management under 10 CFR 54.37(b), and (ii) compliance with the requirements of the Backfit Rule, 10 CFR 50.109.

Newly Identified SSCs under 10 CFR 54.37(b)

The NRC is not proposing to treat neutron-absorbing materials (other than Boraflex) in the spent fuel pools as “newly identified” SSCs under § 54.37(b). Therefore, any additional action on such materials which the NRC may impose upon current holders of renewed operating licenses under Part 54 would not fall within the scope of § 54.37(b). The NRC would have to address compliance with the requirements of § 50.109, before it may impose any new aging management requirements for these neutron absorbing materials on current holders of renewed operating licenses (see discussion below).

Compliance with the Backfit Rule

Issuance of this ISG does not constitute backfitting as defined in 10 CFR 50.109(a)(1), and the NRC staff did not prepare a backfit analysis for issuing this LR-ISG. There are several rationales for this conclusion, depending upon the status of the nuclear power plant licensee.

Current OL holders who have not applied for renewed licenses

This ISG is not directed at holders of (original) operating licenses. Although the NRC is evaluating the issues identified in this LR-ISG for applicability to holders of original operating licenses, the NRC has not yet determined whether the NRC must institute additional regulatory action to address these issues. Any regulatory requirements imposed by the NRC as the result of this evaluation must be implemented consistent with the provisions of 10 CFR Part 50 and the Backfit Rule. Therefore, issuance of this ISG does not constitute backfitting as applied to current holders of (original) operating licenses.

Licensees who are currently in the license renewal process

This ISG is directed to current applicants for license renewal. However, this ISG is not backfitting as defined in § 50.109(a)(1). This guidance is non-binding and provides one approach acceptable to the NRC staff for managing the effects of aging of neutron-absorbing materials in the spent fuel pools in accordance with the requirements of 10 CFR Part 54.

License renewal applicants are not required to use this guidance. Applicants may elect to propose an alternative approach for managing the aging of neutron-absorbing materials in spent fuel pools during the period of extended operation. In addition, the Backfit Rule does not protect license renewal applicants voluntarily requesting renewed licenses from changes in NRC requirements or guidance on license renewal prior to or during the pendency of their renewal application (Ref. 10). Therefore, issuance of this ISG does not constitute backfitting as applied to current applicants for license renewal.

Licensees who already hold a renewed license

This guidance is also directed to licensees who already hold a renewed license. However, this guidance is non-binding and the ISG does not require current holders of renewed licenses to take any action (*i.e.*, programmatic or plant hardware changes for managing the aging of neutron absorbing materials in spent fuel pools). However, the NRC encourages licensees to consider the information in this LR-ISG and implement voluntary actions consistent with this guidance as they deem appropriate. If, in the future, the NRC decides to take additional action and impose requirements for management of neutron absorbing materials in spent fuel pools, then the NRC will follow the requirements of the Backfit Rule. As noted above under the discussion of newly-identified SSCs, the NRC staff would *not* propose that the Backfit Rule's

requirements may be avoided on the basis that neutron absorbing materials in spent fuel pools constitute “newly identified SSCs” under § 54.37(b).

References

1. NUREG 1801 Revision 1, “Generic Aging Lessons Learned (GALL) Report,” U.S. Nuclear Regulatory Commission, September 2005.
2. NUREG 1800 Revision 1, “Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants,” U.S. Nuclear Regulatory Commission, September 2005.
3. Information Notice 2009-26, “Degradation of Neutron-Absorbing Materials in the Spent Fuel Pool,” October 28, 2009.
4. Letter from Entergy Nuclear Operations, Inc. (Palisades) to the NRC, “Commitments to Address Degraded Spent Fuel Pool Storage Rack Neutron Absorber,” ADAMS Accession Number ML082410132, August 27, 2008.
5. Letter from FirstEnergy Nuclear Operating Company to the NRC, “Supplemental Information for the Review of the Beaver Valley Power Station, Units 1 and 2, License Renewal Application (TAC Nos. MD6593 and MD6594) and License Renewal Application Amendment No. 34,” ADAMS Accession Number ML090220216, January 19, 2009.

6. Letter from PPL Susquehanna, LLC, to the NRC, "Susquehanna, Units 1 and 2 – Request for Additional Information for the Review of License Renewal Application (LRA), Section 3.3.2.2.6," ADAMS Accession Number ML091520031, May 13, 2009.
7. Letter from Southern Nuclear Operating Company, Inc. to the NRC, "Vogtle Electric Generating Plant Units 1 and 2, Application for License Renewal," ADAMS Accession Number ML071840351, June 27, 2007.
8. Letter from FPL Energy Seabrook Station to NRC, "Seabrook Station Boral Spent Fuel Pool Test Coupons Report Pursuant to 10 CFR Part 21.21," ADAMS Accession Number ML032880525, October 6, 2003.
9. EPRI Report TR1013721, "Handbook of Neutron Absorber Materials for Spent Fuel Transportation and Storage Applications," 2006.
10. U.S. Nuclear Regulatory Commission (NRC). 2008. Memorandum from Dale E. Klein, Chairman, to Hubert T. Bell, Office of the Inspector General, "Response to Recommendation 8 of 9/6/07 Audit Report on NRC's License Renewal Program." (April 1, 2008). ADAMS No. ML080870286.

