APS

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Technical Specification 5.5.14

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102-04975-SAB/TNW/RKR
July 25, 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 23 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 23, implemented on July 25, 2003. The Revision 23 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,

Scott Bauer

SAB/TNW/RKR/kg

Enclosure: PVNGS Technical Specification Bases Revision 23
Insertion Instructions and Replacement Pages

cc: Regional Administrator, NRC Region IV
J. N. Donohew
N. L. Salgado



A001

# ENCLOSURE

## PVNGS
## Technical Specification Bases
## Revision 23

## Insertion Instructions and
## Replacement Pages

# PVNGS Technical Specifications Bases
# Revision 23
# Insertion Instructions

| Remove Page: | Insert New Page: |
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| List of Effective Pages, Pages 1/2 through List of Effective Pages, Page 7/blank | List of Effective Pages, Pages 1/2 through List of Effective Pages, Page 7/blank |
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| B 3.7.17-1/B 3.7.17-2 | B 3.7.17-1/B 3.7.17-2 |
| B 3.8.1-37/B 3.8.1-38 | B 3.8.1-37/B 3.8.1-38 |

# *PVNGS*

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

# Technical Specification Bases

**Revision 23**
**July 25, 2003**

PALO VERDE

# TECHNICAL SPECIFICATION BASES
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| B 2.1.1-1 | 0 | B 3.1.4-5 | 0 |
| B 2.1.1-2 | 0 | B 3.1.5-1 | 0 |
| B 2.1.1-3 | 21 | B 3.1.5-2 | 12 |
| B 2.1.1-4 | 21 | B 3.1.5-3 | 0 |
| B 2.1.1-5 | 23 | B 3.1.5-4 | 0 |
| B 2.1.2-1 | 0 | B 3.1.5-5 | 7 |
| B 2.1.2-2 | 0 | B 3.1.5-6 | 0 |
| B 2.1.2-3 | 0 | B 3.1.5-7 | 1 |
| B 2.1.2-4 | 23 | B 3.1.5-8 | 1 |
| B 2.1.2-5 | 0 | B 3.1.5-9 | 0 |
| B 3.0-1 | 0 | B 3.1.5-10 | 5 |
| B 3.0-2 | 0 | B 3.1.5-11 | 12 |
| B 3.0-3 | 0 | B 3.1.6-1 | 0 |
| B 3.0-4 | 0 | B 3.1.6-2 | 0 |
| B 3.0-5 | 0 | B 3.1.6-3 | 0 |
| B 3.0-6 | 1 | B 3.1.6-4 | 0 |
| B 3.0-7 | 0 | B 3.1.7-1 | 0 |
| B 3.0-8 | 0 | B 3.1.7-2 | 0 |
| B 3.0-9 | 0 | B 3.1.7-3 | 0 |
| B 3.0-10 | 14 | B 3.1.7-4 | 0 |
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| B 3.0-15 | 0 | B 3.1.7-9 | 0 |
| B 3.0-16 | 17 | B 3.1.8-1 | 0 |
| B 3.0-17 | 17 | B 3.1.8-2 | 0 |
| B 3.0-18 | 17 | B 3.1.8-3 | 0 |
| B 3.0-19 | 17 | B 3.1.8-4 | 0 |
| B 3.1.1-1 | 0 | B 3.1.8-5 | 0 |
| B 3.1.1-2 | 0 | B 3.1.9-1 | 0 |
| B 3.1.1-3 | 12 | B 3.1.9-2 | 0 |
| B 3.1.1-4 | 12 | B 3.1.9-3 | 0 |
| B 3.1.1-5 | 12 | B 3.1.9-4 | 0 |
| B 3.1.1-6 | 0 | B 3.1.9-5 | 7 |
| B 3.1.2-1 | 0 | B 3.1.9-6 | 1 |
| B 3.1.2-2 | 0 | B 3.1.10-1 | 0 |
| B 3.1.2-3 | 5 | B 3.1.10-2 | 0 |
| B 3.1.2-4 | 12 | B 3.1.10-3 | 0 |
| B 3.1.2-5 | 0 | B 3.1.10-4 | 0 |
| B 3.1.2-6 | 0 | B 3.1.10-5 | 0 |
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| B 3.1.2-9 | 0 | B 3.1.11-2 | 0 |
| B 3.1.3-1 | 0 | B 3.1.11-3 | 0 |
| B 3.1.3-2 | 0 | B 3.1.11-4 | 0 |
| B 3.1.3-3 | 0 | B 3.1.11-5 | 0 |
| B 3.1.3-4 | 0 | B 3.2.1-1 | 0 |
| B 3.1.3-5 | 0 | B 3.2.1-2 | 10 |
| B 3.1.3-6 | 0 | B 3.2.1-3 | 0 |
| B 3.1.4-1 | 0 | B 3.2.1-4 | 0 |
| B 3.1.4-2 | 0 | B 3.2.1-5 | 0 |
| B 3.1.4-3 | 0 | B 3.2.1-6 | 0 |
| B 3.1.4-4 | 0 | B 3.2.1-7 | 0 |

