U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-397/93-09

Docket No. 50-397

License No. NPF-21

Licensee: Washington Public Power Supply System (WPPSS)
P.O. Box 968
3000 George Washington Way
Richland, Washington 99352

Facility Name: Washington Nuclear Project No. 2 (WNP-2)

Inspection at: WNP-2 Site, Benton County, Washington

Inspection Conducted: March 1-5, 1993

Inspector: C. A. Clark, Reactor Inspector, Region V

Approved by: W. P. Ang
W. P. Ang, Chief
Engineering Section

3-29-93
Date Signed

Inspection Summary:

Inspection during the period of March 1-5, 1993 (Report No. 50-397/93-09)

Areas Inspected:

This routine announced inspection reviewed the licensee's activities on previously identified open items, licensee event reports and violations. Inspection Procedures 92700, 92701, and 92702 were used as guidance during this inspection.

Safety Issues Management System (SIMS) Item:

None

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Results:

General Conclusions and Specific Findings:

Some of the licensee's close out documentation for open items reviewed during this inspection did not always associate closure actions with the component/equipment identified in the original open item. The lack of this identification sometimes made it difficult to verify completion of licensee corrective actions. However, upon further discussion with the licensee, corrective actions for seven open items were determined to be adequate.

Significant Safety Matters:

None

Summary of Violation or Deviations:

None

Open Items Summary:

Seven open items were closed.

DETAILS

1. Persons Contacted

   Washington Public Power Supply System

   *J. Baker, Plant Manager
   *C. Fies, Licensing Engineer
   *L. Grumme, Nuclear Safety Assurance Manager
   *C. McGilton, Operational Assurance Programs Manager
   *J. Parrish, Operations Assistant Managing Director
   *M. Reis, Technical Programs Manager
   *G. Smith, Operations Division Manager

   *Denotes those attending the exit meeting on March 5, 1993.

   The inspector also held discussions with other licensee personnel during the course of the inspection.

2. Followup of Previously Identified Items (92701)

   a. (Closed) Followup Item 50-397/92-10-01: Erosion/Corrosion Program was not Entered into the Management Guideline Program

      An NRC inspector noted that neither Plant Procedure Manual (PPM) procedure 8.3.63, "Surveillance Procedure for Monitoring Pipe Wall," or the "WNP-2 Pipe Wall Thinning Program Plan" established the responsibility or authority for the overall erosion/corrosion (E/C) program. The inspector also noted that an E/C program implementation procedure did not exist, which resulted in a lack of documentation requirements for:

      - Delaying or deleting specific components from the E/C inspection plan.

      - Verifying E/C calculations, data input or program results.

      The licensee agreed with the inspection findings, and originally committed to place the WNP-2 E/C program in the WNP-2 Engineering Management Guidelines program. Subsequent licensee review of this commitment for implementation, determined that the Engineering Management Guidelines were for projects and not programs. During a June 8, 1992, followup telephone call to the original NRC inspector, the licensee revised their commitment to place the WNP-2 E/C program in the Engineering Management Guidelines. Instead, the licensee committed to revise the WNP-2 Pipe Wall Thinning Program Plan and PPM 8.3.63 to address the E/C program omissions identified in NRC inspection report 50-397/92-10. The NRC acknowledged the licensee's revised commitment and requested they document this commitment in writing to ensure there was no confusion during followup inspections. On July 27, 1992, the licensee documented the revised commitment in a memo to file and provided a copy to the NRC.

During this inspection, the inspector reviewed Revision 1 of the WNP-2 Pipe Wall Thinning Program Plan and noted that Sections 3.6.3, 3.7, 3.8, 4.2, and 4.5 of this procedure provided instructions to address the program omissions identified in the original NRC report. The inspector also reviewed a February 24, 1993, draft of Revision 3 to procedure PPM 8.3.63 and noted that Section 8 contained proposed instructions to address the documentation omissions identified during the original NRC inspection. Instructions had been added to document the rationale for delaying or deleting specific components from the E/C inspection plan. Revision 3 of procedure PPM 8.3.63 was approved March 3, 1993 for issue.

