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

Docket No. 50-397

September 19, 1983
G02-83-847

Mr. J. B. Martin
Regional Administrator
U. S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

Subject: NUCLEAR PROJECT NO. 2
NRC INSPECTION REPORT 83-38 - NOTICE OF VIOLATION

Reference: Letter D. M. Sternberg to C. S. Carlisle, dated August 30, 1983

Washington Public Power Supply System hereby replies to the Notices of Violation designated "A" and "D" in Appendix A of the referenced letter.

Our replies, pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice" Part 2 Title 10 Code of Federal Regulations, consists of this letter and Attachments 1 and 2 which contain our responses to these Notices of Violation.

If you have any questions or desire further information, please contact Roger Johnson at (509) 377-2501, extension 2712.

C. S. Carlisle - 901A
Program Director, WNP-2

HAC/lkh

cc: Mr. R. C. DeYoung, NRC I&E
Mr. R. T. Dodds, NRC RV
Mr. R. F. Heishman, NRC QASIP IE
Mr. A. D. Toth, NRC Resident, WNP-2

Attachment 1

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93

RESPONSE TO INSPECTION REPORT 83-38
NOTICE OF VIOLATION

Statement of Violation

"As a result of the special inspection conducted by the NRC Construction Appraisal Team on May 16-27 and June 6-22, 1983, and in accordance with the NRC Enforcement Policy, 10 CFR Part 2 Appendix C, the following violations were identified:

Criterion V of 10 CFR 50 Appendix B requires, in part, that "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

The FSAR for the WNP-2 project, Section 17.1.1.5, accordingly describes that activities affecting quality are described in procedures, instructions, and drawings and that activities are conducted in accordance with these documents. Procedures, instructions, and drawings include adequate quantitative and qualitative acceptance criteria to ascertain that the prescribed activities have been satisfactorily accomplished.

A. The approved procedures and specifications for installation of weld-o-let fittings requires 100 percent reinforcement of attachment welds.

Contrary to Criterion V, 10 CFR 50, Appendix B, cited above, and the above requirement, weld-o-let fittings have been installed and accepted by quality control inspectors with less that (sic) the 100 percent reinforcement of the attachment weld as observed at the time of the inspection on the four-inch weldolet installed at HPCS-630-11.12/COND-356-9.12.

This is a Severity Level IV Violation, (Supplement II)."

Supply System Response

An isometric drawing review was made of all weldolet type branch connections (weldolets [B/F], laterolets [B/F], elbolets [B/F], elbow pipets [WFI], lateral pipets [WFI], pipets [WFI], bossets (WFI), sockolets [B/F],

and stainless products olet fittings) contained in contracts 215 and 220 work scope. Eight hundred twenty-three (823) olet type fittings were identified. This represents 100 percent of the olet fittings. Eight fittings were not reinspected due to inaccessibility by being either buried or under water. Of the 815 that were inspected, 714 were acceptable, being in strict conformance with the manufacturers' requirements. One hundred one (101) olets inspected were not in strict conformance with the manufacturers requirements. Of the 101 nonconformances, 64 are of a minor nature (minor underweld/concavity, minor contour anomoly, minor lapping at weld edge, minor post weld surface preping/grinding, missing fillet cap [WFI only], abrupt transition to run pipe) and are expected to be dispositioned as acceptable by the engineer. The remaining 37 contain underwelds greater than 1/8" or more serious contour anomalies. All 101 were identified on NCRs. The Architect/Engineer (Burns and Roe) will evaluate each of the 101 on a case-by-case basis documenting the results in accordance with existing project procedures. If the nonconformance meets all code requirements (NX-3000) for pressure and structural integrity for all modes of operation, the joints will be dispositioned as "acceptable as is". If not, the joint will be repaired.

No other contractors on the project used appreciable numbers of olets, with the exception of Contract 233.

Welding out of Weldolets installed under Contract 233, "Spray Pond Piping", was reinspected by the Special PPIA Review Task Force. All weldolets on six separate "tree risers" were inspected, three on each spray pond, which constitutes a 10 percent sample. All were found to be fully welded out, with no deficiencies encountered.