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| B 3.2.2-2 | 10 | B 3.3.1-23 | 21 |
| B 3.2.2-3 | 0 | B 3.3.1-24 | 21 |
| B 3.2.2-4 | 0 | B 3.3.1-25 | 21 |
| B 3.2.2-5 | 1 | B 3.3.1-26 | 21 |
| B 3.2.2-6 | 0 | B 3.3.1-27 | 21 |
| B 3.2.2-7 | 0 | B 3.3.1-28 | 21 |
| B 3.2.3-1 | 0 | B 3.3.1-29 | 21 |
| B 3.2.3-2 | 10 | B 3.3.1-30 | 21 |
| B 3.2.3-3 | 0 | B 3.3.1-31 | 21 |
| B 3.2.3-4 | 0 | B 3.3.1-32 | 21 |
| B 3.2.3-5 | 0 | B 3.3.1-33 | 21 |
| B 3.2.3-6 | 0 | B 3.3.1-34 | 21 |
| B 3.2.3-7 | 0 | B 3.3.1-35 | 21 |
| B 3.2.3-8 | 0 | B 3.3.1-36 | 21 |
| B 3.2.3-9 | 0 | B 3.3.1-37 | 21 |
| B 3.2.3-10 | 0 | B 3.3.1-38 | 21 |
| B 3.2.4-1 | 0 | B 3.3.1-39 | 21 |
| B 3.2.4-2 | 10 | B 3.3.1-40 | 21 |
| B 3.2.4-3 | 0 | B 3.3.1-41 | 21 |
| B 3.2.4-4 | 0 | B 3.3.1-42 | 21 |
| B 3.2.4-5 | 0 | B 3.3.1-43 | 21 |
| B 3.2.4-6 | 0 | B 3.3.1-44 | 21 |
| B 3.2.4-7 | 0 | B 3.3.2-1 | 0 |
| B 3.2.4-8 | 0 | B 3.3.2-2 | 0 |
| B 3.2.4-9 | 0 | B 3.3.2-3 | 1 |
| B 3.2.5-1 | 0 | B 3.3.2-4 | 1 |
| B 3.2.5-2 | 10 | B 3.3.2-5 | 0 |
| B 3.2.5-3 | 0 | B 3.3.2-6 | 15 |
| B 3.2.5-4 | 0 | B 3.3.2-7 | 15 |
| B 3.2.5-5 | 0 | B 3.3.2-8 | 15 |
| B 3.2.5-6 | 0 | B 3.3.2-9 | 15 |
| B 3.2.5-7 | 0 | B 3.3.2-10 | 15 |
| B 3.3.1-1 | 0 | B 3.3.2-11 | 15 |
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| B 3.3.1-4 | 0 | B 3.3.2-14 | 15 |
| B 3.3.1-5 | 18 | B 3.3.2-15 | 15 |
| B 3.3.1-6 | 21 | B 3.3.2-16 | 15 |
| B 3.3.1-7 | 21 | B 3.3.2-17 | 15 |
| B 3.3.1-8 | 21 | B 3.3.3-1 | 0 |
| B 3.3.1-9 | 15 | B 3.3.3-2 | 18 |
| B 3.3.1-10 | 0 | B 3.3.3-3 | 0 |
| B 3.3.1-11 | 21 | B 3.3.3-4 | 0 |
| B 3.3.1-12 | 21 | B 3.3.3-5 | 7 |
| B 3.3.1-13 | 1 | B 3.3.3-6 | 0 |
| B 3.3.1-14 | 0 | B 3.3.3-7 | 0 |
| B 3.3.1-15 | 6 | B 3.3.3-8 | 0 |
| B 3.3.1-16 | 0 | B 3.3.3-9 | 0 |
| B 3.3.1-17 | 21 | B 3.3.3-10 | 0 |
| B 3.3.1-18 | 21 | B 3.3.3-11 | 0 |
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| B 3.3.4-5 | 0 | B 3.3.6-15 | 0 |
| B 3.3.4-6 | 0 | B 3.3.6-16 | 0 |
| B 3.3.4-7 | 0 | B 3.3.6-17 | 0 |
| B 3.3.4-8 | 0 | B 3.3.6-18 | 0 |
| B 3.3.4-9 | 0 | B 3.3.6-19 | 0 |
| B 3.3.4-10 | 0 | B 3.3.6-20 | 0 |
| B 3.3.4-11 | 0 | B 3.3.6-21 | 1 |
| B 3.3.4-12 | 0 | B 3.3.6-22 | 1 |
| B 3.3.4-13 | 0 | B 3.3.7-1 | 2 |
| B 3.3.4-14 | 0 | B 3.3.7-2 | 2 |
| B 3.3.4-15 | 0 | B 3.3.7-3 | 0 |
| B 3.3.5-1 | 0 | B 3.3.7-4 | 0 |
| B 3.3.5-2 | 0 | B 3.3.7-5 | 0 |
| B 3.3.5-3 | 0 | B 3.3.7-6 | 0 |
| B 3.3.5-4 | 0 | B 3.3.7-7 | 0 |
| B 3.3.5-5 | 0 | B 3.3.7-8 | 0 |
| B 3.3.5-6 | 0 | B 3.3.7-9 | 2 |
| B 3.3.5-7 | 0 | B 3.3.8-1 | 0 |
| B 3.3.5-8 | 0 | B 3.3.8-2 | 0 |
| B 3.3.5-9 | 0 | B 3.3.8-3 | 0 |
| B 3.3.5-10 | 0 | B 3.3.8-4 | 0 |
| B 3.3.5-11 | 0 | B 3.3.8-5 | 0 |
| B 3.3.5-12 | 1 | B 3.3.8-6 | 1 |
