



A subsidiary of Pinnacle West Capital Corporation

Palo Verde Nuclear
Generating Station

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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
Response to 10 CFR 50.59 Findings in NRC Special Inspection
Report 05000528/2004014; 05000529/2004014; 05000530/2004014

In NRC Special Inspection Report (IR) 05000528/2004014; 05000529/2004014; 05000530/2004014 for PVNGS, dated January 5, 2005, the NRC discussed four findings, two of which involved 10 CFR 50.59. One of the 10 CFR 50.59 findings, identified as an apparent violation being considered for escalated enforcement action, involved a failure to perform a written safety evaluation and receive NRC approval prior to implementing a change to a procedure in 1992 which involved the method of draining a segment of containment sump safety injection suction piping. The other 10 CFR 50.59 finding, identified as a green non-cited violation, cited three examples, including the failure to perform a written 10 CFR 50.59 evaluation for the condition where a 10-20 cubic foot voided section of suction piping temporarily existed in each train between the outboard containment sump isolation valve and its respective downstream check valve.

On February 17, 2005, the NRC held a pre-decisional enforcement and regulatory conference with Arizona Public Service Company (APS) at NRC Region IV offices in Arlington, Texas. At this conference, APS presented to the NRC information to support APS' position that the 1992 procedure change and the 10-20 cubic foot void condition were not violations of 10 CFR 50.59. Enclosed with this letter is a detailed discussion of APS' position on those two issues.

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Response to 10 CFR 50.59 Findings in NRC Special Inspection Report
05000528/2004014; 05000529/2004014; 05000530/2004014
Page 2

There are no commitments in this letter. Should you have any questions, please contact
Mr. Scott A. Bauer (623) 393-5978.

Sincerely,

David Mauldin for G.R. Overbeck

GRO/SAB/TNW/GAM

Enclosure: Arizona Public Service Company Response to 10 CFR 50.59 Findings in
NRC Special Inspection Report 05000528/2004014; 05000529/2004014;
05000530/2004014

cc: B. S. Mallett NRC Region IV Regional Administrator
A. T. Howell III, Director, Division of Reactor Projects, NRC Region IV
M. B. Fields NRC NRR Project Manager
G. G. Warnick NRC Senior Resident Inspector for PVNGS

Enclosure
Arizona Public Service Company's
Response to 10 CFR 50.59 Findings in NRC Special Inspection Report
05000528/2004014; 05000529/2004014; 05000530/2004014

1992 Change to the ECCS Systems Leak Test Procedure

NRC Position in Special Inspection Report 05000528/2004014; 05000529/2004014; 05000530/2004014

"The team identified an apparent violation of 10 CFR 50.59 requirements for the licensee's failure to perform a written safety evaluation and receive NRC approval prior to implementing changes to the facility in 1992 which involved draining, and maintaining drained, a significant segment of containment sump safety injection recirculation piping during normal plant operations. This change resulted in the failure to maintain the safety injection piping full of water in accordance with the Updated Final Safety Analysis Report. This represented an unreviewed safety question since it increased the probability of a malfunction of equipment important to safety previously evaluated in the safety analysis report."

APS Position

APS recognizes that the change to the ECCS system leak test procedure in 1992 was a missed opportunity to identify and correct the design and licensing bases deficiency that existed since plant startup in 1985 and continued until August 2004. Since plant startup, the design and licensing bases failed to identify the need to keep the ECCS sump suction lines filled to assure ECCS operability. As determined from APS' root cause evaluation of this condition, no design output document could be found that specified a design requirement to maintain the ECCS sump suction lines filled, and thus no procedural requirement was established to maintain the ECCS sump suction piping filled for operability.

As identified in interviews during APS' investigation of this issue, there was a general knowledge among operations personnel that the ECCS sump suction lines were maintained empty. This was generally understood to be acceptable as it was believed the lines would self-vent when the recirculation actuation signal occurred due to the bulk of water in the containment over the sumps and the time involved for the transition from the refueling water tank to the containment sumps.

The original PVNGS Technical Specifications (TSs) were based on the Combustion Engineering (CE) Standard Technical Specifications (STS). The CE STS and PVNGS original TSs Surveillance Requirement 4.5.2 stated:

"4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

b. At least once per 31 days by:

2. Verifying that the ECCS piping is full of water by venting the accessible discharge piping high points."

UFSAR Section 6.3 (specifically 6.3.2.6), cited in NRC Special Inspection Report (IR) 05000528/2004014; 05000529/2004014; 05000530/2004014, states:

"To minimize the potential for water hammer, the safety injection piping will be maintained filled with water."