Corrective Action to Preclude Repetition

This program covered 100 percent of the population. Inspectors have been retrained. Deficiencies have been recorded as nonconformances and will be evaluated by the engineer and repaired if necessary.

Date of Full Compliance

All nonconformances are scheduled to be dispositioned and required rework complete by November 1, 1983.

Attachment 2

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
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The FSAR for the WNP-2 project, Section 17.1.1.5, accordingly describes that activities affecting quality are described in procedures, instructions, and drawings and that activities are conducted in accordance with these documents. Procedures, instructions, and drawings include adequate quantitative and qualitative acceptance criteria to ascertain that the prescribed activities have been satisfactorily accomplished.

D. Contrary to Criterion V, 10 CFR 50, Appendix B, cited above, installed bolting materials for the following equipment and structures were not in accordance with the applicable design drawings and specifications when observed during the inspection.

1. ASTM A-194 Grade 2H nuts were installed in lieu of Grade 7 on various bolts, in the motor-pump coupiings of pumps RHR-P2A, RHR-P2B, RHR-P2C, HPCS-P1 and LPCS-P1.

2. One ASTM A-194 Grade 2 nut was installed in lieu of Grade 2H on pump SLC-P1A.

3. Not all nuts were the required ASTM-A-194 Grade 2H in the relief valve SLC-RV-29B and pump RRC-P-1B penetration 41-e. The grade of these nuts was unknown.

This is a Severity Level IV Violation (Supplement II)."

Supply System Response

The Supply System has reviewed bolting materials in various applications throughout the plant, since the CAT inspection, to determine compliance with design drawings and specifications. These sample inspections were established to obtain a representation of all major installers' installations and were based on obtaining a 95 percent confidence level that less than 5 percent of the total fasteners were different than specification requirements using standard statistical methods. The 95 percent confidence level is the same as that used by the NRC in Bulletin IE-79-02 Appendix A for evaluation of concrete expansion bolts, which is a similar situation as the fasteners reviewed here.

In total, the Supply System has reinspected over 6,000 individual fasteners and has found that the number of material deviations are within the 95 percent confidence level. Following is a breakdown of these inspections by bolting type:

	Inspected	Defects
Pipe Flange Bolting	4238	139
Valve Bolting		
Pressure Boundary	1322	46
Non-Pressure Boundary	352	10
ECCS Pump Assembly Bolting	459	7
TOTALS	6371	202

Responding to the three items specifically mentioned, the following has been done:

1. All of the ECCS pump coupling bolts and nuts have been reinspected for proper material. While it is true that Grade 7 nuts were specified for these pumps, the Grade 2H nuts installed are technically acceptable since the only difference is the minimum tempering temperature. Grade 7 nuts are tempered at 1100°F and Grade 2H nuts are tempered at 850°F. Since the pump coupling bolts operate at a relatively low temperature, this difference in nut grade does not affect the structural adequacy of the installation. Test and Startup removes, bags, and replaces the same bolting material, so it is possible that the 2H nuts were supplied by the pump supplier, Ingersol Rand.

   In addition to the ECCS Pumps, the following twelve additional pump groups are being inspected or reinspected for proper coupling bolt material.

1. RWCU-P-1A - Cleanup Circulating Pump
   RWCU-P-1B - Cleanup Circulating Pump

2. RCIC-P-1 - RCIC Pump

3. HPCS-P-3 - HPCS Water Leg Pump

4. CRD-P-1A - CRD Pump
   CRD-P-1B - CRD Pump

5. FPC-P-2A - Fuel Pool Holding Pump
   FPC-P-2B - Fuel Pool Holding Pump

6. TMU-P-1A - Cooling Tower Makeup Pumps
   TMU-P-1B - Cooling Tower Makeup Pumps
   TMU-P-1C - Cooling Tower Makeup Pumps