| B 3.3.5-13 | 0 | B 3.3.8-7 | 0 |
| B 3.3.5-14 | 0 | B 3.3.8-8 | 0 |
| B 3.3.5-15 | 0 | B 3.3.9-1 | 0 |
| B 3.3.5-16 | 0 | B 3.3.9-2 | 2 |
| B 3.3.5-17 | 0 | B 3.3.9-3 | 21 |
| B 3.3.5-18 | 0 | B 3.3.9-4 | 10 |
| B 3.3.5-19 | 0 | B 3.3.9-5 | 1 |
| B 3.3.5-20 | 1 | B 3.3.9-6 | 0 |
| B 3.3.5-21 | 0 | B 3.3.9-7 | 0 |
| B 3.3.5-22 | 0 | B 3.3.10-1 | 0 |
| B 3.3.5-23 | 0 | B 3.3.10-2 | 0 |
| B 3.3.5-24 | 0 | B 3.3.10-3 | 0 |
| B 3.3.5-25 | 0 | B 3.3.10-4 | 0 |
| B 3.3.5-26 | 0 | B 3.3.10-5 | 18 |
| B 3.3.5-27 | 10 | B 3.3.10-6 | 0 |
| B 3.3.5-28 | 10 | B 3.3.10-7 | 0 |
| B 3.3.5-29 | 10 | B 3.3.10-8 | 14 |
| B 3.3.6-1 | 0 | B 3.3.10-9 | 14 |
| B 3.3.6-2 | 0 | B 3.3.10-10 | 14 |
| B 3.3.6-3 | 0 | B 3.3.10-11 | 14 |
| B 3.3.6-4 | 0 | B 3.3.10-12 | 14 |
| B 3.3.6-5 | 0 | B 3.3.10-13 | 14 |
| B 3.3.6-6 | 0 | B 3.3.10-14 | 14 |
| B 3.3.6-7 | 0 | B 3.3.10-15 | 14 |
| B 3.3.6-8 | 0 | B 3.3.10-16 | 14 |
| B 3.3.6-9 | 0 | B 3.3.10-17 | 14 |
| B 3.3.6-10 | 0 | B 3.3.10-18 | 14 |
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| B 3.3.11-3 | 2 | B 3.4.9-5 | 0 |
| B 3.3.11-4 | 2 | B 3.4.9-6 | 0 |
| B 3.3.11-5 | 19 | B 3.4.10-1 | 0 |
| B 3.3.11-6 | 2 | B 3.4.10-2 | 7 |
| B 3.3.11-7 | 2 | B 3.4.10-3 | 0 |
| B 3.3.12-1 | 15 | B 3.4.10-4 | 0 |
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| B 3.3.12-3 | 5 | B 3.4.11-2 | 7 |
| B 3.3.12-4 | 5 | B 3.4.11-3 | 0 |
| B 3.3.12-5 | 6 | B 3.4.11-4 | 0 |
| B 3.3.12-6 | 6 | B 3.4.11-5 | 0 |
| B 3.4.1-1 | 10 | B 3.4.11-6 | 0 |
| B 3.4.1-2 | 7 | B 3.4.12-1 | 1 |
| B 3.4.1-3 | 0 | B 3.4.12-2 | 1 |
| B 3.4.1-4 | 0 | B 3.4.12-3 | 0 |
| B 3.4.1-5 | 0 | B 3.4.12-4 | 0 |
| B 3.4.2-1 | 7 | B 3.4.12-5 | 0 |
| B 3.4.2-2 | 1 | B 3.4.13-1 | 0 |
| B 3.4.3-1 | 0 | B 3.4.13-2 | 0 |
| B 3.4.3-2 | 0 | B 3.4.13-3 | 1 |
| B 3.4.3-3 | 0 | B 3.4.13-4 | 0 |
| B 3.4.3-4 | 2 | B 3.4.13-5 | 0 |
| B 3.4.3-5 | 2 | B 3.4.13-6 | 0 |
| B 3.4.3-6 | 0 | B 3.4.13-7 | 2 |
| B 3.4.3-7 | 0 | B 3.4.13-8 | 2 |
| B 3.4.3-8 | 2 | B 3.4.13-9 | 0 |
| B 3.4.4-1 | 0 | B 3.4.13-10 | 2 |
| B 3.4.4-2 | 7 | B 3.4.14-1 | 0 |
| B 3.4.4-3 | 7 | B 3.4.14-2 | 23 |
| B 3.4.4-4 | 0 | B 3.4.14-3 | 23 |
| B 3.4.5-1 | 0 | B 3.4.14-4 | 7 |
| B 3.4.5-2 | 6 | B 3.4.14-5 | 2 |
| B 3.4.5-3 | 6 | B 3.4.14-6 | 2 |
| B 3.4.5-4 | 0 | B 3.4.14-7 | 2 |
| B 3.4.5-5 | 6 | B 3.4.15-1 | 0 |
| B 3.4.6-1 | 0 | B 3.4.15-2 | 0 |
| B 3.4.6-2 | 6 | B 3.4.15-3 | 0 |
| B 3.4.6-3 | 6 | B 3.4.15-4 | 0 |
| B 3.4.6-4 | 6 | B 3.4.15-5 | 0 |
| B 3.4.6-5 | 6 | B 3.4.15-6 | 0 |
| B 3.4.7-1 | 0 | B 3.4.15-7 | 0 |
| B 3.4.7-2 | 6 | B 3.4.16-1 | 2 |
| B 3.4.7-3 | 6 | B 3.4.16-2 | 10 |
| B 3.4.7-4 | 2 | B 3.4.16-3 | 0 |
| B 3.4.7-5 | 0 | B 3.4.16-4 | 0 |
| B 3.4.7-6 | 0 | B 3.4.16-5 | 0 |
