



Palo Verde Nuclear
Generating Station

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102-05779-DCM/GAM
December 10, 2007

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528, 50-529, and 50-530
Request for Extension to Complete the Final Confirmatory Testing,
Analysis and Validation of Containment Sump Strainers Associated
with NRC Generic Letter 2004-02**

By letter no. 102-05336, dated September 1, 2005, Arizona Public Service Company (APS) submitted to the NRC a response to Request No. 2 in Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors." In that submittal, APS committed to actions that would address the issues identified in the GL, including the installation of new, larger containment sump strainers in PVNGS Units 1, 2, and 3, and the completion of actions needed to confirm the revised containment sump design analyses. Completion dates for several commitments were subsequently updated in APS letters dated March 20, June 29, August 30, and October 12, 2006, and March 2, 2007. In addition, by letter dated December 13, 2006, the NRC approved an extension to install the larger sump strainers in Unit 2 during the spring 2008 refueling outage.

APS has determined that the final confirmatory testing, analysis and validation of containment sump strainers for the PVNGS units will not be able to be completed by December 31, 2007, due to a number of issues including competing vendor resources on closure issues and various revisions to the guidance documents providing the methodologies for performing and validating these tests. Therefore, APS is requesting approval to complete the containment sump strainer confirmatory testing, analysis, and validation for PVNGS Units 1, 2, and 3 by June 30, 2008. This extension request is consistent with Case 2 in the November 8, 2007 NRC letter to the Nuclear Energy Institute (NEI). This request and justification are provided in Enclosure 1. Enclosure 2 contains the list of GL 2004-02 commitments and status or due dates.

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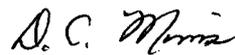
Contingent on NRC approval, APS commits to complete the containment sump strainer confirmatory testing, analysis, and validation for PVNGS Units 1, 2, and 3 by June 30, 2008. APS commits to submit the information from containment sump strainer confirmatory testing, analysis and validation for PVNGS Units 1, 2 and 3 within 90 days of their completion (this will provide information not submitted with the GL 2004-02 supplemental response due by February 29, 2008).

If you have any questions, please contact Glenn A. Michael at (623) 393-5750.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 12/10/07.

Sincerely,



DCM/SAB/GAM/gat

Enclosures: 1. Request for Extension Associated with NRC Generic Letter 2004-02
2. List of Generic Letter 2004-02 Commitments with Status or Due Dates

cc: E. E. Collins Jr. NRC Region IV Regional Administrator
M. T. Markley NRC NRR Project Manager
G. G. Warnick NRC Senior Resident Inspector for PVNGS

Enclosure 1

**Request for Extension Associated
with
NRC Generic Letter (GL) 2004-02**

Extension Requested

Arizona Public Service Company (APS) is requesting approval to complete the GL 2004-02 containment sump strainer confirmatory testing, analysis and validation for PVNGS Units 1, 2, and 3 by June 30, 2008. This extension request is consistent with Case 2 in the November 8, 2007 NRC letter to the Nuclear Energy Institute (NEI). The period of the requested extension for Units 1 and 3 would be from December 31, 2007, until June 30, 2008. The period of the requested extension for Unit 2 would be from the expiration of the currently-approved extension (the end of the spring 2008 refueling outage, approximately May 15, 2008) until June 30, 2008.

Background

APS has aggressively pursued the completion of the design, procurement, installation of the new sump strainers, and the evaluation of all applicable issues. The new, larger containment sump strainers have been installed in PVNGS Unit 1, and installation in Unit 3 will be completed during the current refueling outage (before December 31, 2007). The new sump strainers will be installed in Unit 2 during the spring 2008 refueling outage, as allowed by the extension approved by the NRC in a letter to APS dated December 13, 2006.