Attached:

Add:

XI.XXXX MONITORING OF NEUTRON ABSORBING MATERIALS OTHER THAN BORAFLEX

Program Description

A monitoring program is implemented to assure that degradation of the neutron-absorbing material used in spent fuel pools that could compromise the criticality analysis will be detected. The applicable aging management program (AMP) relies on periodic inspection, testing, monitoring, and analysis of the criticality design to assure that the required 5% subcriticality margin is maintained during the renewed license period.

Evaluation and Technical Basis

- 1. Scope of Program:** The AMP manages the effects of aging on neutron-absorbing components/materials used in spent fuel racks. For these materials, gamma irradiation and/or long-term exposure to the wet pool environment may cause shrinkage resulting in loss of material, and changes in dimension such as gap formation, formation of blisters, pits and bulges, and potentially resulting in loss of neutron absorbing capability of the material.
- 2. Preventive Actions:** This AMP is a condition monitoring program and therefore there are no preventative actions.
- 3. Parameters Monitored/Inspected:** The parameters monitored include the physical condition of the neutron-absorbing materials, such as in-situ gap formation, geometric

changes in the material (formation of blisters, pits, and bulges) as observed from coupons or in-situ, and decreased boron areal density, etc. The parameters monitored should be directly related to determination of the loss of material or loss of neutron absorption capability of the material(s).

4. **Detection of Aging Effects:** The loss of material and the degradation of the neutron-absorbing material capacity is determined through direct in situ measurement of boron areal density, geometric changes in the material (blistering, pitting, and bulging), detection of gaps through blackness testing and periodic verification of boron loss through areal density measurement of coupons or through techniques such as the “Boron-10 areal density gage for evaluating racks” or BADGER device. The frequency of the inspection and testing depends on the condition of the neutron-absorbing material, with a maximum of ten years.
5. **Monitoring and Trending:** The measurements from periodic inspections and analysis are compared to baseline information or prior measurements and analysis for trend analysis. The approach for relating the measurements to the performance of the spent fuel neutron absorber materials shall be specified by the applicant, considering differences in exposure conditions, vented/non-vented test samples and spent fuel racks, etc.
6. **Acceptance Criteria:** Although the goal is to ensure maintenance of the 5% subcriticality margin for the spent fuel pool, the specific acceptance criteria for the measurements and analyses shall be specified by the applicant.
7. **Corrective Actions:** Corrective actions are initiated if the results from measurements and analysis indicate that the 5% subcriticality margin cannot be maintained because

of the current or projected future degradation of the neutron absorbing material. Corrective actions consist of providing additional neutron-absorbing capacity with an alternate material, or applying other options, which are available to maintain a subcriticality margin of 5%. As discussed in the appendix to this report, the staff finds the requirements of 10 CFR Part 50, Appendix B, acceptable to address the corrective actions.

8. **Confirmation Process:** Site quality assurance (QA) procedures, site review and approval processes, and administrative controls are implemented in accordance with the requirements of 10 CFR Part 50, Appendix B. As discussed in the appendix to this report, the staff finds the requirements of 10 CFR Part 50, Appendix B acceptable to address the confirmation process and administrative controls.
9. **Administrative Controls:** See item 8, above.
10. **Operating Experience:** Applicants for license renewal should reference plant-specific operating experience and industry experience to provide reasonable assurance that the program will be able to detect degradation of the neutron absorbing material. Some of the industry operating experience that should be included is listed below:
 1. Loss of material from the neutron absorbing material has been seen at many plants, including loss of aluminum which was detected by monitoring the aluminum concentration in the spent fuel pool. One instance of this was documented in the Vogtle LRA Water Chemistry Program B.3.28.
 2. Blistering has also been noted at many plants. Examples include blistering at Seabrook and Beaver Valley.

3. The significant loss of neutron-absorbing capacity of the material has only been reported at Palisades.

The applicant should describe how the monitoring program described above is capable of detecting the aforementioned degradation mechanisms.

References

Letter from Entergy Nuclear Operations, Inc. (Palisades) to the NRC, "Commitments to Address Degraded Spent Fuel Pool Storage Rack Neutron Absorber," ADAMS Accession Number ML082410132, August 27, 2008.

Letter from Southern Nuclear Operating Company, Inc. to the NRC, "Vogtle Electric Generating Plant Units 1 and 2 Application for License Renewal," ADAMS Accession Number ML071840351, June 27, 2007.

Letter from FirstEnergy Nuclear Operating Company to the NRC, "Supplemental Information for the Review of the Beaver Valley Power Station, Units 1 and 2, License Renewal Application (TAC Nos. MD6593 and MD6594) and License Renewal Application Amendment No. 34," ADAMS Accession Number ML090220216, January 19, 2009.

Letter from FPL Energy Seabrook Station to NRC, "Seabrook Station Boral Spent Fuel Pool Test Coupons Report Pursuant to 10 CFR Part 21.21," ADAMS Accession Number ML032880525, October 6, 2003.