| B 3.4.7-7 | 6 | B 3.4.16-6 | 0 |
| B 3.4.8-1 | 0 | B 3.4.17-1 | 0 |
| B 3.4.8-2 | 6 | B 3.4.17-2 | 0 |
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| B 3.5.1-1 | 0 | B 3.6.2-5 | 0 |
| B 3.5.1-2 | 0 | B 3.6.2-6 | 0 |
| B 3.5.1-3 | 7 | B 3.6.2-7 | 0 |
| B 3.5.1-4 | 0 | B 3.6.2-8 | 0 |
| B 3.5.1-5 | 0 | B 3.6.3-1 | 0 |
| B 3.5.1-6 | 0 | B 3.6.3-2 | 0 |
| B 3.5.1-7 | 1 | B 3.6.3-3 | 0 |
| B 3.5.1-8 | 1 | B 3.6.3-4 | 1 |
| B 3.5.1-9 | 0 | B 3.6.3-5 | 1 |
| B 3.5.1-10 | 1 | B 3.6.3-6 | 1 |
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| B 3.5.2-6 | 0 | B 3.6.3-12 | 11 |
| B 3.5.2-7 | 1 | B 3.6.3-13 | 1 |
| B 3.5.2-8 | 22 | B 3.6.3-14 | 1 |
| B 3.5.2-9 | 1 | B 3.6.3-15 | 1 |
| B 3.5.2-10 | 1 | B 3.6.3-16 | 1 |
| B 3.5.3-1 | 0 | B 3.6.3-17 | 1 |
| B 3.5.3-2 | 0 | B 3.6.4-1 | 0 |
| B 3.5.3-3 | 0 | B 3.6.4-2 | 1 |
| B 3.5.3-4 | 0 | B 3.6.4-3 | 1 |
| B 3.5.3-5 | 0 | B 3.6.5-1 | 0 |
| B 3.5.3-6 | 2 | B 3.6.5-2 | 1 |
| B 3.5.3-7 | 2 | B 3.6.5-3 | 0 |
| B 3.5.3-8 | 1 | B 3.6.5-4 | 0 |
| B 3.5.3-9 | 0 | B 3.6.6-1 | 0 |
| B 3.5.3-10 | 2 | B 3.6.6-2 | 0 |
| B 3.5.4-1 | 15 | B 3.6.6-3 | 1 |
| B 3.5.4-2 | 0 | B 3.6.6-4 | 7 |
| B 3.5.4-3 | 0 | B 3.6.6-5 | 1 |
| B 3.5.5-1 | 0 | B 3.6.6-6 | 0 |
| B 3.5.5-2 | 7 | B 3.6.6-7 | 1 |
| B 3.5.5-3 | 4 | B 3.6.6-8 | 1 |
| B 3.5.5-4 | 4 | B 3.6.6-9 | 0 |
| B 3.5.5-5 | 0 | B 3.6.7-1 | 0 |
| B 3.5.5-6 | 0 | B 3.6.7-2 | 0 |
| B 3.5.5-7 | 0 | B 3.6.7-3 | 0 |
| B 3.5.6-1 | 0 | B 3.6.7-4 | 0 |
| B 3.5.6-2 | 1 | B 3.6.7-5 | 0 |
| B 3.5.6-3 | 0 | B 3.7.1-1 | 7 |
| B 3.5.6-4 | 1 | B 3.7.1-2 | 7 |
| B 3.5.6-5 | 0 | B 3.7.1-3 | 0 |
| B 3.6.1-1 | 0 | B 3.7.1-4 | 0 |
| B 3.6.1-2 | 0 | B 3.7.1-5 | 1 |
| B 3.6.1-3 | 0 | B 3.7.1-6 | 7 |
| B 3.6.1-4 | 0 | B 3.7.2-1 | 0 |
| B 3.6.1-5 | 0 | B 3.7.2-2 | 0 |
| B 3.6.2-1 | 0 | B 3.7.2-3 | 0 |
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| B 3.7.3-1 | 1 | B 3.7.13-5 | 0 |
| B 3.7.3-2 | 1 | B 3.7.14-1 | 0 |
| B 3.7.3-3 | 1 | B 3.7.14-2 | 21 |
| B 3.7.3-4 | 0 | B 3.7.14-3 | 21 |
| B 3.7.3-5 | 0 | B 3.7.15-1 | 3 |
| B 3.7.4-1 | 0 | B 3.7.15-2 | 3 |
| B 3.7.4-2 | 0 | B 3.7.16-1 | 7 |
| B 3.7.4-3 | 0 | B 3.7.16-2 | 0 |
| B 3.7.4-4 | 0 | B 3.7.16-3 | 0 |
| B 3.7.5-1 | 0 | B 3.7.16-4 | 0 |
| B 3.7.5-2 | 0 | B 3.7.17-1 | 23 |
| B 3.7.5-3 | 0 | B 3.7.17-2 | 3 |
| B 3.7.5-4 | 0 | B 3.7.17-3 | 3 |
| B 3.7.5-5 | 9 | B 3.7.17-4 | 3 |
| B 3.7.5-6 | 9 | B 3.7.17-5 | 3 |
| B 3.7.5-7 | 9 | B 3.7.17-6 | 3 |
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| B 3.7.5-10 | 9 | B 3.8.1-3 | 20 |
| B.3.7.5-11 | 9 | B 3.8.1-4 | 20 |
| B 3.7.6-1 | 0 | B 3.8.1-5 | 20 |
| B 3.7.6-2 | 0 | B 3.8.1-6 | 20 |
| B 3.7.6-3 | 5 | B 3.8.1-7 | 2 |
| B 3.7.6-4 | 0 | B 3.8.1-8 | 2 |