Criteria for Extension Requests

By letter dated November 8, 2007, the NRC provided to the Nuclear Energy Institute (NEI) guidance to licensees for pressurized water reactor (PWR) plants for additional time to complete corrective actions for GL 2004-02 (Agencywide Documents Access and Management System accession no. ML073060581). This guidance stated the following for Case 2:

Case 2: Plants for which licensees have determined that testing and/or analyses will not be completed or are not likely to be completed by the end of 2007. Requests for extension under these circumstances should be submitted to the NRC as soon as the licensee believes the circumstances apply, not later than December 10, 2007. Because testing activities are scheduled for late 2007 and the first quarter of 2008, the NRC believes extensions needed in this situation will at most cover a few months. The NRC staff plans to review extension requests of this sort using the criteria of SECY-06-0078. Among other things, these criteria call for the licensee to describe how mitigative measures taken by the licensee will minimize the risk of degraded safety system functions during the extension period. In addition to these criteria, licensees requesting an extension beyond June 30, 2008, should provide a quantitative risk assessment to help support its request and to inform the staff's review of that request.

SECY-06-0078 provided the following guidance:

Proposed extensions to permit changes at the next outage of opportunity after December 2007 may be acceptable if, based on the licensee's request, the staff determines that:

- *the licensee has a plant-specific technical/experimental plan with milestones and schedule to address outstanding technical issues with enough margin to account for uncertainties and*
- *the licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded ECCS and CSS functions during the extension period.*

For proposed extensions beyond several months, a licensee's request will more likely be accepted if the proposed mitigative measures include temporary physical improvements to the ECCS sump or materials inside containment to better ensure a high level of ECCS sump performance.

Plant Specific technical/experimental plan

Enclosure 2 provides the PVNGS plan, status, and schedule for completion of all elements in response to GL 2004-02.

Mitigative Measures

The following mitigative measures will minimize the risk of degraded system functions during the extension period (until June 30, 2008):

- The new, larger containment sump strainers have been installed in PVNGS Unit 1, and installation in Unit 3 will be completed during the current refueling outage (before December 31, 2007). The new sump strainers will be installed in Unit 2 during the spring 2008 refueling outage (to be completed by approximately May 15, 2008), as allowed by the extension approved by the NRC in a letter to APS dated December 13, 2006.
- The new sump strainers have a surface area of approximately 3140 square feet compared with approximately 210 square feet of surface area in the old strainers.
- The new strainers have a nominal hole size of 1/12 inch compared with 1/8 inch for the old strainers.

Enclosure 1
Request for Extension Associated with
NRC Generic Letter (GL) 2004-02

- The installed Fiberfrax insulation, which is a significant debris source, has been removed from PVNGS Units 1 and 2, and is being removed from Unit 3 during the current refueling outage (before December 31, 2007). (Note: PVNGS uses reflective metallic insulation as the primary insulation for the nuclear steam supply system piping and vessels.)
- Compensatory operator actions in response to Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors," have been implemented, as described in APS letter nos. 102-05236, dated March 25, 2005, and 102-05335, dated August 30, 2005.
- Changes in programs and procedures to ensure and/or enhance the control of transportable debris (e.g., insulation, signs, and foreign materials) in containment have been implemented in all three units.

In addition, the following favorable conditions exist at Palo Verde, Units 1, 2, and 3:

- Although Palo Verde uses trisodium phosphate as a containment sump pool pH buffer, no calcium silicate insulation material is used in containment that might react to form calcium phosphate precipitate.
- The new strainer confirmatory head-loss testing, capture ratio verification and chemical effects margin validation have been preliminarily completed. They show a head loss margin of greater than 4 feet at elevated LOCA temperatures. It is expected that the final analyzed tests will verify the acceptability of new sump strainer design margins, without further modifications.

Based on the above, APS believes the risk of any potential degraded system functions due to completing the containment sump strainer confirmatory testing, analysis, and validation for PVNGS Units 1, 2, and 3 during the extension period (until June 30, 2008) is minimal.