In addition, the inspector reviewed Memorandum SS2-PE-92-544, dated June 26, 1992, "R-7 Pipe Wall Thinning Program Preliminary Results," and a proposed outage plan, dated February 26, 1993, "Erosion/Corrosion Program, R-8 Outage Inspection List," and noted that these documents appeared to provide additional information in response to the omissions noted during the original inspection. The licensee added requirements to document exceptions to procedure wall thickness acceptance/evaluation methodology.

Based on review of the above information, discussions with the licensee staff and the original NRC inspector, and the licensee's commitment to issue Revision 3 to PPM 8.3.63, the inspector concluded that the licensee had implemented corrective actions to satisfactorily address this item. This item is closed.

b. <u>(Closed) Unresolved Item 50-397/92-24-01: Failure of Valve MS-19 Non-grade 5 Valve to Actuator Bolting</u>

An NRC inspection during the 1992 refueling outage (R-7) identified that during "as left " testing of motor operated valve (MOV) MS-V-19 actuator/operator MS-MO-19, the motor achieved a lock rotor condition. Due to the over-thrusting of the actuator, all four bonnet to actuator studs were stretched to the point where the torque thrust cell (TTC) was no longer flush with the bonnet seat (the TTC was mounted during testing). An attempt was made to again torque the studs to the design requirement of approximately 18 ft/lbs, however, this attempt led to the shearing of one of the studs (bolts). Had the stall condition occurred, with bolt failure, during power operations the valve would have been unable to perform its design function. MS-V-19 was an American Society of Mechanical Engineers (ASME) Code Class 1 containment isolation valve. The above problem was documented in Problem Evaluation Report (PER) 292-379. A licensee May 1, 1992, interoffice memorandum (SS2-PE-92-0371) indicated that non-Grade 5 SAE bolting had been incorrectly installed. The item was left unresolved pending further licensee review because the licensee's initial actions for this problem did not appear to address the generic concerns with similar valves in a timely manner.

Subsequent to the original inspection, the licensee investigated all Limitorque Model SMB-000 operators installed on other Velan motor operated (MOV) valves with the potential for wrong bolting being installed. This was the same operator/valve combination as valve MS-V-19.

During this inspection, the inspector held discussions with the licensee staff and reviewed an August 17, 1992, licensee document entitled "Bolting Issues Identified on Motor Operated Valves at R-7," and noted the following:

- Eight Velan valves with Limitorque Model SMB-000 operators were installed in the plant. Of these, three valves, CAC-V-13, 15 and 17 were loaded in service such that if a Grade 1 or 2 actuator bolt or stud were installed, there was a potential safety concern associated with potential bolting failure. Since these valves had small studs, 5/16 inch diameter, the studs were removed during the R-7 refueling outage and tested. Three of the four studs of Valve CAC-V-13 and all four studs of valve CAC-V-17 were lower grade studs which did not meet the valve manufacturer's material specification. However, as discussed below, the licensee concluded that the existing bolting exceeded the actual design loading for these MOVs.

- As a result of the stud material problems identified with valves CAC-V-13 and 17, approximately 54 of the 163 safety related valves were inspected for correct bolting material. Approximately 18 of the 54 valves could not be confirmed as having the correct bolting material. Based on the results of this first walkdown inspection, the licensee decided to perform a walkdown inspection of all safety related MOVs to ensure that the proper bolting was installed for all the valves. Subsequently, the licensee inspected 163 MOVs. After review of the results of the inspections of all 163 MOVs, the licensee replaced the actuator mounting bolting on 14 valves. The licensee used engineering analysis to verify sufficient strength of existing bolting on the remaining MOVs. The licensee did not identify any counterfeit bolting. The licensee postulated that either the manufacturer or the licensee did not properly control the bolting material during manufacture, initial assembly or subsequent assembly after refurbishment of either the actuator or valve.

