Docket No. 50-397

50.55(e) Report

Washington Public Power Supply System

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Docket No. 50-397

September 1, 1982
G02-82-727

Mr. R. H. Engelken
U.S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Subject: NUCLEAR PROJECT NO. 2
10CFR50.55(e) REPORTABLE CONDITION #175, WBG RADIOGRAPHS; #177, BULK PURCHASE VALVES

References: 1) Letter G02-82-318, dated March 11, 1982, R.G. Matlock to R.H. Engelken.

2) Letter G02-82-375, dated April 12, 1982, R.G. Matlock to R.H. Engelken.

In accordance with the provisions of 10CFR50.55(e), your office was informed by telephone of the above subject reportable conditions on November 19, 1981 and December 8, 1981, respectively. Attachments A and B provide the Project's final reports on Conditions #175 and #177.

If there are any questions concerning this matter, please contact Roger Johnson, (509) 377-2501, extension 2712.

R. G. Matlock
Program Director, WNP-2

LCF/kd

Attachments: (3) As stated

cc: W.S. Chin, BPA - Site
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ATTACHMENT A

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93
REVERIFICATION OF WBG RADIOGRAPHS
10CFR50.55(e) CONDITION #175
FINAL REPORT

DESCRIPTION OF DEFECT OR NONCOMPLIANCE

During a sample review of weld radiographs previously accepted by the Mechanical Contractor, the radiographs for 15 welds were interpreted as having indications possibly in excess of ASME Code limitations. In addition, the radiographs for 16 welds were reinterpreted as not meeting minimum Code requirements for film quality.

SAFETY IMPLICATION

Weld defects overlooked during the original RT film interpretation could have caused weld failure leading to failure of the safety system. Typical systems where defects have been detected are residual heat removal and main steam.

APPROACH TO RESOLUTION

The radiographs for the fifteen (15) welds described above were reinterpreted by a Bechtel Level III radiographic interpreter from the San Francisco home office. He judged 7 of the 15 acceptable. The remaining 8 could not be judged acceptable on the basis of the radiographs alone. It was then jointly decided by Bechtel, Burns and Roe, and the Supply System to destructively examine 3 of the 8 welds in an attempt to determine if the cause of the indications was a radiographic anomaly or actual weld defects. The results of this destructive examination follow:

1. Field weld - 14A, 6" bimetalic weld between a SS flow reducer and CS pipe: no physical defects noted.

2. Field weld - 4, 18" CS pipe to CS pipe: non-fusion at the weld root and internal mismatch in excess of Code requirements.

3. Field weld - 5, 20" CS pipe to CS pipe: Non-fusion at the root and internal mismatch in excess of Code requirements.

Based on the above data, it was decided by the Supply System, Bechtel, and Burns and Roe to reinterpret 1,000 of the previously accepted WBG/Bovee Crail ASME Section III Class 1, 2, and 3 Seismic I radiographs for completed and accepted welds. When 1,000 welds had been reviewed, it was decided to continue the review process until a decision was made whether or not to continue or discontinue the program. A total of 1,373 welds were reviewed by the time the decision to continue the program was made, which represented approximately 50% of the total number of welds.

APPROACH TO RESOLUTION (Continued)

A Bechtel Level III interpreter initiated the review program, provided special orientation to the Bechtel Level II interpreters who completed the review, and oversaw the entire review effort during periodic visits from the San Francisco home office.

The radiographs for the 1373 welds were first reinterpreted for film quality and technique. During this part of the review program all density readings were made with a calibrated densitometer and recorded. Similarly, geometric unsharpness factors were calculated and also recorded. Radiographs which were reinterpreted as not meeting Code requirements (density, penetrameters, weld coverage, etc.) were reradiographed.

The WBG radiographs which successfully passed the initial film quality and technique review, as well as the new Bechtel radiographs which were produced to replace the WBG film rejected for film quality and technique, were reinterpreted for weld quality. The Bechtel Level III radiographic interpreter initially performed this review using the information from the 3 cut out WBG welds and other similar studies conducted by Bechtel on past projects as a basis for film reinterpretation. The reinterpretations were then completed by two on-site Bechtel Level II film interpreters.

Bechtel's Materials and Quality Services (M & QS) department performed a trend analysis of the review data from the 1,373 welds and determined there was no obvious trend to account for the differences in interpretations for weld quality made during the original film review by WBG, the ANI, and Burns and Roe; and the later reviews made by Bechtel's interpreters. Since there was no discernable trend, and because Bechtel had taken Code responsibility as the installer of all ASME piping started but not completed by WBG, it was decided that Bechtel would cut out, repair and reradiograph all of the sample welds with radiographs which the Bechtel interpreters judged as not meeting ASME requirements for weld quality. It was further decided that Bechtel would reinterpret all other radiographs for ASME Section III, Class 1, 2, and 3, Seismic I welds previously completed and radiographed by WBG/Bovee Crail, and repair them as necessary in the same manner as for the 1373 sample welds.

Of the 1373 welds first reinterpreted, 243 were rejected for not meeting film quality and technique requirements of these welds, 192 have been reradiographed and interpreted. All 192 reshot welds originally rejected for film quality deviations were accepted for weld quality after reradiography. An analysis performed by Bechtel's M & QS department of these radiographs showed no significant difference in film interpretability between the original WBG/Bovee Crail film and the new Bechtel film. Based upon these results, it was decided to modify the review program for evaluating film quality and technique. Under this modified program, minor film quality deviations were not documented when the remaining WBG/Bovee Crail film not covered by the original 1373 weld sample was reinterpreted by the Bechtel Level II technicians.