Enclosure 2

**List of Generic Letter 2004-02 Commitments
with
Status or Due Dates**

List of Generic Letter 2004-02 Commitments
 (Changes from APS letter no. 102-05651, March 2, 2007, are in bold)

| GL 2004-02 REGULATORY COMMITMENT (from APS letter no. 102-05560 dated August 30, 2006) | LATEST PREVIOUS DUE DATE | REVISED DUE DATE or STATUS |
|---|--|---|
| 1. Evaluate the recommendations contained in the Westinghouse downstream effects evaluation for PVNGS and establish an implementation schedule for appropriate recommendations. (RCTSAI 2826236) | December 31, 2005 | Completed |
| 2. Perform confirmatory head-loss testing of new strainer with plant specific debris to ensure an adequate design. (RCTSAI 2826244) | As soon in 2007 as achievable, and no later than December 31, 2007 | June 30, 2008 |
| 3. Verify that a capture ratio of 97% or higher can be achieved in the final design of the new sump screen to ensure that the fuel evaluation contained in the Westinghouse downstream effects evaluation is bounding. (RCTSAI 2826247) | As soon in 2007 as achievable, and no later than December 31, 2007 | June 30, 2008 |
| 4. Perform sump strainer structural evaluation to ensure seismic and operational integrity. (RCTSAI 2826250) | October 31, 2006 | Completed |
| 5. Validate allocated margins for Chemical Effects in strainer head-loss to ensure an adequate design. (RCTSAI 2826239) | As soon in 2007 as achievable, and no later than December 31, 2007 | June 30, 2008 |
| 6. Perform a confirmatory containment latent debris walkdown of PVNGS Units 1 and 3. (RCTSAI 2826259) [Note: The containment walkdown for transportable debris was completed in Unit 2 as stated in letter no. 102-05336, 9/1/05.] | June 30, 2006 | Completed |

List of Generic Letter 2004-02 Commitments
 (Changes from APS letter no. 102-05651, March 2, 2007, are in bold)

| GL 2004-02 REGULATORY COMMITMENT (from APS letter no. 102-05560 dated August 30, 2006) | LATEST PREVIOUS DUE DATE | REVISED DUE DATE or STATUS |
|--|---|----------------------------------|
| 7. Perform a confirmatory containment unqualified coating walkdown of PVNGS Units 1 and 3. (RCTSAI 2826260) [Note: The containment walkdown for transportable debris was completed in Unit 2 as stated in letter no. 102-05336, 9/1/05.] | June 30, 2006 | Completed |
| 8. Review the existing programmatic controls for containment coatings identified in the response to GL 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System after a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," for their adequacy. (RCTSAI 2826262) | November 30, 2006 | Completed |
| 9. Review the existing programmatic and procedural controls in place to prevent potentially transportable debris (insulation, signs and foreign material) in the containment building to ensure that the bounding assumptions in the design of the new strainers will be maintained. (RCTSAI 28262826263) | November 30, 2006 | Completed |
| 10. Implement in Unit 1 changes to programs and procedures to ensure and/or enhance the control of transportable debris in containment. (RCTSAI 2826264) | 1R13 refueling outage (approx. May 31, 2007) | Completed |
| 11. Implement in Unit 2 changes to programs and procedures to ensure and/or enhance the control of transportable debris in containment. (RCTSAI 2826267) | 2R13 refueling outage (approx. Nov. 30, 2006) | Completed |
| 12. Implement in Unit 3 changes to programs and procedures to ensure and/or enhance the control of transportable debris in containment. (RCTSAI 2826269) | 3R13 refueling outage (approx. Dec. 31, 2007) | No Change |

Enclosure 2

List of Generic Letter 2004-02 Commitments
(Changes from APS letter no. 102-05651, March 2, 2007, are in bold)

| GL 2004-02 REGULATORY COMMITMENT (from APS letter no. 102-05560 dated August 30, 2006) | LATEST PREVIOUS DUE DATE | REVISED DUE DATE or STATUS |
|---|---|---|
| 13. Install larger sump strainers in PVNGS Unit 1. (RCTSAI 2826 277) | 1R13 refueling outage (approx. May 31, 2007) | Completed |
| 14. Install larger sump strainers in PVNGS Unit 2. (RCTSAI 2826278) | 2R14 refueling outage (to begin no later than April 28, 2008) | No change. |
| 15. Install larger sump strainers in PVNGS Unit 3. (RCTSAI 2826284) | 3R13 refueling outage (approx. Dec. 31, 2007) | No change. |
| 16. Remove installed Fiberfrax insulation in PVNGS Unit 1. (RCTSAI 2826282) | 1R13 refueling outage (approx. May 31, 2007) | Completed |
| 17. Remove installed Fiberfrax insulation in PVNGS Unit 2. (RCTSAI 2826283) | 2R13 refueling outage (approx. Nov. 30, 2006) | Completed |
| 18. Remove installed Fiberfrax insulation in PVNGS Unit 3. (RCTSAI 2826284) | 3R13 refueling outage (approx. Dec. 31, 2007) | No change. |