| B 3.7.7-1 | 0 | B 3.8.1-9 | 2 |
| B 3.7.7-2 | 1 | B 3.8.1-10 | 2 |
| B 3.7.7-3 | 1 | B 3.8.1-11 | 2 |
| B 3.7.7-4 | 1 | B 3.8.1-12 | 2 |
| B 3.7.7-5 | 1 | B 3.8.1-13 | 2 |
| B 3.7.8-1 | 1 | B 3.8.1-14 | 2 |
| B 3.7.8-2 | 1 | B 3.8.1-15 | 2 |
| B 3.7.8-3 | 1 | B 3.8.1-16 | 20 |
| B 3.7.8-4 | 1 | B 3.8.1-17 | 20 |
| B 3.7.9-1 | 0 | B 3.8.1-18 | 20 |
| B 3.7.9-2 | 1 | B 3.8.1-19 | 20 |
| B 3.7.9-3 | 0 | B 3.8.1-20 | 20 |
| B 3.7.10-1 | 10 | B 3.8.1-21 | 20 |
| B 3.7.10-2 | 1 | B 3.8.1-22 | 20 |
| B 3.7.10-3 | 1 | B 3.8.1-23 | 20 |
| B 3.7.10-4 | 1 | B 3.8.1-24 | 20 |
| B 3.7.11-1 | 0 | B 3.8.1-25 | 20 |
| B 3.7.11-2 | 0 | B 3.8.1-26 | 20 |
| B 3.7.11-3 | 21 | B 3.8.1-27 | 20 |
| B 3.7.11-4 | 10 | B 3.8.1-28 | 20 |
| B 3.7.11-5 | 10 | B 3.8.1-29 | 20 |
| B 3.7.11-6 | 10 | B 3.8.1-30 | 20 |
| B 3.7.12-1 | 1 | B 3.8.1-31 | 20 |
| B 3.7.12-2 | 21 | B 3.8.1-32 | 20 |
| B 3.7.12-3 | 21 | B 3.8.1-33 | 20 |
| 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 3.8.2-1 | 0 |
| B 3.8.2-2 | 0 |
| B 3.8.2-3 | 0 |
| B 3.8.2-4 | 21 |
| B 3.8.2-5 | 21 |
| B 3.8.2-6 | 0 |
| B 3.8.3-1 | 0 |
| B 3.8.3-2 | 0 |
| B 3.8.3-3 | 0 |
| B 3.8.3-4 | 0 |
| B 3.8.3-5 | 1 |
| B 3.8.3-6 | 0 |
| B 3.8.3-7 | 0 |
| B 3.8.3-8 | 0 |
| B 3.8.3-9 | 0 |
| B 3.8.4-1 | 0 |
| B 3.8.4-2 | 0 |
| B 3.8.4-3 | 0 |
| B 3.8.4-4 | 2 |
| B 3.8.4-5 | 2 |
| B 3.8.4-6 | 2 |
| B 3.8.4-7 | 2 |
| B 3.8.4-8 | 2 |
| B 3.8.4-9 | 2 |
| B 3.8.4-10 | 2 |
| B 3.8.4-11 | 2 |
| B 3.8.5-1 | 1 |
| B 3.8.5-2 | 1 |
| B 3.8.5-3 | 21 |
| B 3.8.5-4 | 21 |
| B 3.8.5-5 | 2 |
| B 3.8.5-6 | 2 |
| B 3.8.6-1 | 0 |
| B 3.8.6-2 | 0 |
| B 3.8.6-3 | 0 |
| B 3.8.6-4 | 6 |
| B 3.8.6-5 | 6 |
| B 3.8.6-6 | 6 |
| B 3.8.6-7 | 0 |
| B 3.8.7-1 | 0 |
| B 3.8.7-2 | 0 |
| B 3.8.7-3 | 0 |
| B 3.8.7-4 | 0 |
| B 3.8.8-1 | 1 |
| B 3.8.8-2 | 1 |
| 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 |
| B 3.8.9-3 | 0 |
| B 3.8.9-4 | 0 |
| B 3.8.9-5 | 0 |
| B 3.8.9-6 | 0 |
| B 3.8.9-7 | 0 |
| B 3.8.9-8 | 0 |
| B 3.8.9-9 | 0 |
| B 3.8.9-10 | 0 |
| B 3.8.9-11 | 0 |
| B 3.8.10-1 | 0 |
| B 3.8.10-2 | 21 |
| B 3.8.10-3 | 0 |
| B 3.8.10-4 | 0 |
| B 3.9.1-1 | 0 |
| B 3.9.1-2 | 0 |
| B 3.9.1-3 | 0 |
| B 3.9.1-4 | 0 |
| B 3.9.2-1 | 15 |
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| B 3.9.2-4 | 15 |
| B 3.9.3-1 | 18 |
| B 3.9.3-2 | 19 |
| B 3.9.3-3 | 19 |
| B 3.9.3-4 | 19 |
| B 3.9.3-5 | 19 |
| B 3.9.3-6 | 19 |
| B 3.9.4-1 | 0 |
| B 3.9.4-2 | 1 |
| B 3.9.4-3 | 0 |
| B 3.9.4-4 | 0 |
| B 3.9.5-1 | 0 |
| B 3.9.5-2 | 16 |
| B 3.9.5-3 | 16 |
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| B 3.9.5-5 | 16 |
| B 3.9.6-1 | 0 |
| B 3.9.6-2 | 0 |
| B 3.9.6-3 | 0 |
| B 3.9.7-1 | 0 |
| B 3.9.7-2 | 0 |
| B 3.9.7-3 | 0 |

