



A subsidiary of Pinnacle West Capital Corporation

Palo Verde Nuclear  
Generating Station

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ID#: 102-06228-DCM/RAS/DFS  
July 22, 2010

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 Request for Additional Information Relating to License  
Amendment Request to Change the Technical Specifications to  
Support Crediting an Existing Manual Operator Action to Isolate the  
Refueling Water Tank (RWT) (TAC NOS. ME2842, ME2843, and  
ME2844)**

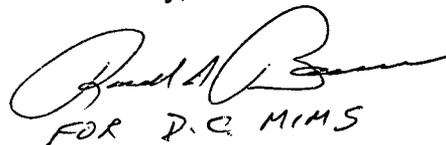
By APS letter no. 102-06099, dated November 30, 2009 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML093450485), Arizona Public Service Company (APS), submitted a request for amendment to Technical Specification Table 3.3.5-1, Engineered Safety Features Actuation System Instrumentation, and Figure 3.5.5-1, Minimum Required Refueling Water Tank (RWT) Volume and supporting changes. The enclosure to this letter contains responses to the questions provided to APS by the NRC Project Manager by email dated April 26, 2010.

No commitments are being made to the NRC by this letter. Should you need further information regarding this response, please contact Russell A. Stroud, Licensing Section Leader, at (623) 393-5111.

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

Executed on July 22, 2010  
(Date)

Sincerely,



FOR D.C. MIMS

DCM/RAS/DFS/gat

AC01  
NRC

A member of the **STARS** (Strategic Teaming and Resource Sharing) Alliance

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U.S. Nuclear Regulatory Commission  
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Enclosure: Response to Request for Additional Information (RAI) Relating to License  
Amendment Request (LAR) to Change the Technical Specification (TS) to  
Support Crediting an Existing Manual Operator Action to Isolate the  
Refueling Water Tank (RWT)

cc: E. E. Collins Jr. NRC Region IV Regional Administrator  
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**ENCLOSURE**

**Response to Request for Additional Information (RAI) Relating to  
License Amendment Request (LAR) to Change the Technical  
Specification (TS) to Support Crediting an Existing Manual Operator  
Action to Isolate the Refueling Water Tank (RWT)**

**Enclosure**

**Response to RAI Relating to LAR to Change the TS to Support  
Crediting an Manual Operator Action to Isolate the RWT**

**Introduction:**

By letter number 102-06099, "Request for Amendment to Technical Specification (TS) Table 3.3.5-1, Engineered Safety Features Actuation System Instrumentation, and Figure 3.5.5-1, Minimum Required Refueling Water Tank (RWT) Volume and Supporting Changes," dated November 30, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML093450485), Arizona Public Service Company (APS) submitted a license amendment request for the Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 (Reference 1). The proposed amendment would revise TS Table 3.3.5-1, "Engineered Safety Features Actuation System Instrumentation," to increase the RWT low-level setpoint for the Recirculation Actuation Signal (RAS); and TS Figure 3.5.5-1, "Minimum Required RWT Volume," to increase the minimum volume in the RWT; and would change the plant licensing basis to credit an existing manual operator action to isolate the RWT to preclude the potential for air entrainment from the RWT following a RAS.

By email dated April 26, 2010, the NRC requested the following information:

**NRC Request 1:**

Because PVNGS is a three-unit facility that shares common TS pages and implementation of the TS changes for each of these units will be completed over time as the associated modifications are completed, care must be taken to clearly identify the applicable revision of TS for each plant. The stated format of this change will be to add additional TS pages in support of the proposed amendment. The additional pages for the "After RWT TS setpoint change" will be applicable for the Units that have implemented the proposed changes contained in the APS submittal. The current TS pages will be revised to indicate that they are the "Pre-RWT TS setpoint changes" and will continue to be applicable for Units with the existing RWT setpoints. TS Bases pages will also be changed to reflect the Pre-RWT and After RWT setpoint changes. When the three units have implemented the proposed changes contained in this submittal, APS plans to submit a license amendment request to remove the pages related to the Pre-RWT TS setpoint changes that no longer apply. From the submittal, it appears that there will not be any cues provided on the "Pre-RWT" pages or the "After RWT" pages to allow easy determination of whether the pages are applicable or not. The proposed page footers do not help in determining applicability and may just add confusion. Also, there is no confirmatory action to determine whether the RWT setpoint changes have been implemented and Operations accepted, i.e. whether the Pre-RWT or the After RWT pages are applicable. How will the applicability of the "Pre-RWT" pages versus the "After RWT" pages be clearly communicated to plant personnel?

