**Washington Public Power Supply System**

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

January 15, 1982
GO-1-82-0018



Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Attention: Mr. B. H. Faulkenberry
Chief, Reactor Construction
Projects Branch

Subject: Nuclear Projects 1 and 4
NRC Inspection WNP 1/4
Dates of Inspection October 1, 9
and 19-23, 1981
Docket Nos. 50-460 and 50-513
Construction Permit Nos. CPPR-134 and 174

Reference: (1) Letter from R. H. Faulkenberry to
D. W. Mazur, NRC Inspection at
WNP 1/4 Site, dated December 3, 1981

(2) Letter D. W. Mazur to R. H. Faulkenberry
dated December 12, 1981, GO1-81-414

Reference one (1) of the correspondence delineated the results of the October, 1981 inspection of activities authorized by NRC Construction Permits Nos. CPPR-134 and -174. Further, reference one (1) of the correspondence identified certain activities which were not conducted in full compliance with PSAR requirements as set forth in the Notice of Violation enclosed as Appendix A. This item of noncompliance has been categorized into a level as described in Supplement II of the Federal Register dated October 7, 1980 (45FR66754) as the Interim Enforcement Policy.

The specific finding, as identified, and the Supply Systems response is provided herewith as Appendix A.

D. W. Mazur
Program Manager, WNP-1/4

DWM:MER:wp
Attachments
cc: CR Bryant, BPA/399
RT Johnson, QA WNP-2/917Q
V. Stello, Director of Inspection, NRC
A. Toth, Resident NRC Inspector
FDCC/899



82-04

STATE OF WASHINGTON)
)
COUNTY OF BENTON )

D. W. MAZUR, Being first duly sworn, deposes and says: That he is the Program Director, WNP-1/4, for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that he is authorized to submit the foregoing on behalf of said applicant; that he has read the foregoing and knows the contents thereof; and believes the same to be true to the best of his knowledge.

DATED 1/14, 1982

D. W. MAZUR

On this day personally appeared before me D. W. MAZUR to me know to be the individual who executed the foregoing instrument and acknowledged that he signed the same as his free act and deed for the uses and purposes therein mentioned.

GIVEN under my hand and seal this 14th day of January, 1982

Notary Public in and for the State of Washington
Residing at Kennewick

Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Docket No. 50-460 and 50-513
Construction Permit Nos. CPPR-134 and -174

APPENDIX A

FINDING A

Criterion V of Appendix B of 10 CFR 50 states, in part, that: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings....(which) shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

Section 17.1.5 of the PSAR for the Washington Nuclear Project Unit #1 describes that measures would be established to comply with the above requirement.

Contrary to the above requirements, on October 9, 1981, welding and weld inspection procedure JAJ-WI-010.1 did not include appropriate acceptance criteria for welding of skewed joints of piping support structural steel. This situation has existed since at least October 9, 1979, when the contractor had contacted the ASME code committee to inquire about this matter. In the absence of specific ASME requirements, the contractor failed to define inspection criteria and techniques for assessing adequacy of weld sizes of skew joints.

On October 9, 1981 a weld of less than 1/8-inch throat size had been accomplished and accepted by the JA Jones Construction Company, whereas a 1/4-inch size fillet weld was shown for the 150-degree skewed joint on support steel for the in-core monitoring system, weld number N1 of sheet 29A of drawing 9779-LL-419500.

This is a Severity Level V violation (Supplement II).

Supply System Response

A. The deficiency described in the subject item of noncompliance was reported to your office on November 16, 1981 as a Potentially Reportable Condition under the requirements of 10 CFR50.55(e). On December 8, 1981 an interim report, Supply System letter number GO1-81-414, was forwarded to your office identifying the deficiency and the planned and ongoing corrective actions to be taken by the Project to correct the deficiency. A copy of that interim 10 CFR50.55(e) report is attached with modifications, Appendix B, as our response to the Notice of Violation. The original 10CFR50(e) Report will be amended to reflect the changes made by way of this response.

There is one (1) item which was not specifically addressed in our interim report, which is germane to the Notice of Violation and that is the aspect of inspection acceptance criteria. The PCP's referred to in the interim (Appendix B) report not only establish the new fillet weld leg sizes as a function of the dihedral angle but also indicate by means of diagrammatical illustrations how the fillet weld leg lengths are to be measured. This new leg length and the variable dihedral angle represent the acceptance criteria for skewed welds.

At the present time the in plant inspection of existing skewed welds as discussed in Appendix B will be limited to Unit I only. The skewed welds in Unit 4 requiring leg size verification will be inspected only after restart of construction. In order to assure that timely follow-up action is initiated at the restart of construction of Unit 4 this item will be carried on the Projects Action Tracking Systems by Supply System Engineering.

APPENDIX B
WNP-1/4
DOCKET NOS. 50.460 AND 50-513
POTENTIAL REPORTABLE CONDITION 10CFR50.55(e)
SKEWED TEE JOINT WELD SIZE INTERIM REPORT

## BACKGROUND

Apparent undersize fillet welds on skewed tee joints with obtuse angles were identified during a routine inspection by the WNP-1/4 resident NRC inspector, Mr. A. Toth. This created a question of whether or not the design criteria for increased weld size to obtain the required effective throat for skewed tee joints was properly implemented. In accordance with AWS D1.1 skewed tee joints are defined as having a dihedral angle of not less than 60 degrees nor more than 135 degrees.

