



Pennsylvania Power & Light Company

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Norman W. Curtis
Vice President-Engineering & Construction-Nuclear
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August 5, 1981

Mr. Boyce H. Grier
Director, Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406



SUSQUEHANNA STEAM ELECTRIC STATION
INTERIM REPORT OF A DEFICIENCY INVOLVING INADEQUATE
THROAT THICKNESS ON SMALL PIPE SOCKET WELDS
ERs 100450/100508 FILES 821-10/900-10
PLA-894

Dear Mr. Grier:

This letter serves to provide the Commission with an interim report of a deficiency involving socket welds on small pipe. The welds were discovered to have inadequate throat thickness. The deficiency was originally reported by telephone to Mr. L. Narrow of NRC Region I by Mr. A. Sabol of PP&L on July 17, 1981. During that conversation, Mr. Narrow was advised that the condition was considered reportable under the provisions of 10 CFR 50.55(e).

The deficiency involves welding performed by a single welder on small pipe in safety and non safety related systems at SSES. The attachment to this letter contains a description of the deficiency, its cause, safety impact and the corrective action taken.

Since the details of this report provide information relevant to the reporting requirements of 10 CFR 21, this correspondence is considered to also discharge any formal responsibility PP&L may have in compliance thereto.

We expect to issue a final report on the deficiency in September, 1981. We trust the Commission will find this information acceptable.

Very truly yours,

A. R. Sabol
N. W. Curtis
Vice President-Engineering & Construction-Nuclear

FLW:sab

Attachment

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Mr. Boyce H. Grier

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August 5, 1981

cc: Mr. Victor Stello (15)

Director-Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. G. McDonald, Director (1)

Office of Management Information & Program Control
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Gary Rhoads

U. S. Nuclear Regulatory Commission
P.O. Box 52
Shickshinny, PA 18655

SUBJECT

Several socket welds on "Q" systems were discovered to have inadequate throat thickness.

DESCRIPTION OF PROBLEM

During piping system revision, three socket welds made by the Gas Tungsten Arc Welding (GTAW) process were discovered which exhibited less than complete penetration to the root of the weld.

This condition was documented on Bechtel NCR 6963 dated 12/30/80 based on the lack of complete penetration to the root of three socket welds in the Instrument Gas System line SP-CC-201-1.

CAUSE OF THE DEFICIENCY

An extensive investigation designed to establish the extent of this deficiency revealed that these and all subsequently identified deficient welds were made by a single welder.

The welder performing these welds apparently lacked sufficient experience with the GTAW process to detect that penetration to the root of the weld was not being achieved. The performance qualification test (groove test qualifying for fillets) administered to this welder did not reveal the technique deficiencies.

ANALYSIS OF SAFETY IMPLICATION

Socket welds are used extensively throughout safety related piping systems of two inch diameter and under. Specific systems wherein this deficiency was discovered included Emergency Service Water, High Pressure Core Injection, Residual Heat Removal and Core Spray. Insufficient throat thickness can be the cause of piping system failure. Failure of one or more of these welds could possibly affect the ability to safely shutdown the plant. Therefore, this nonconformance is considered a significant deficiency in construction and is thus reportable under 10 CFR 50.55(e).

CORRECTIVE ACTION

In order to determine the extent of the deficiency, a sampling of two hundred and eight additional socket welds was taken. The sampled welds had been made by different welders utilizing GTAW and Shielded Metal Arc Welding (SMAW) on both carbon steel and austenitic stainless steel materials. These welds were examined by radiographic techniques to ascertain the degree of penetration (or lack of) to the root of the weld, any material uniqueness, welders involved and process dependency. The results of this investigation revealed that the subject deficiency was unique to one welder and one process (GTAW).

An ultrasonic procedure for thickness measurement was developed to verify the existing throat thickness.

All ASME Section III, Class 1, 2 and 3 socket welds made by the subject welder using the GTAW process were identified. These welds were examined to determine the actual throat thickness. In excess of six hundred welds were measured using the engineering approved ultrasonic technique and twelve were found to be below the minimum acceptance criteria (ASME Section III, NB4427-1). These welds will be either removed and replaced or, built up to the required throat thickness. They will be examined in accordance with the original fabrication and installation code as well as subjected to throat thickness ultrasonic measurement to verify this dimension.

The welder has received additional instruction and training in the use of the GTAW process on this weld configuration. Destructive testing of sample welds made after this period of retraining have verified this welder's ability to achieve penetration to the root of the weld.

A further description of corrective action taken will be included in our final report.

FINAL REPORT

The final report will be issued in September, 1981.