CURRENT STATUS

Every effort has been made by the Project to assure that all Quality Class I welds previously radiographed by WBG have been accounted for and reviewed under the guidelines of this program. However, if during the final Bechtel documentation review prior to N-5 data form preparation and turnover, additional weld radiographs are discovered they will be reviewed and dispositioned as stated in this program.

All 2690 ASME Section III Class 1, 2, and 3 Seismic I WBG/Bovee Crail welds have been reviewed and dispositioned. All welds rejected for weld quality have had NCR's issued and dispositioned for repair. All welds rejected for film quality and/or technique have been (or will be)* reradiographed, reviewed, and accepted. Final results are indicated in the table below.

REVERIFICATION OF RADIOGRAPHS

	Number of Welds			
	Phase 1	Phase 2	Total	%
Welds Reviewed	1373	1317	2690	
Rejected Film Quality	243(1)	3	246	9.1
Rejected Weld Quality	65	16	81	3.0
Accepted Welds	1065	1298	2363	87.8
Accepted Reshots (Film Quality)	192	0	192	
Remaining Reshots (Film Quality)	4	3	7	
Cutouts (Film Quality)	47(2)	0	47	

NOTES: (1) Originally reported in error as 254 welds.

(2) Welds were cutout of system by WBG and cannot be reradiographed.

* As of July 30, 1982, there are 7 welds remaining on the schedule of welds to be reshot for film quality and technique rejections.

ATTACHMENT B

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93
BULK PURCHASE VALVES
10CFR50.55(e) REPORTABLE CONDITION #177
FINAL REPORT

DESCRIPTION OF DEFECT OR NONCOMPLIANCE

Bulk purchased valves have been procured and installed in safety related systems, which do not meet the full design requirements of the system.

1. The vendor drawing for bulk purchased valves RHR-V-155C and RHR-V-708C, Burns and Roe, Inc. file number 215.02.1536, indicates .040" corrosion allowance. The system design corrosion allowance is .080".

2. Valve RCIC-V-47 is shown on isometric RCIC-1480-1 and drawing M-519 as a 600 pound carbon steel spring loaded check valve to Quality Class I, Seismic Category I, Code Group B requirements. WBG incorrectly installed a 1500 pound Code Group C valve.

3. Valves RHR-V-161A and RHR-V-162A for isometric RHR-851-17 are Borg Warner valves. The drawing for these valves (Burns and Roe file number 215.02.1535) indicates environmental Class B. The location of these valves requires environmental Class A.

4. Valve RHR-V-156C for isometric RHR-897-15.18 is a Borg Warner valve. The drawing for this valve (Burns and Roe file number 215. 02.1525) indicates the valve was fabricated to ANSI requirements. The system is ASME Section III, Class 2.

SAFETY IMPLICATION

The incorrect installation of the WBG bulk purchase valves could conceivably have resulted in a failure of a safety related system which could have affected the safety of the plant.

APPROACH TO RESOLUTION

Nonconformance reports have been written on Items 1, 2, 3, and 4. Each item will be evaluated on an individual basis and a disposition assigned.

Item 1

After an intensive review program, Borg Warner has certified that valves in this category will meet the requirements of the specification to withstand the .080" corrosion allowance required by design. The NCR's in this category were dispositioned "Accept-As-Is." There are approximately 2500 valves in this category

Item 2

The disposition on NCR related to valve problems, where higher pressure rated valves were installed in lower pressure systems, was as follows:

> For spring loaded check valves, replace with valve as shown on isometric; for globe valves in this pressure rating category - "Accept-As-Is"

There are 40 springloaded check valves to be replaced with the correct valve and 98 globe valves that were "accepted-as-is" in this category.

Item 3

NCR was initially dispositioned "Reject" and replace with the correct environmental Class A valve. At a later date, the Borg Warner drawing was revised and subject valves were upgraded to environmental Class A by Borg Warner. The NCR was revised and voided. No other deficiencies were found in this category. There are 2 valves in this category.

Item 4

Inspection Reports and NCR's in this category were dispositioned "Re-work" and replace existing valve with the correct ASME valve per drawing and specification.

This item has also been addressed on a generic basis as part of the organized review program of Contract 215 (WBG) quality documentation. The program encompassed review of both: (1) Purchase order packages, and (2) Installation packages.

The purchase orders have been reviewed for compliance to the specification requirements. This review verified that necessary Materials Engineering approval existed for vendor supplied items, and that valves are applicable to the installation code or class, and are in compliance with specification requirements. Any discrepancies have been documented and were or are being resolved in accordance with established project procedures.

Review of the installation packages followed the purchase order reviews and included a check of component serial numbers against the associated procurement data. The component serial numbers were those recorded at the time of installation or during subsequent walkdowns. Any discrepancies have been documented and were or are being resolved in accordance with established project procedures.

Review of the purchase orders and installation packages is complete and the information transmitted to Bechtel. Open items currently are being dispositioned by Bechtel as a specific task in the completion of each system.

There are 15 valves in this category.

Item 5

During the reviews a fifth category was discovered. It involves ASME Section III Class 3 valves installed in ASME Section III Class 2 applications. Valves in this category have been documented on nonconformance reports and are to be replaced with the correct class valves. There are 15 valves in this category.

CURRENT STATUS

The WBG documentation review is complete and any remaining action to close out specific discrepancies is progressing as part of Bechtel's system completion activities.

PROJECTED COMPLETION OF CORRECTIVE ACTION

Complete ninety (90) days before fuel loading.