7. TSW-P-1A - Plant Service Water
   TSW-P-1B - Plant Service Water

8. FP-P-1 - Fire Pump
   FP-P-2A - Fire Pump
   FP-P-2B - Fire Pump
   FP-P-3 - Fire Pump
   FP-P-101 - Fire Protection Pump
   FP-P-102 - Fire Protection Pump
   FP-P-110 - Fire Protection Pump

9. COND-P-1A - Condensate Pump
   COND-P-1B - Condensate Pump
   COND-P-1C - Condensate Pump

10. COND-P-2A - Condensate Booster Pump
    COND-P-2B - Condensate Booster Pump
    COND-P-2C - Condensate Booster Pump

11. SW-P-1A - Standby Service Water Pump
    SW-P-1B - Standby Service Water Pump

12. COND-P-3 - Reactor Building Condensate Supply Pump
    COND-P-4 - Radwaste Building Condensate Supply Pump
    COND-P-5 - Condensate Filter/Demineralizer Backwash Pump

To date, approximately 50 percent of these pumps have been reinspected with no identification of improper material.

2. Both of these items concern nuts of improper or unknown grade on flanged connections. The Supply System performed the following evaluation specifically for flange bolting.

PIPE FLANGE BOLTING

Sample Evaluation

MATERIAL

Installer	Sample Size		Material Variations		Nuts Turned Over	Nuts Unknown	
	Studs or Bolts	Nuts	Studs	Nuts			
Supplier	32	64	0	7	4	3	
C-233	120	120	0	0	0	0	
C-220	32	56	0	0	1	0	
C-215	807	959	43	15	23	17	
C-250	419	592	10	56	16	31	
Test & Startup	461	700	0	8	25	4	
TOTALS	1,871	2,491	53	86	69	55	
TOTALS	4,362		139		124		

Of the total of 4,362 fasteners inspected, 124 are nuts which would require removal to check for identification. Sixty nine of this 124 are clearly turned over so the identification marks were inaccessible. The other 55 nuts were inaccessible for identification for a variety or reasons such as paint, insulation, access, turned over, etc. To properly account for material variations that could exist in this 124, a percentage of exceptions was established using the total population of 4,362 reduced by the 124 giving 139 exceptions in a population of 4,238. This results in a possible 5 additional exceptions in the 124 nuts.

Therefore, in the total population of 4,362 fasteners a total of 144 exceptions could exist.

The allowable number of exceptions for a sample size of 4,362 is 194 to maintain a 95 percent confidence level that there are less than 5 percent material variations in the population not inspected.

The sample shows that the material used in Quality Class I flange bolting is acceptable. Specific exceptions to specified materials identified in the inspection sample will be corrected by December 1, 1983.

A review of flange bolt loading was performed with Burns and Roe. The actual flange bolt loading is generally much less than the allowable bolt loading. These additional design margins are beyond the conservatism inherent in flange bolt loading design, providing additional assurance that a random nut or stud of a lesser tensile strength (A-307 versus A-193) is of no concern. Of the 53 stud material variations 43 were A-307 and 10 were unknown. Of the 86 nut variations 81 were A-307 and 5 had identification marks which could not be identified. However, the minimum material used is A-307, since this is the lowest grade commercially available for this type of fastener.

Corrective Action to Preclude Repetition

The number of deficiencies found do not indicate a generic problem with fastener materials. The emphasis placed upon compliance with specification requirements or fastener installations by the thorough review conducted by the project, following the CAT audit, has sensitized organizations participating in field work to the requirements of the specifications, procedures, and responsibilities for compliance.

The Bechtel warehouse for fasteners, which is also used by the Supply System Test and Startup, was reinspected and material segregation problems were corrected.

The overall WNP-2 fastener review/inspection program identified work on locking devices and equipment mounting that was generically unacceptable and for which reinspection/rework is being implemented.

Date of Full Compliance

Results of extensive sample inspections indicate that WNP-2 fastener materials are in compliance with design drawings and specifications with a 95 percent confidence level that less than 5 percent defects exist. Specific deficiencies identified in the sample inspections will be corrected prior to December 1, 1983. Reinspection and rework implemented to correct the problems identified on locking devices and equipment mounting will likewise be completed prior to December 1, 1983.