**APS Response:**

There are several RWT modifications that need to be installed in the PVNGS units in order to implement the requested TS changes. The modifications have been completed in Unit 1 and they will be installed in Units 2 and 3 in their next refueling outages (Unit 3 in the fall of 2010 and Unit 2 in the spring of 2011). Assuming the requested amendment is approved in the November/December of 2010 timeframe, the TS pages for Pre-RWT and After RWT TS setpoint changes will become part of the PVNGS TS's

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in the March 2011 timeframe during the 90-day implementation period. The After RWT TS setpoint changes would become applicable in Units 1 and 3 during the 90-day implementation period of the amendment. The After RWT TS setpoint changes will become applicable in Unit 2 during the spring 2011 outage. All three units would then have implemented the After RWT TS setpoint changes by the summer of 2011. Once the After RWT TS setpoint changes are fully implemented, APS will submit a license amendment request to remove the Pre-RWT TS setpoint change pages.

The TS formatting and implementing process used in the RWT submittal is similar to that of the PVNGS core protection calculator (CPC) upgrade and the associated TS changes which were approved in NRC letter dated October 24, 2003, Palo Verde Nuclear Generating Station, Units 1, 2, and 3 - Issuance of Amendments on the Core Protection Calculator System Upgrade (ADAMS Accession No. ML 033030363) (Reference 2). That is, unit specific procedures and training will be modified and maintained based on the applicable version of the TS RWT setpoints. During the implementation process the applicable procedures and training will be updated to incorporate the After-RWT TS setpoint changes prior to the application of the After-RWT TS setpoint changes. That implementation process will include completion of any training in support of the operation and maintenance of those changes. The implementation process is described further in the responses to requests 2 through 4, below.

In addition to the procedure and training changes, the supporting modifications are installing control board meters that are superior in appearance and function from the current instruments. This upgrade will be evident to operators and support personnel as they move between units during the short period when the pre-RWT setpoints changes are still applicable in Unit 2.

This implementation process should eliminate confusion related to the applicability and ensure a smooth transition for plant operators.

**NRC Request 2:**

In the LAR, the licensee stated that the impacts of the increased RAS setpoint and associated Allowable Values and minimum RWT water volume on RWT design functions were evaluated. a) Were any changes to the operator interface identified, e.g., display banding, range expansion, control type, annunciator setpoints, or other control or display characteristics? b) Are any Safety Parameter Display System (SPDS) displays affected? c) Please list all identified changes to the control room, emergency operating procedures (EOPs), and SPDS not previously identified in your submittal.

**APS Response:**

The impacts of the increased RAS setpoint and associated Allowable Values, and the minimum RWT water volume on RWT design functions were evaluated and are described below:

- a. Changes to the operator interfaces were identified as part of the original scope of the supporting instrument modification and have been documented in the approved engineering work package. The existing control board RWT level indicators are being replaced with digital versions that display both a bar graph

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and digital readout of RWT level for the specified channels. When the increased RAS setpoint and associated Allowable Values are approved, the required Engineered Safety Function Actuation System (ESFAS) setpoints for the indicators and associated annunciator setpoints will be revised. The indicator replacement and the RWT TS changes do not change the existing display banding (0 – 100%), range, control type or display characteristics other than what has been described above.

- b. The Safety Parameter Display System (SPDS) display is unaffected by the proposed amendment. There is no control room or remote shutdown panel changes other than the RWT level display previously described.
- c. The following changes have been identified for the EOPs:
  - 1. In Emergency Operating Procedures (EOP) Setpoint Document [TA-13-C00-2000-001 Revision 06] the RAS setpoint will be revised from 7.4% to 9.4% in Section 6.16.1-0. This change will become effective and the older value (of 7.4%) will become obsolete when the TS amendment is approved and implemented in the associated units.
  - 2. A note is being added to EOP 40EP-9EO03, Loss of Coolant Accident, to direct the operators that isolation of the RWT discharge valves is time critical and must be performed as quickly as possible to ensure the safety injection system remains available. A draft copy of the procedure note is provided in Attachment 1.