BASES

SAFETY LIMIT VIOLATIONS (continued)

2.2.3

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the NRC Operations Center must be notified within 1 hour, in accordance with 10 CFR 50.72 (Ref. 3).

2.2.4

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the appropriate senior management of the nuclear plant and the utility shall be notified within 24 hours. This 24 hour period provides time for the plant operators and staff to take the appropriate immediate action and assess the condition of the unit before reporting to the senior management.

2.2.5

If SL 2.1.1.1 or SL 2.1.1.2 is violated, a Licensee Event Report shall be prepared and submitted within 30 days to the NRC in accordance with 10 CFR 50.73 (Ref. 4). A copy of the report shall also be provided to the senior management of the nuclear plant, and the utility Senior Vice President, Nuclear.

2.2.6

If SL 2.1.1.1 or SL 2.1.1.2 is violated, restart of the unit shall not commence until authorized by the NRC. This requirement ensures the NRC that all necessary reviews, analyses, and actions are completed before the unit begins its restart to normal operation.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10, 1988.
2. UFSAR, Sections 6 and 15.
3. 10 CFR 50.72.
4. 10 CFR 50.73.

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BASES

APPLICABILITY

SL 2.1.2 applies in MODES 1, 2, 3, 4, and 5 because this SL could be approached or exceeded in these MODES due to overpressurization events. The SL is not applicable in MODE 6 because the reactor vessel head closure bolts are not fully tightened, making it unlikely that the RCS can be pressurized.

SAFETY LIMIT VIOLATIONS

The following SL violation responses are applicable to the RCS pressure SLs.

2.2.2.1

If the RCS pressure SL is violated when the reactor is in MODE 1 or 2, the requirement is to restore compliance and be in MODE 3 within 1 hour.

With RCS pressure greater than the value specified in SL 2.1.2 in MODE 1 or 2, the pressure must be reduced to below this value. A pressure greater that the value specified in SL 2.1.2 exceeds 110% of the RCS design pressure and may challenge system integrity.

The allowed Completion Time of 1 hour provides the operator time to complete the necessary actions to reduce RCS pressure by terminating the cause of the pressure increase, removing mass or energy from the RCS, or a combination of these actions, and to establish MODE 3 conditions.

2.2.2.2

If the RCS pressure SL is exceeded in MODE 3, 4, or 5, RCS pressure must be restored to within the SL value within 5 minutes.

Exceeding the RCS pressure SL in MODE 3, 4, or 5 is potentially more severe than exceeding this SL in MODE 1 or 2, since the reactor vessel temperature may be lower and the vessel material, consequently, less ductile. As such, pressure must be reduced to less than the SL within 5 minutes. This action does not require reducing MODES, since this would require reducing temperature, which would

(continued)

BASES

SAFETY LIMIT VIOLATIONS

2.2.2.2 (continued)

compound the problem by adding thermal gradient stresses to the existing pressure stress.

2.2.2.3

If the RCS pressure SL is violated, the NRC Operations Center must be notified within 1 hour, in accordance with 10 CFR 50.72 (Ref. 6).

2.2.2.4

If the RCS pressure SL is violated, the appropriate senior management of the nuclear plant and the utility shall be notified within 24 hours. This 24 hour period provides time for the plant operators and staff to take the appropriate immediate action and to assess the condition of the unit before reporting to the senior management.

2.2.2.5

If the RCS pressure SL is violated, a Licensee Event Report shall be prepared and submitted within 30 days to the NRC in accordance with 10 CFR 50.73 (Ref. 7). A copy of the report shall also be provided to the senior management of the nuclear plant, and the utility Senior Vice President, Nuclear.

2.2.2.6

If the RCS pressure SL is violated, restart of the unit shall not commence until authorized by the NRC. This requirement ensures the NRC that all necessary reviews, analyses, and actions are completed before the unit begins its restart to normal operation.

(continued)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.14 RCS Operational LEAKAGE

BASES

BACKGROUND

Components that contain or transport the coolant to or from the reactor core make up the RCS. Component joints are made by welding, bolting, rolling, or pressure loading, and valves isolate connecting systems from the RCS.

During plant life, the joint and valve interfaces can produce varying amounts of reactor coolant LEAKAGE, through either normal operational wear or mechanical deterioration. The purpose of the RCS Operational LEAKAGE LCO is to limit system operation in the presence of LEAKAGE from these sources to amounts that do not compromise safety. This LCO specifies the types and amounts of LEAKAGE.