The design criteria for the weld size of a skewed tee joint is based on an equivalent sized 90 degree tee joint fillet size. The fillet weld leg length is increased to provide an effective throat for obtuse angle tee joints which is equivalent to a 90 degree tee joint weld. Fillet welds on acute angle tee joints inherently results in an increased weld leg length which provides an effective throat greater than an equivalent sized 90 degree tee joint weld.

## DESCRIPTION OF DEFICIENCY

All obtuse skewed fillet welds detailed by UE&C on the drawings used by the contractors have been sized based on a 90 degree tee joint fillet. UE&C considered it the responsibility of the contractors to recognize the need for increased leg lengths on obtuse angle skewed tee joints for angles up to 135 degrees. However, it appears the contractors assumed that the weld size specified on the detail drawings provided by UE&C were correctly sized and no adjustment in leg length was necessary for the skewed tee joints. With weld sizes applied as detailed, a condition of inadequate effective weld throat could result for obtuse angle tee joints.

Sample analysis performed by UE&C has indicated that an inadequate effective throat could result if the weld size was not increased for the skewed tee joint fillet welds. In any event, not following the criteria for skewed joints would result in undersized welds. Whether or not an inadequate effective throat exists depends upon the applied loads and the degree of conservatism in the design.

## IMMEDIATE CORRECTIVE ACTION

The affected site contractors (contracts 211, 257, 207A, 216, 218, 217, 262, and 253) have been issued PCPs specifically directing them to increase the weld sizes (leg length) for skewed welds shown on the detail drawings supplied them by UE&C Engineering. The contractors have been directed, by way of the aforementioned PCPs, to revise their affected procedures to reflect the information provided in the PCPs. Bechtel has verified through contact with each of the effected contractors that none of the currently approved procedures require revising. However, to ensure uniform inspection of skewed welds, each of the affected contractors will

receive by February 1, 1982 an inspection training packet from Bechtel which is to be administered to all welding inspectors by March 1, 1982. Per the PCPs, the magnitude of the leg length increase is to be determined by the contractor based on a chart included with the PCP which gives a range of different weld sizes and dihedral angles with the respective factor by which the weld is to be increased. It should be noted that, to date, the 217 and 262 contractors have not installed any members or supports which incorporated skewed welds.

Site contractors 216, 218, 253, and 207 are currently working to the requirements of AWS D1.1; however, their design practices are being reviewed by UE&C Engineering to assure that the treatment of skewed welds is in accordance with AWS D1.1. UE&C Engineering will take a random sample of contractor designed connections involving skewed welds and verify that the design and the drawings are compatible with the provisions of AWS D1.1. If it is determined that the contractors designs are not in accordance with AWS D1.1, Engineering will make whatever recommendations they deem necessary to correct the contractors design procedures. If it is determined that the welds are undersized, the same procedure of analysis and verification delineated in the following paragraphs regarding contract 211/257 will be followed. For the case were the drawings are found to be in compliance with AWS D1.1, a sample of the welds shown on the detail drawing analyzed by UE&C Engineering will be reinspected in the field to assure conformance to the drawings.

UE&C Engineering is in the process of identifying all of the skewed tee joints already installed by the 211/257 contractor. From this list, UE&C Engineering will perform an analytical review of each joint where the dihedral angle is in excess of $105^{\circ}$ to ascertain on, a case by case basis, the acceptability of the joint. Based on calculations performed by UE&C Engineering it has been concluded that, for dihedral angles between $90^{\circ}$ - $105^{\circ}$, there is an insignificant reduction in the effective throat and therefore they need not be considered in the analytical review.

Because of the large number of skewed joints with this potential deficiency, it has been concluded that the most accurate and effective means of determining the effective throat for the as welded joints would be to have engineering take the original weld size from the detail drawing and, using the know dihedral angle, compute what the reduction in the theoretical throat would be. This calculation is based on the assumption that the welded joints were installed per the detail drawing. Currently there is nothing to indicate that the joints were not installed in accordance with the detail drawings. Utilizing this reduced throat size and the load data, UE&C engineering will perform their analytical review. This review should be completed by June 1982.

For those instances where the analysis indicates that the weld would not support the design load, a reinspection of the joint will made to determine the actual weld size. The weld size will be reported to UE&C Engineering for comparison with what was called for in the detail drawing. The reason for this reinspection of those joints where the load could not be supported

is that, for the weld sizes called out on the detailed drawings, there is a plus 1/8" tolerance for the weld size (no minus tolerance). In some cases the joint could have been welded oversized by this 1/8" thus increasing the effective throat size making the weld acceptable upon reanalysis.

For the cases were the weld size was in accordance with the detail drawings and the analysis indicates it will not carry the required load, the joint will be repaired/reworked to bring it into acceptable limits. The applicable contractors will be notified of the required repairs by way of PCPs initiated by UE&C Engineering. Further, UE&C Engineering will maintain a status log for all skewed welds i.e., those already installed. This repair/rework program will be administered by Bechtel QC. It is anticipated that this program will be completed by July 1982.