

Arizona Public Service Company

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ANPP-29687-EEVB/WFQ
REGION V

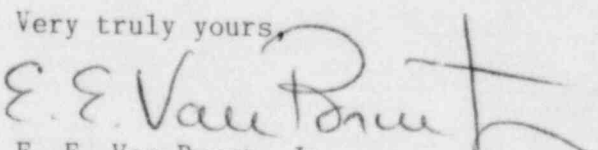
Mr. John B. Martin
U. S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Subject: Palo Verde Nuclear Generating Station
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Notice of Deviation
NRC's Special Construction Appraisal Inspection
File: 84-019-026; D.4.33.2

Reference: Letter from E. E. Van Brunt, Jr. (APS), to John B.
Martin, (NRC) dated April 13, 1984. (ANPP-29302-WEI/BSK)

Dear Mr. Martin:

Please find attached the proposed revision to FSAR Section 3.8.1.6.6 concerning structural and miscellaneous steel welding for your review as committed to in the referenced letter. This revision is documented as PVNGS SAR change notice 1123 for our files. If you have any questions or comments concerning these changes, please contact me.

Very truly yours,

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

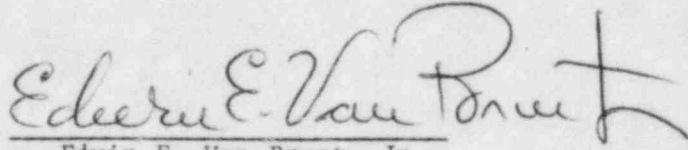
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Attachment

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NRC's Special Construction
Appraisal Inspection
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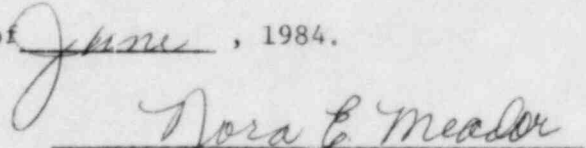
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STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Edwin E. Van Brunt, Jr., represent that I am Vice President, Nuclear, of Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, that to the best of my knowledge and belief, the statements made therein are true.


Edwin E. Van Brunt, Jr.

Sworn to before me this 7th day of June, 1984.


Notary Public

My Commission Expires:

My Commission Expires April 6, 1987

Welding ^{and} ~~is done in accordance with AWS D1.1-72, Revision 1, 1973, Structural Welding Code.~~ The acceptance criteria for

visual inspection of welding ^{are} ~~is done~~ in accordance with AWS D1.1-72, Rev. 1, 1973 **WITH CLARIFICATIONS AND CHANGES IDENTIFIED IN SECTION 3.8.1.6.6.1.A.**

3.8.1.6.6.1 Structural Steel Construction. ~~Recommendations~~ for steel construction procedures are as follows.

- A. Welding
 - 1. Structural Welding Code (AWS D1.1-72, Revision 1, 1973) is used with the following changes:
 - a. Paragraph 4.9.2 replaced as follows:
All electrodes having low-hydrogen coverings conforming to AWS A5.1 are purchased in hermetically-sealed containers. If the hermetically-sealed container shows evidence of damage the electrodes are dried prior to use. Immediately after the opening of the hermetically-sealed containers, electrodes are stored in ovens held at a temperature of 200F minimum. The E70XX electrodes that are not used within 12 hours, E80XX within 2 hours, E90XX within 1 hour, E100XX and E110XX within 1/2 hour after the opening of the hermetically-sealed container or removal of the electrodes from a drying or storage oven are redried for 8 hours at a temperature of 200F minimum prior to reissue. Electrodes which have been wet are not used. Heated rod cans are not required when rod is used within the specified time.
 - b. In Table 4.2, the governing thickness to determine preheat requirements for fillet welds shall be the weld throat thickness.

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A. Welding and acceptance criteria for visual inspection of welding is per the Structural Welding Code (AWS D1.1-72, Revision 1, 1973) with the following clarifications and changes:

1. Weld joint classification is based upon suitability for service in accordance with the following categories:

- a. Category A Joints are part of the main building frame and carry principle design loads.
- b. Category B Joints are connections between main building frame and miscellaneous metal.
- c. Category C Joints are not part of the main building frame, but rather provide auxiliary support or framing for systems, components and equipment. These joints are within the miscellaneous metal category, and shall include, but are not limited to, pipe supports (beyond the scope of ASME Codes), stairways, embedments, HVAC duct supports, instrument supports and electrical raceway and supports (except where unistrut is used).
- d. Category D Joints are not part of the building frame, or auxiliary support system but rather perform a passive or inactive function. These joints are within the miscellaneous metal category and shall include, but are not limited to, doors, windows, hatch covers and frames, ledger angles, handrails and gratings.
- e. Category E Joints are limited to welds, used in ductwork welding of thin walled gauge steel, whose classification is not specifically covered by the Structural Welding Code.

2. Paragraph 3.1.4 is clarified as follows:

- a. Weld sizes specified in the drawings are considered nominal. Deviations of up to minus 1/32 inch for the entire weld length are considered as meeting the weld size requirement.
- b. The fillet leg dimension may not under run the specified weld size by more than 1/16 inch for more than 10 percent of the weld length. For flange-to-web joints, the undersize may not be within two flange thicknesses of the weld end.
- c. The actual size of the fillet weld profile may exceed the size shown on the design drawings by 3/16 inch for its entire length, and 1/4 inch for no more than 10 percent of its length.
- d. Fillet weld lengths in excess of those shown on the design drawings are acceptable.
- e. Where intermittent fillet welds are specified on the design drawings, a continuous weld of the same size is acceptable.