10 CFR 50, Appendix A, GDC 30 (Ref. 1), requires means for detecting and, to the extent practical, identifying the source of reactor coolant LEAKAGE. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems.

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring reactor coolant LEAKAGE into the containment area is necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE is necessary to provide quantitative information to the operators, allowing them to take corrective action should a leak occur detrimental to the safety of the facility and the public.

A limited amount of leakage inside containment is expected from auxiliary systems that cannot be made 100% leaktight. Leakage from these systems should be detected, located, and isolated from the containment atmosphere, if possible, to not interfere with RCS LEAKAGE detection.

This LCO deals with protection of the Reactor Coolant Pressure Boundary (RCPB) from degradation and the core from inadequate cooling, in addition to preventing the accident analysis radiation release assumptions from being exceeded. The consequences of violating this LCO include the possibility of a Loss Of Coolant Accident (LOCA).

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

Except for primary to secondary LEAKAGE, the safety analyses do not address operational LEAKAGE. However, other operational LEAKAGE is related to the safety analyses for LOCA; the amount of leakage can affect the probability of such an event. The safety analysis for an event resulting in steam discharge to the atmosphere assumes a 1 gpm total primary to secondary LEAKAGE as the initial condition. While some events assume the 1 gpm leakage is in one steam generator, others assume 0.5 gpm per steam generator (1 gpm total) as an initial condition. Therefore, the individual UFSAR accident analysis section must be reviewed to determine the assumed primary to secondary LEAKAGE for a specific accident.

Primary to secondary LEAKAGE is a factor in the dose releases outside containment resulting from a Steam Line Break (SLB) accident. To a lesser extent, other accidents or transients involve secondary steam release to the atmosphere, such as a Steam Generator Tube Rupture (SGTR). The leakage contaminates the secondary fluid.

The Technical Specification limit of 150 gallons per day (gpd) primary to secondary LEAKAGE through any one steam generator is significantly less than the initial conditions assumed in the safety analyses. The 150 gpd limit is based on operating experience as an indication of one or more propagating tube leak mechanisms. This leakage rate limit provides additional assurance against tube rupture at normal and faulted conditions and provides additional assurance that cracks will not propagate to burst prior to detection by leakage monitoring methods and commencement of plant shutdown.

The UFSAR (Ref. 3) analysis for SGTR assumes the contaminated secondary fluid is only briefly released via safety valves and the majority is steamed to the condenser. Tube leakage of 1 gpm in the unaffected steam generator is assumed for the duration of the transient.

The SLB is more limiting for site radiation releases. The safety analysis for the SLB accident assumes 1 gpm primary to secondary LEAKAGE in the faulted steam generator as an initial condition. The dose consequences resulting from the SLB accident are well within the limits defined in 10 CFR 50 or the staff approved licensing basis (i.e., a small fraction of these limits).

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36 (C)(2)(ii).

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

No pressure boundary LEAKAGE is allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable as the leak itself could cause further deterioration, resulting in higher LEAKAGE. Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.

b. Unidentified LEAKAGE

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring and containment sump level monitoring equipment can detect within a reasonable time period. Violation of this LCO could result in continued degradation of the RCPB, if the LEAKAGE is from the pressure boundary.

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of unidentified LEAKAGE and is well within the capability of the RCS makeup system. Identified LEAKAGE includes LEAKAGE to the containment from specifically known and located sources, but does not include pressure boundary LEAKAGE or controlled Reactor Coolant Pump (RCP) seal leakoff (a normal function not considered LEAKAGE). Violation of this LCO could result in continued degradation of a component or system.

(continued)

BASES

LCO (continued)

LCO 3.4.15, "RCS Pressure Isolation Valve (PIV) Leakage," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leaktight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable identified LEAKAGE.

d. Primary to Secondary LEAKAGE through Any One SG

The maximum allowable operational primary to secondary LEAKAGE through any one SG of 150 gpd is based on operating experience as an indication of one or more propagating tube leak mechanisms. This operational limit is significantly less than the initial conditions assumed in the safety analyses. The Steam Generator Tube Surveillance Program described in TS Section 5.5.9 ensures that the structural integrity of the SG tubes is maintained. The 150 gpd leakage rate limit provides additional assurance against tube rupture at normal and faulted conditions and provides additional assurance that cracks will not propagate to burst prior to detection by leakage monitoring methods and commencement of plant shutdown. Primary to secondary LEAKAGE must be included in the total allowable limit for identified LEAKAGE.

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

(continued)

## B 3.7 PLANT SYSTEMS

### B 3.7.17 Spent Fuel Assembly Storage

BASES

BACKGROUND

The spent fuel storage is designed to store either new (nonirradiated) nuclear fuel assemblies, or burned (irradiated) fuel assemblies in a vertical configuration underwater. The storage pool was originally designed to store up to 1329 fuel assemblies in a borated fuel storage mode. The current storage configuration, which allows credit to be taken for boron concentration, burnup, and decay time, and does not require neutron absorbing (boraflex) storage cans, provides for a maximum storage of 1209 fuel assemblies in a four-region configuration. The design basis of the spent fuel cooling system, however, is to provide adequate cooling to the spent fuel during all operating conditions (including full core offload) for only 1205 fuel assemblies (UFSAR section 9.1.3). Therefore, an additional four spaces are mechanically blocked to limit the maximum number of fuel assemblies that may be stored in the spent fuel storage pool to 1205.

