

**Washington Public Power Supply System**

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

December 8, 1981  
G01-81-414

REGION V 152

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

Subject: PROJECTS 1 AND 4  
DOCKET NOS. 50-460 AND 50-513  
POTENTIALLY REPORTABLE CONDITION  
10CFR50.55(e) SKEWED WELD JOINTS

Reference: 1) Telecon ME Rodin, Supply System  
to P. Narbut, Region V  
Nuclear Regulatory Commission  
dated November 6, 1981.



In reference (1) the Supply System informed your office of a potentially reportable deficiency under 10CFR50.55(e).

Attachment "A" to this letter provides the Supply System's interim report on the subject condition. The Project will be in a better position to make a determination as to the reportability of this condition after engineering completes a technical evaluation of the apparent deficiencies. Recognizing that the engineering evaluation is going to take a considerable amount of time we will submit interim progress reports to your office on a quarterly basis. At such time as the Project has sufficient data to make the reportability determination, your office will be so notified.

If you have any questions or desire further information, please advise.

Very truly yours,

D. W. Mazur  
Program Director

CRE:MER:lm  
Attachment

cc: CR Bryant, Bonneville Power Administration/399  
RT Johnson, Quality Assurance WnP-2/917Q  
V. Stello, Director of Inspection, NRC  
FDCC/899

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ATTACHMENT A  
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 POTENTIAL 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.

SAFETY IMPLICATIONS

It has not yet been verified if a condition of inadequate effective weld throats exist or if a condition exists which could have caused a failure of safety related items.

IMMEDIATE CORRECTIVE ACTION

The affected site contractors (contracts 211, 257, 207A, 216, 218, 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. In addition, the contractors have been directed by way of the same PCPs to revise their affected procedures in accordance with the PCPs by December 18, 1981. 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.

UE&C Engineering is in the process of identifying all of the skewed tee joints already installed by site contractors. From this list, UE&C Engineering will start (about December 7, 1981) 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 known 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 be 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 where 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.

There is one (1) exception to the foregoing. All skewed joints for the 207 and 253 contractors will be re-inspected and any nonconforming conditions will be documented on nonconformance reports and submitted to the engineer for dispositioning. The reason these two contracts were exempted from the above program is that there are fewer skewed joints on these contracts and they are very excessible at this time.