- The licensee analysis and evaluation of the Limitorque actuator to bonnet bolting determined that the strength of the installed bolting exceeded the design loading for the bolting applications used in the plant. Based on that analysis the licensee determined that none of the valves would have been inoperable due to the wrong grade bolting. Although this analysis showed that the non-grade 5 (or better) bolting found installed would not have resulted in an inoperable valve, all bolting which was not identified as high strength was subsequently replaced prior to the next plant startup.

- In the last two years the licensee had issued new instructions for the control of MOV maintenance and testing activities. To prevent recurrence of the loss of control of MOV bolting material during MOV maintenance and testing, the licensee has emphasized bolting material inspection and control during discussions and training provided to MOV maintenance and testing personnel.

After reviewing and discussing the information identified above with the licensee staff, the inspector considered that the corrective actions taken by the licensee were reasonable and sufficiently timely to meet NRC requirements. The inspector concluded that the original unresolved item had been satisfactorily resolved. This item is closed.

c. <u>(Closed) Unresolved Item 50-397/92-24-02: Failure of Valve HPCS-V-23 Actuator Non-grade 5 Upper Housing Cover Bolting</u>

An NRC inspection performed during the 1992 refueling outage noted that while performing final torquing of the upper housing cover bolts on a SMB series motor actuator/operator HPCS-MO-23, installed on valve HPCS-V-23, one of the 1 inch diameter bolts became elongated and cracked. The licensee issued PER 292-662 to document this problem. Valve HPCS-V-23 was an ASME CODE Class 2 high pressure core spray 12 inch motor operated globe type containment isolation valve. Limitorque Corporation maintenance update 89-1 identified that two types of bolting were used in the assembly of limitorque housing covers and motors on the SMB series of actuators. Hex head cap screws SAE Grade 5 or socket head cap screws SAE Grade 8 (strength equivalent) were installed during actuator assembly. The HPCS-V-23 bolting failure was the second example of bolting failure associated with a valve actuator. The licensee recognized that installation of non-Grade 5 bolting material may have been a factor in this bolting failure. Operability of any similar valve motor actuator with similar bolting material was questioned by the original NRC inspector and left as an unresolved item, pending licensee investigation.

During this inspection, the inspector followed-up on licensee action regarding the unresolved item. The inspector determined that the licensee investigation of the HPCS-MO-23 actuator bolting failure discovered SAE Grade 1 cap screws installed in the actuator upper housing cover, instead of the required Grade 5 or better bolting material. As result of this upper housing bolting failure and a separate actuator to bonnet bolting failure on valve MS-V-19, a walkdown inspection of approximately 163 safety related MOVs was performed. The results of the licensee walkdown inspection and subsequent evaluation were documented in an August 17, 1992, licensee document entitled "Bolting Issues Identified on Motor Operated Valves at R-7."

The inspector reviewed and discussed the "Bolting Issues Identified on Motor Operated Valves at R-7," report with the licensee staff. The following was determined during this review and discussion:

- The walkdown inspections identified that the incorrect bolting material and subsequent bolting failure on valve actuator HPCS-MO-23 was not an isolated case.

- Just after the bolting failure on actuator HPCS-MO-23, the bolting on the actuator installed on valve HPCS-V-10 stretched during torquing after being refurbished.

- Of the 163 MOVs sighted, forty four MOVs had upper housing bolting that was not routinely accessible. The licensee considered that these forty four MOVs and fifteen additional MOVs were acceptable based on the bolting design load being within the yield strength of the grade 1 or 2 bolting, i.e. even if grade 1 or 2 bolting were installed, in lieu of grade 5, the bolting strength was sufficient. The licensee determined that eighty-two MOVs contained acceptable Grade 5 cap screws (or equivalent) in the upper housing cover. Twenty-two MOVs were found to have unacceptable bolting which was replaced with Grade 5 cap screws.