Enclosure 2

List of Generic Letter 2004-02 Commitments
(Changes from APS letter no. 102-05651, March 2, 2007, are in bold)

| GL 2004-02 REGULATORY COMMITMENT (from APS letter no. 102-05560 dated August 30, 2006) | LATEST PREVIOUS DUE DATE | REVISED DUE DATE or STATUS |
|---|---|---|
| 19. After plant specific strainer testing has been completed and the Westinghouse downstream effects evaluation for PVNGS has been evaluated, APS will submit an update to the NRC to report the validation of the allocated margins for chemical effects and identify any recommendations from the Westinghouse evaluation to be implemented. (RCTSAI 2826287) | To be submitted along with the NRC RAI response as soon in 2007 as the results are available, and no later than December 31, 2007 | This item is closed to new commitments #20 and #21 |
| 20. Contingent on NRC approval, APS commits to complete the containment sump strainer confirmatory testing, analysis and validation for PVNGS Units 1, 2 and 3 by June 30, 2008. (RCTSAI 3106850) | New commitment in this letter | June 30, 2008 |
| 21. Submit the information from containment sump strainer confirmatory testing, analysis and validation for PVNGS Units 1, 2 and 3 within 90 days of their completion (this will provide information not submitted with the GL 2004-02 supplemental response due by February 29, 2008). (RCTSAI 3106852) | New commitment in this letter | September 28, 2008 |

References

Arizona Public Service Company Letters

1. Letter no. 102-05221, March 4, 2005, 90-Day Response to NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
2. Letter no. 102-05236, March 25, 2005, Supplement to Responses to Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors," Regarding Operator Actions.

List of Generic Letter 2004-02 Commitments
(Changes from APS letter no. 102-05651, March 2, 2007, are in bold)

3. Letter no. 102-05304, July 9, 2005, Response to NRC Request for Additional Information Related to Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
4. Letter no. 102-05335, August 30, 2005, Responses to Request for Additional Information Related to Potential Operator Actions for Containment Sump Debris Blockage (NRC Bulletin 2003-01).
5. Letter no. 102-05336, September 1, 2005, Response to Request No. 2 in NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
6. Letter no. 102-05449, March 20, 2006, Revision to Commitment Dates Associated with NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
7. Letter no. 102-05523, June 29, 2006, Revision to Commitment Dates Associated with NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
8. Letter no. 102-05560, August 30, 2006, Revision to Commitment Date Associated with NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
9. Letter no. 102-05584, October 12, 2006, Unit 2 - Request for Extension to Delay Implementation of Containment Sump Strainer Changes Associated with NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
10. **Letter no. 102-05651, March 2, 2007, Revision to Commitment Dates Associated with NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors".**

NRC Letters to APS

1. Generic Letter 2004-02 dated September 13, 2004, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."

List of Generic Letter 2004-02 Commitments
(Changes from APS letter no. 102-05651, March 2, 2007, are in bold)

2. Letter dated June 2, 2005, Request for Additional Information (RAI) Related to Generic Letter 2004-02, "Potential Impact Of Debris Blockage On Emergency Sump Recirculation At Pressurized-Water Reactors."
3. Letter dated February 9, 2006, Request for Additional Information Re: Response to Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors."
4. Letter dated March 28, 2006, Alternative Approach for Responding to the Nuclear Regulatory Commission Request for Additional Information Letter Re: Generic Letter 2004-02.
5. Letter dated December 13, 2006, Unit 2 - Approval of Generic Letter 2004-02 Extension Request.
6. Letter dated January 4, 2007, Alternative Approach for Responding to the Nuclear Regulatory Commission Request for Additional Information Letter Regarding Generic Letter 2004-02.