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Technical Specification 5.5.14

102-05002-SAB/TNW/RKR
September 24, 2003

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-37
Washington, DC 20555-0001

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Technical Specifications Bases Revision 24 Update

Pursuant to PVNGS Technical Specification (TS) 5.5.14, "Technical Specifications Bases Control Program," Arizona Public Service Company (APS) is submitting changes to the TS Bases incorporated into Revision 24, implemented on September 12, 2003. The Revision 24 insertion instructions and replacement pages are provided in the Enclosure.

No commitments are being made to the NRC by this letter.

Should you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,

SAB/TNW/RKR/kg

Enclosure: PVNGS Technical Specification Bases Revision 24
Insertion Instructions and Replacement Pages

cc: B. S. Mallett NRC Region IV Regional Administrator
M. B. Fields NRC NRR Project Manager
N. L. Salgado NRC Senior Resident Inspector for PVNGS

A001

ENCLOSURE

PVNGS
Technical Specification Bases
Revision 24

Insertion Instructions and
Replacement Pages

PVNGS Technical Specifications Bases
Revision 24
Insertion Instructions

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PVNGS

Palo Verde Nuclear Generating Station
Units 1, 2, and 3

Technical Specification Bases

Revision 24
September 12, 2003

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B 3.7.12-4	10	B 3.8.1-34	20
B 3.7.13-1	0	B 3.8.1-35	20
B 3.7.13-2	0	B 3.8.1-36	20

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B 3.8.1-37	23	B 3.8.9-3	0
B 3.8.1-38	23	B 3.8.9-4	0
B 3.8.1-39	20	B 3.8.9-5	0
B 3.8.1-40	20	B 3.8.9-6	0
B 3.8.2-1	0	B 3.8.9-7	0
B 3.8.2-2	0	B 3.8.9-8	0
B 3.8.2-3	0	B 3.8.9-9	0
B 3.8.2-4	21	B 3.8.9-10	0
B 3.8.2-5	21	B 3.8.9-11	0
B 3.8.2-6	0	B 3.8.10-1	0
B 3.8.3-1	0	B 3.8.10-2	21
B 3.8.3-2	0	B 3.8.10-3	0
B 3.8.3-3	0	B 3.8.10-4	0
B 3.8.3-4	0	B 3.9.1-1	0
B 3.8.3-5	1	B 3.9.1-2	0
B 3.8.3-6	0	B 3.9.1-3	0
B 3.8.3-7	0	B 3.9.1-4	0
B 3.8.3-8	0	B 3.9.2-1	15
B 3.8.3-9	0	B 3.9.2-2	15
B 3.8.4-1	0	B 3.9.2-3	15
B 3.8.4-2	0	B 3.9.2-4	15
B 3.8.4-3	0	B 3.9.3-1	18
B 3.8.4-4	2	B 3.9.3-2	19
B 3.8.4-5	2	B 3.9.3-3	19
B 3.8.4-6	2	B 3.9.3-4	19
B 3.8.4-7	2	B 3.9.3-5	19
B 3.8.4-8	2	B.3.9.3-6	19
B 3.8.4-9	2	B 3.9.4-1	0
B 3.8.4-10	2	B 3.9.4-2	1
B 3.8.4-11	2	B 3.9.4-3	0
B 3.8.5-1	1	B 3.9.4-4	0
B 3.8.5-2	1	B 3.9.5-1	0
B 3.8.5-3	21	B 3.9.5-2	16
B 3.8.5-4	21	B 3.9.5-3	16
B 3.8.5-5	2	B 3.9.5-4	16
B 3.8.5-6	2	B.3.9.5-5	16
B 3.8.6-1	0	B 3.9.6-1	0
B 3.8.6-2	0	B 3.9.6-2	0
B 3.8.6-3	0	B 3.9.6-3	0
B 3.8.6-4	6	B 3.9.7-1	0
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B 3.8.8-1	1		
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B 3.8.8-3	21		
B 3.8.8-4	21		
B 3.8.8-5	1		
B 3.8.9-1	0		
B 3.8.9-2	0		

BASES

LCO (continued)