3. Paragraph 4.9.2 is replaced as follows:

All electrodes having low-hydrogen coverings conforming to AWS A5.1 are purchased in hermetically-sealed containers. If the hermetically-sealed container shows evidence of damage, the electrodes are dried prior to use. Immediately after the opening of the hermetically-sealed containers, electrodes are stored in ovens held at a temperature of 200F minimum. The E70XX electrodes that are not used within 12 hours, E80XX within 2 hours, E90XX within 1 hour, E100XX and E110XX within 1/2 hour after the opening of the hermetically-sealed container or removal of the electrodes from a drying or storage oven are redried for 8 hours at a temperature of 200F minimum prior to reissue. Electrodes which have been wet are not used. Heated rod cans are not required when rod is used within the specified time.

4. In Table 4.2, the governing thickness to determine preheat requirements for fillet welds shall be the weld throat thickness.

5. Paragraph 3.6.4 is replaced as follows:

a. For all structural steel welded connections, the undercut shall not exceed 1/32 inch unless noted otherwise.

b. For Category C Joints undercut (underfill) not exceeding 1/32 inch may be acceptable for the full length of the weld. Undercut not exceeding 1/16 inch may be accepted providing the width is greater than the depth and does not have an acute intersection at its root. The accumulative length of 1/16 inch undercut shall not exceed 50 percent of the weld length. For members welded from both sides the cumulative undercut depth or length shall not exceed the criteria.

c. For Category D and E Joints, undercut shall not exceed 50 percent of the material thickness.

6. Paragraph 3.6.6 is replaced as follows:

Overlap/rollover may not exceed 1/8 inch.

7. Paragraph 3.6.1 is replaced as follows:

The face of fillet welds may be slightly convex, flat, or slightly concave. The convexity height shall not exceed 1/3 inch. Concavity shall not reduce the weld throat beyond that required for weld size.

8. Paragraph 8.15.1.3 is replaced as follows:

a. For Category A and B Joints, the weld may have an under-filled crater, provided the underfill depth does not exceed 1/32 inch, and the crater has a smooth contour blending gradually with the adjacent weld and base metal without acute notches.

b. For Category C and D Joints, underfilled groove weld craters shall be accepted provided the depth of underfill is 1/16 inch or less. Underfilled single-pass fillet weld craters shall be accepted provided the crater length is less than 10 percent of the weld length. On multi-pass fillet weld crater depth 1/16 inch or less shall be accepted.

9. Paragraph 8.15.1.5 is replaced as follows:

a. For Category A, B, C and E Joints, the welds may contain a maximum of 5 percent, by surface area, unaligned, unclustered porosity.

b. For Category D Joints, porosity is not a criterion for rejection.

10. Paragraph 3.10.1 is clarified as follows:

For Category D Joints, slag inclusions are not a criterion for rejection.

11. Welding shall be performed only by welders or welding operators who have been qualified in accordance with Section 5 of the Structural Welding Code, except for the following:

a. Construction aids defined as temporary pipe supports, lifting eyes, construction bracing, supports for concrete embeds and other similar material which may be attached to structural or miscellaneous steel and are not shown on design drawings: Welders or welding operators may be qualified to AWS or ASME Section IX requirements.

b. Welders performing welding on pipe supports (beyond the scope of ASME codes), embedments, or instrument supports may be qualified to AWS or ASME Section IX requirements.

c. The Structural Welding Code groove plate test in the 3G and 4G positions shall qualify a welder to perform the following additional operations:

1) Welding of handrails in all positions.

2) To make fillet welds of any size, in all positions, on base metals in all thicknesses for structural tubing.

12. To provide more definitive acceptance criteria for intermittent fillet welds for electrical raceway supports, paragraph 4.6.1 of AWS A2.4 is replaced by the following:

When intermittent fillet welding is used by itself, the symbol indicates that increments shall be located at the ends of the dimensioned length. However, weld lengths starting or terminating within 1 inch of the end of the member shall be acceptable for electrical raceway supports.

2. ~~Welders performing welding on pipe supports (beyond the scope of ASME codes), embedments or instrument supports are qualified to AWS or ASME Section IX requirements.~~

- B. AISC, Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, as referenced in section 3.8.1.2.2, is used.
- C. AISC, Specification for Structural Joints Using ASTM A 325 or A 490 Bolts is used.

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- D. Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants (ANSI N45.2.5-1974) is used except as noted below:
1. Section 5.4, High Strength Bolting -- Used except AISC Specification for Structural Joints Using ASTM A325 or A490 Bolts shall govern the proper length of bolts.
 2. Section 5.5, Welding -- Used with exceptions as noted in section 3.8.1.6.6.1.A.

3.8.1.6.7 Quality Control

Quality control procedures are established and implemented during construction and inspection. The quality control procedures are specified in the technical specifications covering the fabrication, furnishing, and installation of each structural component and provide inspection and documentation to assure that the codes and construction practices are met.

3.8.1.6.7.1 Control Tests for Concrete. Concrete for the containment structure is tested in accordance with ACI 301-72, except as noted in section 3.8.1.6.1. Concrete placement is accomplished in accordance with NRC Regulatory Guide 1.55 as discussed in section 1.8.

3.8.1.6.7.2 Control Tests for Reinforcing Steel. Reinforcing steel is tested in accordance with NRC Regulatory Guide 1.15.

Control of mechanical splices for reinforcement utilizing filler metal and an enclosing sleeve (Cadweld-type splices)