**NRC Request 3:**

Will any changes to the simulator be required to support the proposed TS changes? If so, how will the sequencing of the proposed changes to the simulator vis-à-vis training for all three plants be addressed?

**APS Response:**

Yes, a simulator model change will be required. This will be performed after NRC approval of the setpoint (TS) changes and issuance of the amendment. A work management action item has been initiated to the simulator group to ensure the model is updated as part of the implementation of the amendment. As the After RWT TS setpoint changes become applicable, a work management action item will require that licensed personnel are trained on the After RWT TS setpoint changes in effect for the specific unit.

**NRC Request 4:**

The licensee stated that the "emergency operating procedures (EOP) are an integral part of the licensed operator qualification and requalification training programs. The action to close these valves after a RAS already exists in the EOPs, but the proposed change credits this task as time-critical. To ensure completion of the task within the allotted time, the EOPs will be modified to: (a) include a note that the action to close valves CH-530 and CH-531 after RAS is a time-critical step; and (b) re-sequence the actions after RAS to isolate the RWT sooner. Changes to the EOPs will be

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communicated to PVNGS plant operators and appropriate training will be provided." Given that each unit will implement this TS change at a different time in plant life, how will the EOP revisions and supporting training be sequenced to assure that each/all plant staff has adequate, timely training?

**APS Response:**

Any unit differences in the EOPs are annotated by inserting "Unit x only" in bold type at the beginning of the appropriate steps or notes. As the After RWT TS setpoint changes become applicable, a work management action item will require that licensed personnel are trained on the After RWT TS setpoint changes in effect for the specific unit.

**NRC Request 5:**

Please provide a copy of the Note that has been proposed to be added to the EOPs to cue the operators that the isolation of the RWT is a time-critical task. Preferably, this should be in the form of a marked-up page, or a page from the clean final draft.

**APS Response:**

The draft procedure page containing the note is provided in Attachment 1.

**NRC Request 6:**

Please provide a copy of PVNGS Engineering Study 13-MS-B094, Revision 0, "Operator Action Time for RWT Isolation After RAS," dated October 9, 2009.

**APS Response:**

The engineering study is provided in Attachment 2.

**References:**

1. Letter number 102-06099, "Request for Amendment to Technical Specification (TS) Table 3.3.5-1, Engineered Safety Features Actuation System Instrumentation, and Figure 3.5.5-1, Minimum Required Refueling Water Tank (RWT) Volume and Supporting Changes," dated November 30, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML093450485)
2. NRC letter dated October 24, 2003, Palo Verde Nuclear Generating Station, Units 1, 2, and 3 -Issuance of Amendments on the Core Protection Calculator System Upgrade (ADAMS Accession No. ML 033030363)

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**Attachment 1**

**Procedure 40EP-9EO03 – Loss of Coolant Accident**

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## LOSS OF COOLANT ACCIDENT

INSTRUCTIONSCONTINGENCY ACTIONS

\* 56. **IF** a RAS has actuated,  
**THEN** perform the following:

- a. Ensure that both LPSI Pumps are stopped.
- b. Ensure that the ESF pump suction has shifted to the containment.

b.1 **IF** any ESF pump suction can **NOT** be shifted to the containment sump,  
**THEN** perform the following:

**IF ANY** HPSI Pump is running with its associated Containment suction closed,  
**THEN** stop the affected HPSI Pump.

2) **IF ANY** CS Pump is running with its associated Containment suction closed,  
**THEN** stop the affected CS Pump.

DRAFT

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NOTE

Actions directed by the following step are time critical and must be performed as quickly as possible to ensure that Safety Injection remains available.

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- \* c. Close **BOTH** of the following valves:
- CHA-HV-531, RWT to Train A Safety Injection Valve
  - CHB-HV-530, RWT to Train B Safety Injection Valve

(continue)