- A licensee engineering review of Limitorque bolting application in the plant was performed to determine the extent of upper housing cover cap screw discrepancies. The concern with cap screws was divided into four categories: (1) potential overtorque of licensee installed captivated cap screws; (2) potential induced cap screw fatigue failure in safety-related actuators; (3) effect on the bolting due to rerating Limitorque actuators based on the Kalsi Engineering studies (the Kalsi studies indicated that certain actuators could be rated for additional thrust, subject to specific bolting requirments); and (4) possible unacceptable bolting used in non-safety related actuators. A licensee's evaluation of the four categories of concern was performed and documented in the report. Item (3) was a concern since the loading of the upper housing cover bolting could be in excess of the yield strength of Grade 1 bolting.

- The licensee analysis and evaluation of the Limitorque actuator bolting determined that all bolting actual strength exceeded the actual design loading for the bolting applications used in the plant. Based on that analysis the licensee determined that none of the valves would have been inoperable due to the wrong grade bolting. Although this analysis showed that the installation of non-grade 5 bolting would not have resulted in an inoperable valve, the licensee stated that all bolting in the forty-four valves not yet inspected, that is not identified as grade 5 (or better) bolting, will be replaced.

- The licensee determined that the incorrect bolting material had been provided by Limitorque and that a Part 21 report had to be issued in accordance with Title 10 of the Code of Federal Regulations (CFR) Part 21, Section 21.21. A Part 21 report was issued by the Supply System in a August 13, 1992, letter (G02-92-193). The inspector reviewed this Part 21 report and noted that it described the problem identified by the licensee.

Based on review of the information identified above, other associated documents, and discussions with the licensee staff, the inspector considered that the incorrect bolting material had not caused any MOVs to be inoperable and that the licensee had implemented reasonable corrective actions to address this concern. The inspector concluded that no violation of NRC requirements had occurred, therefore, this unresolved item is closed.

No violations or deviations from NRC requirements were identified.

3. <u>Followup on Corrective Actions for Violations and Deviations (92702)</u>

a. <u>(Closed) Violation 50-397/91-01-01: Failure to Provide Appropriate Quantitative Acceptance Criteria For Control Rod Drive Scram Accumulator Check Valve Operability Test</u>

An NRC inspection noted that the control rod drive system (CRDS) hydraulic control unit (HCU) accumulator check valves had a long history of leakage problems. These check valves were required to maintain accumulator pressure above the low pressure alarm point of 940 pounds per square inch gage (psig) upon the loss of both Control Rod Drive (CRD) hydraulic pumps. From May 1990 to January 1991 there were approximately 440 trouble alarms in the control room, associated with the HCUs. A review of Revision 3 of Plant Procedures Manual (PPM) surveillance procedure (SP) no. 7.4.1.3.5.3, "Control Rod Scram Accumulator Check Valve Operability Check," identified that the test did not provide specific quantitative test acceptance criteria for the CRDS HCU accumulator check valves. This SP described nine steps which were required to be performed to properly test the check valves. Section 7.4.1.3.5.8 of the SP defined the acceptance criteria as the "successful performance of the above referenced nine steps."

Section 4.1.3.5.b.2 of the Technical Specification (TS) required individual check valve performance to be measured and recorded for up to 10 minutes with both CRD pumps off. No minimum retention time at the accumulator pressure was specified by the TS. Violation 50-397/91-01-01 was initiated for the lack of a quantitative acceptance

criteria, in SP 7.4.1.3.5.3, that would assure that an appropriate pressure was maintained for an appropriate time in order to demonstrate that the check valves were operable as required by Section 4.1.3.5-2 of the TS.