Water hammer is a discharge-side phenomenon. Thus, in the context of the TS and UFSAR 6.3.2.6, the licensing basis description was focused on water hammer and maintaining the ECCS discharge piping filled. Again, the prevailing understanding was that the ECCS sump suction would be self-venting upon a RAS, and the TS SR stating that the ECCS piping is verified full by venting the ECCS discharge piping and the UFSAR focus on water hammer did not contradict that understanding.

NRC Special Inspection Report (IR) 05000528/2004014; 05000529/2004014; 05000530/2004014, states that UFSAR Section 6.3 describes the ECCS net positive suction head (NPSH) requirements for the containment spray (CS) and high pressure safety injection (HPSI) pumps. The IR noted that the NPSH calculations assume that the suction piping is full of water. However, the NPSH calculations refer to the expected conditions in the system after the transition of suction from the RWT to the ECCS containment sump is completed and fully developed flow from the sump is established. There are no statements in the NPSH calculations that define the initial conditions in the pipe required for successful transition of the suction source. It is true that an initially full pipe would ensure a successful transition, but the fact that an initially full pipe was required for a successful transition at PVNGS was only determined through the testing and analysis performed over the last few months.

Since plant startup in 1985, the PVNGS licensing and design basis did not specify that the ECCS sump suction line be maintained filled for ECCS operability, and, consistent with this, there was no procedural requirement to maintain the ECCS sump suction line filled for operability. Furthermore, in practice, the suction line was not filled during normal operation. As such, the starting point for the 1992 ECCS leak test procedure change was that the ECCS sump suction line was maintained empty.

The change cited by the NRC involved a change to the ECCS leak test surveillance procedure (41ST-1SI09). This procedure is performed while the plant is shutdown during refueling outages. In order to perform this test procedure, demineralized water is added to the suction line as a test medium. Prior to the 1992 procedure change, this water was drained to the containment sump following completion of the test via the next

quarterly stroke test of the containment isolation valves on the containment sump suction lines. The 1992 procedure change specified that this water instead should be drained to a floor drain. Thus, the purpose of the leak test procedure change was to specify draining the test medium (demineralized water) from the pipe into a floor drain instead of allowing it to dump into the sump when the ECCS sump valves were cycled for the quarterly stroke test. The change was pursued to reduce the need to clean the water from the sumps.

It has been determined that, prior to the 1992 procedure change, there may have been occasions when the test water remained in the ECCS sump suction lines when the plant was started up after the ECCS leak test. The water would have been left in the lines due to the scheduling of the valve stroke tests, and it was not left in the lines for ECCS operability. The water would have been drained from the lines upon the first quarterly valve stroke test subsequent to the leakage test.

The ECCS sump suction lines were unfilled prior to the 18-month leakage test. The 1992 change to the leakage test procedure changed the method by which the lines were returned to their unfilled condition following the leakage test. The purpose of 10 CFR 50.59 was and is to determine if prior NRC approval is required for a change to the facility or procedures as described in the UFSAR, or to perform a test or experiment not described in the UFSAR. Since the 1992 ECCS leakage test procedure change simply returned the ECCS suction piping to its original unfilled condition, there was no change to the configuration of the facility or procedures as described in the UFSAR. Therefore, it was appropriately determined by the procedure writers that a 10 CFR 50.59 was not required.

One of the objectives of 10 CFR 50.59 is to ensure that licensees evaluate proposed changes to their facilities for their effects on the licensing basis of the plant, as described in the FSAR. The 1992 ECCS leak test procedure change added steps to the test procedure to return the ECCS sump suction line to its as-found unfilled condition, and this change was not inconsistent with the licensing basis. As a result, a 10 CFR 50.59 safety evaluation was not needed for the procedure change.

The ECCS leak test procedure that was changed in 1992 was a surveillance test procedure (41ST-1SI09). This procedure performs a maintenance activity and is still used for performing the leak test surveillance. It currently still includes filling the line with demineralized water, pressurizing the line and draining the demineralized water at the completion of the test to a floor drain. Following the discovery of the nonconforming condition on July 29, 2004, the steps needed to place the system in an operable condition were added to an operating procedure (40OP-9SI02) rather than the surveillance test procedure (41ST-1SI09).

In summary, it is APS' position that the 1992 procedure change was properly reviewed by the procedure writers and their determination that a 10 CFR 50.59 was not required was correct. In order for the 1992 procedure change to have required prior Commission approval it would have had to have resulted in a plant configuration change. The APS

root cause evaluation clearly shows the unfilled pipe condition (i.e., the existing plant configuration at the time of the procedure change) existed since plant startup in 1985. Therefore, the 1992 procedure change did not create the condition and was not subject to a 10 CFR 50.59 safety evaluation and, furthermore, did not require prior Commission approval.