Region 1 is comprised of two 9x8 storage racks and one 12x8 storage rack. Cell blocking devices are placed in every other storage cell location in Region 1 to maintain a two-out-of-four checkerboard configuration. These cell blocking devices prevent inadvertent insertion of a fuel assembly into a cell that is not allowed to contain a fuel assembly.

Region 3 is comprised of three 9x8 storage racks and one 9x9 storage rack. Since fuel assemblies may be stored in every Region 3 cell location, no cell blocking devices are installed in Region 3.

Regions 2 and 4 are mixed and are comprised of seven 9x8 storage racks and three 12x8 storage racks. Regions 2 and 4 are mixed in a repeating 3x4 storage pattern in which two-out-of-twelve cell locations are designated Region 2 and ten-out-of-twelve cell locations are designated Region 4 (see UFSAR Figure 9.1-9). Since fuel assemblies may be stored in every Region 2 and Region 4 cell location, no cell blocking devices are installed in Region 2 and Region 4.

(continued)

BASES

| | |
|---|---|
| BACKGROUND (continued) | The spent fuel storage cells are installed in parallel rows with a nominal center-to-center spacing of 9.5 inches. This spacing, a minimum soluble boron concentration of 900 ppm, and the storage of fuel in the appropriate region based on assembly burnup in accordance with TS Figures 3.7.17-1, 3.7.17-2, and 3.7.17-3 is sufficient to maintain a $k_{eff}$ of $\leq 0.95$ for fuel of original maximum radially averaged enrichment of up to 4.80%. |
| APPLICABLE SAFETY ANALYSES | The spent fuel storage pool is designed for non-criticality by use of adequate spacing, credit for boron concentration, and the storage of fuel in the appropriate region based on assembly burnup in accordance with TS Figures 3.7.17-1, 3.7.17-2, and 3.7.17-3. The design requirements related to criticality (TS 4.3.1.1) are $k_{eff} < 1.0$ assuming no credit for boron and $k_{eff} \leq 0.95$ taking credit for soluble boron. The burnup versus enrichment requirements (TS Figures 3.7.17-1, 3.7.17-2, and 3.7.17-3) are developed assuming $k_{eff} < 1.0$ with no credit taken for soluble boron, and that $k_{eff} \leq 0.95$ assuming a soluble boron concentration of 900 ppm and the most limiting single fuel mishandling accident.<br><br>The analysis of the reactivity effects of fuel storage in the spent fuel storage racks was performed by ABB-Combustion Engineering (CE) using the three-dimensional Monte Carlo code KENO-VA with the updated 44 group ENDF/B-5 neutron cross section library. The KENO code has been previously used by CE for the analysis of fuel rack reactivity and have been benchmarked against results from numerous critical experiments. These experiments simulate the PVNGS fuel storage racks as realistically as possible with respect to parameters important to reactivity such as enrichment and assembly spacing.<br><br>The modeling of Regions 2, 3, and 4 included several conservative assumptions. These assumptions neglected the reactivity effects of poison shims in the assemblies and structural grids. These assumptions tend to increase the calculated effective multiplication factor ($k_{eff}$) of the racks. The stored fuel assemblies were modeled as CE 16x16 assemblies with a nominal pitch of 0.5065 inches between fuel rods, a fuel pellet diameter of 0.3255 inches, and a UO(2) density of 10.31 g/cc. |

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.18

Under accident and loss of offsite power conditions loads are sequentially connected to the bus by the automatic load sequencer. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The 1 second load sequence time tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. FSAR, Chapter 8 (Ref. 2) provides a summary of the automatic loading of ESF buses.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3), paragraph 2.2.4, takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems.

SR 3.8.1.19

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 18 months takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of 18 months.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.19 (continued)

This SR is modified by three Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations for DGs. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Note 3 states that the steady state voltage and frequency limits are analyzed values and have not been adjusted for instrument accuracy. The analyze values for the steady-state diesel generator voltage limits are ≥ 4000 and ≤ 4377.2 volts and the analyzed values for the steady-state diesel generator frequency limits are ≥ 59.7 and ≤ 60.7 hertz. The indicated steady state diesel generator voltage and frequency limits, using the panel mounted diesel generator instrumentation and adjusted for instrument error, are ≥ 4080 and ≤ 4300 volts (Ref. 12), and ≥ 59.9 and ≤ 60.5 hertz (Ref. 13), respectively. If digital Maintenance and Testing Equipment (M&TE) is used instead of the panel mounted diesel generator instrumentation, the instrument error may be reduced, increasing the range for the indicated steady state voltage and frequency limits.

SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can proper speed within the specified time when the DGs are started simultaneously.

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3), paragraph 2.3.2.4 and Regulatory Guide 1.137 (Ref. 9).

This SR is modified by three Notes. The reason for Note 1 is to minimize wear on the DG during testing. The reason for Note 2 is that during operation with the reactor critical, performance of this SR could cause perturbations to the EDS that could challenge continued steady state operation and, as a result, unit safety systems. Note 3 states that the steady state voltage and frequency limits are analyzed values and have not been adjusted for instrument accuracy. The analyzed values for the steady-state diesel generator voltage limits are ≥ 4000 and

(continued)