In a March 29, 1991 licensee response letter (G02-91-062) to this violation, the licensee stated the following:

- A licensee review of this item determined that based on the short control rod scram insertion time (average time of approximately 3.497 seconds or less) and the fact that abnormal procedure controls would be implemented within a matter of seconds of a scram, the time the accumulator check valves held accumulator pressure was a commercial risk and not a safety risk. A TS change request was submitted in a letter (G02-91-043) to the NRC on a March 1, 1991, to remove the scram accumulator check valves surveillance from the WNP-2 plant TS.

- Surveillance procedure PPM 7.4.1.3.5.3 was revised to include quantitative acceptance criteria. One criterion was that each scram accumulator check valve must hold its associated accumulator pressure above the nitrogen low pressure setpoint for one minute. The other criterion was that any scram accumulator check valve which does not hold its pressure above the low pressure setpoint for a 10 minute hold time for three consecutive surveillance tests will be reworked and retested with a 10 minute hold time acceptance criteria.

- Engineering will determine the minimum accumulator pressure hold time and will establish the basis for that time. When the minimum hold time is available, SP PPM 7.4.1.3.5.3 will (if necessary) be revised and re-performed.

The inspector reviewed the corrective actions the licensee identified in their response to this violation and noted the following:

- A TS change request was submitted by the licensee for removal of the scram accumulator check valve surveillance from the WNP-2 plant TS. The TS change was still being reviewed by the NRC at the time of this inspection.

- Engineering determined that the minimum accumulator pressure hold time would be ensured by a two minute test. Surveillance procedure PPM 7.4.1.3.5.3, Revision 5, was modified to include this quantitative acceptance criteria. The acceptance criteria was "Check valves which fail to maintain accumulator pressure above the alarm setpoint for low accumulator pressure for a minimum of two minutes shall be judged as having failed this test and shall be reworked..." The procedure also required the same acceptance criteria for retesting of reworked check

valves.

- A licensee engineering evaluation of the above acceptance criteria was provided in a May 10, 1991, licensee engineering interoffice memorandum. Based on that evaluation a procedure change was issued.

Based on the above noted review, the licensee accomplished the actions they committed to perform. The licensee's corrective action for this violation appeared to be satisfactory. This item is closed.

b. <u>(Closed) Violation 50-397/92-020-01: Inadequate Calibration of Ultrasonic Test Instrumentation</u>

An NRC inspection identified a failure to calibrate the sensitivity level of the ultrasonic test (UT) instrumentation correctly for circumferential scans performed on ferritic pipe during Inservice Inspection (ISI) weld examinations. The axially orientated notches in the calibration blocks were not used to calibrate the UT instrumentation, and this can reduce the sensitivity level of the instrumentation to detect defects during the circumferential scan examinations. These scans were performed to identify any defects oriented perpendicular to the weld. This failure to correctly calibrate the UT instrumentation for defects oriented perpendicular to the weld, called into question all examinations of a similar orientation performed for the first interval of the licensee ISI program. The licensee identified that they would evaluate the calibration responses of the applicable calibration blocks and perform an evaluation/reinspection of welds and examinations performed with questionable previous calibrations.

In a October 1, 1992, licensee response letter (02-92-230) to this violation, the licensee stated the following:

- The root causes for the violation were assigned to personnel error, inadequate work practices, and failure to perform intended or required verifications.

- The code infers that the UT instrument should be calibrated to the calibration block axial and circumferential notches separately and settings used in the field should be specified to the direction of calibration. It has been the practice at WNP-2 to calibrate the instruments only to the circumferential notch and to use that sensitivity setting on all four scan directions involved in ferritic pipe weld examinations (two axial scans and two circumferential scans). The WNP-2 alternate practice was a continuation of the procedures and practices of the Pre-service Inspection (PSI) contractor. This WNP-2 practice was based on testing that determined the difference in the sensitivity calibration for the circumferential and axial notches on the calibration blocks was less than two decibels (db) as measured on analog instruments. Since a two db tolerance is allowed by the ASME Code, the PSI contractor concluded that calibration on only the circumferential notch was adequate to use both axially and circumferentially during weld examination. However, documentation of the PSI contractor testing was not retained by WNP-2. A major change in conducting UT scans was made with the introduction of digital UT instruments during the 1991 Refueling Outage (R-6). No comparison scan of the circumferential and axial notches were made at that time with the new digital instruments. As a result, the Level III examiners did not adequately verify that the alternate method of calibration of using a single notch profile for all scan directions was still applicable for the new instruments.