10-20 cubic foot void condition

NRC Position in Special Inspection Report 05000528/2004014; 05000529/2004014; 05000530/2004014

“The team identified three examples of a noncited, Severity Level IV violation of 10 CFR 50.59 requirements involving the failure to perform written safety evaluations prior to implementing changes to the facility... The second example involved operation of emergency core cooling systems with a 10-20 cubic foot void in the suction piping.”

APS Position

The 10-20 cubic foot void was not a change but was a nonconforming condition that was determined to be acceptable temporarily under an operability determination, as allowed by Generic Letter (GL) 91-18, until a final corrective action could be put in place. The final corrective action for the degraded condition was to fill the section of pipe to conform with what has been determined to be the correct design basis condition.

Current regulatory guidance concerning degraded and non-conforming conditions provides the basis for the APS position concerning the 10-20 cubic foot void. These factors include:

- Guidance in NEI 96-07, *Guidelines For 10 CFR 50.59 Implementation, Revision 1*, clearly establishes no 50.59 review is required.
- Guidance in *Generic Letter 91-18, Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions, Revision 1*, clearly establishes no 50.59 review is required.

NEI 96-07, Revision 1, was formally endorsed by the NRC in Regulatory Guide 1.187, “Guidance for Implementation of 10 CFR 50.59, Changes, Tests, And Experiments,” November 2000.

Section 4.4 of NEI 96-07 provides guidance for the application of 10 CFR 50.59 when degraded and nonconforming conditions are discovered. It states:

4.4 *Applying 10 CFR 50.59 To Compensatory Actions To Address Nonconforming or Degraded Conditions*

Three general courses of action are available to licensees to address non-conforming and degraded conditions. Whether or not 10 CFR 50.59 must be

applied, and the focus of a 10 CFR 50.59 evaluation if one is required, depends on the corrective action plan chosen by the licensee, as discussed below:

- *If the licensee intends to restore the SSC back to its as-designed condition then this corrective action should be performed in accordance with 10 CFR 50, Appendix B (i.e., in a timely manner commensurate with safety). This activity is not subject to 10 CFR 50.59.*
- *If an interim compensatory action is taken to address the condition and involves a temporary procedure or facility change, 10 CFR 50.59 should be applied to the temporary change. The intent is to determine whether the temporary change/compensatory action itself (not the degraded condition) impacts other aspects of the facility or procedures described in the UFSAR. In considering whether a temporary change impacts other aspects of the facility, a licensee should pay particular attention to ancillary aspects of the temporary change that result from actions taken to directly compensate for the degraded condition.*
- *If the licensee corrective action is either to accept the condition "as-is" resulting in something different than its as-designed condition, or to change the facility or procedures, 10 CFR 50.59 should be applied to the corrective action, unless another regulation applies, e.g., 10 CFR 50.55a. In these cases, the final corrective action becomes the proposed change that would be subject to 10 CFR 50.59.*

At the time that the operability determination (which addressed the existence of the 10-20 cubic foot void between the check valve and the outboard ECCS sump suction line isolation valve) was put in place, APS recognized that the void was a nonconforming/degraded condition, and intended to restore the 10-20 cubic foot portion of piping to the design basis condition (i.e., filled pipe) as documented in the PVNGS corrective action program. Therefore, this temporary nonconforming/degraded condition met the first bullet in Section 4.4 of NEI 96-07, Revision 1, and was not subject to 10 CFR 50.59.

Revision 1 to Generic Letter 91-18, issued October 8, 1987, revised the guidance in the NRC Inspection Manual to clarify the role of 10 CFR 50.59 during degraded and non-conforming conditions. The cover letter states in part the following change that was made by revision 1 to the generic letter:

If the licensee intends to restore the SSC back to its previous condition (as described in the SAR), then this corrective action should be performed in accordance with 10 CFR Part 50, Appendix B (i.e., in a timely manner commensurate with safety), and a 10 CFR 50.59 safety evaluation is not required.

This guidance is consistent with NEI 96-07 and further supports the conclusion that no 50.59 review was required since APS intended to restore the system to the as-designed condition.

In conclusion, existing regulatory guidance does not require that a 50.59 review be performed if the licensee intends to restore the SSC to the as-designed condition. The final resolution of the degraded/nonconforming condition was to restore the 10-20 cubic foot void to a filled condition. In the interim (i.e., from July 29, 2004, until the lines were filled in all of the PVNGS units between August 1-4, 2004) an operability determination in accordance with GL 91-18 was in place demonstrating operability with the 10-20 cubic foot void.