The required amount of TSP is based upon the extreme cases of water volume and pH possible in the containment sump after a large break LOCA. The minimum required volume is the volume of TSP that will achieve a sump solution pH of $\geq$ 7.0 when taking into consideration the maximum possible sump water volume and the minimum possible pH. The amount of TSP needed in the containment building is based on the mass of TSP required to achieve the desired pH. However, a required volume is specified, rather than mass, since it is not feasible to weigh the entire amount of TSP in containment. The minimum required volume is based on the design basis value for density of anhydrous TSP. Since TSP can have a tendency to agglomerate from high humidity in the containment building, the density may increase and the volume decrease during normal plant operation. Due to possible agglomeration and increase in density, estimating the minimum volume of TSP in containment is conservative with respect to achieving a minimum required pH.

APPLICABILITY

In MODES 1, 2, and 3, the RCS is at elevated temperature and pressure, providing an energy potential for a LOCA. The potential for a LOCA results in a need for the ability to control the pH of the recirculated coolant.

In MODES 4, 5, and 6, the potential for a LOCA is reduced and TSP is not required.

ACTIONS

A.1

If it is discovered that the TSP in the containment building is not within limits, action must be taken to restore the TSP to within limits.

The Completion Time of 72 hours is allowed for restoring the TSP within limits, where possible, because 72 hours is the same time allowed for restoration of other ECCS components.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If the TSP cannot be restored within limits within the Completion Time of Required Action A.1, the plant must be brought to a MODE in which the LCO does not apply. The specified Completion Times for reaching MODES 3 and 4 are those used throughout the Technical Specifications; they were chosen to allow reaching the specified conditions from full power in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.6.1

Periodic determination of the volume of TSP in containment must be performed due to the possibility of leaking valves and components in the containment building that could cause dissolution of the TSP during normal operation. A Frequency of 18 months is required to determine visually that a minimum of 524 cubic feet is contained in the TSP baskets (Ref. 1). This requirement ensures that there is an adequate volume of TSP to adjust the pH of the post LOCA sump solution to a value $\geq$ 7.0.

The periodic verification is required every 18 months, since access to the TSP baskets is only feasible during outages, and normal fuel cycles are scheduled for 18 months. Operating experience has shown this Surveillance Frequency acceptable due to the margin in the volume of TSP placed in the containment building.

SR 3.5.6.2

Testing ensures that the solubility and buffering ability of the TSP is not degraded after exposure to the containment environment. A representative sample of 3.36 grams ± 0.005 grams of anhydrous TSP (corrected for moisture content) is collected from one or more of the baskets in containment. The sample is submerged in 1.0 ± 0.005 liter (total volume) of 4280 to 4400 ppm boric acid solution at a temperature of 135°F ± 9°F. Without agitation, the solution pH should rise to greater than or equal to 7.0 within 4 hours. Solution pH is measured at 77°F ± 9°F and rounded to the nearest tenth of a pH unit.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.6.2 (continued)

The sample weight and volume correspond to the design minimum concentration of TSP expected post LOCA in the containment sump. The limiting concentration occurs when the LCO minimum TSP volume of 524 cubic feet, weighing about 25,325 pounds at the installed bulk density, is dissolved into the maximum recirculation fluid mass of approximately 3.4E6 kg, which is about 900,000 gallons at room temperature. The boron concentration of the test water is the highest possible with the maximum expected recirculation sump volume.

Agitation of the test solution is prohibited since an adequate standard for the agitation intensity cannot be specified. The test time of 4 hours is necessary to allow time for the dissolved TSP to naturally diffuse through the sample solution. In the post LOCA containment sump, rapid mixing would occur, significantly decreasing the actual amount of time before the required pH is achieved. This ensures compliance with the Standard Review Plan guidance of achieving pH greater than or equal to 7.0 by the onset of recirculation after a LOCA.

The temperature of 135 ± 9°F was chosen for the borated water solution because that is the minimum temperature expected at the inlet of the shutdown cooling heat exchangers during the intial phase of this accident when the TSP is dissolved into solution.

REFERENCES

1. PVNGS operating license amendment numbers 110, 102 and 82 for Units 1, 2 and 3, respectively, and associated NRC Safety Evaluation dated December 10, 1996.

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