- To address this concern testing was performed, with analog instruments, to verify the difference in notch profiles to be less than or equal to 2 db on 40 ferritic pipe calibration blocks. These calibration blocks had been used at WNP-2 since PSI. A comparison of the measurements between the two notches on each calibration block revealed the difference exceeded 2 db on seven blocks. The maximum difference observed between the two notch profiles was 7 db in one calibration block as measured by an analog instrument. Only one weld was examined at WNP-2 using this block. This weld was reexamined during the R-7 outage with the proper instrument calibration and found acceptable. The maximum observed difference in the remaining blocks was 5 db. An actual flaw indication requiring analysis would have resulted in, at least, a recordable indication even considering the maximum difference of 5 db between the notch profiles. Since the beginning of the PSI program, there have been no ferritic pipe weld recordable flaw indications observed at WNP-2. This provides assurance that there are no critical flaws in previously examined ferritic pipe welds.

- All ferritic pipe weld UT examinations performed during the 1992 R-7 outage were partially reexamined in the circumferential scan direction with the corrected sensitivity level from the axial notch. No recordable indications were detected in either the initial or final scans. Three pipe welds examined during the 1991 R-6 outage using digital instruments were also partially reexamined as described above. No recordable indications were detected in either the initial of final scans.

- The UT procedure for ferritic pipe welds will be revised by December 31, 1992, to require sensitivity calibration on both the axial and circumferential notches of the calibration blocks.

- By the end of the 1993 refueling outage, circumferential scans will be again performed on all ferritic pipe welds previously examined using digital instruments.

- By the end of the 1993 refueling outage, circumferential scans will be again performed on all ferritic pipe welds previously examined using the calibration blocks that were found to have exceeded a difference of 2 db between notches as measured by analog instruments.

The inspector reviewed and discussed the information and corrective actions identified in the licensee response to this violation and other associated documents with the licensee and the NRC inspectors that identified the violation. Based on this review and the discussions, the inspector noted the following:

- Instructions had been added to section 4.0 of Rev. 4 of licensee procedure QCI 6-13, "Ultrasonic Examination of Ferritic Steel Pipe Welds," issued November 25, 1992, to require sensitivity calibration on both the axial and circumferential notches of the calibration blocks.

- The licensee developed a schedule for performance of the committed inspections. Corrective actions are scheduled to be completed by the end of the 1993 Refueling outage.

After reviewing the above information, the inspector concluded that the licensee corrective actions were adequate and reasonable to resolve this violation. Reasonable assurance existed for the completion of the UT examinations. This item is closed.

c. <u>(Closed) Violation 50-397/92-020-02: Acceptance of Nonconforming Radiographs</u>

An NRC inspection identified that the licensee accepted a final set of radiographs for an ASME Code Class 1 weld (no. WRR 8417 X1-1) that failed to meet the minimum acceptance requirements of the ASME Code, Section V, Article 2 because a radiograph was approved without a valid identification marker.

In an October 1, 1992, licensee response letter (02-92-230) to this violation, the licensee stated the following:

- During radiography of this High Pressure Core Spray (HPCS) weld, the identification marker fell off. The radiograph film exposure was found acceptable but it had no identification marker displayed on the film. Because the location and geometry of the weld made it difficult to radiograph, the licensee's NDE Level III Examiner found an earlier radiograph of the same weld with a section marker. However, that radiograph was also not acceptable because of inadequate film density. After comparing the two films, the Level III examiner accepted the two films as a set based on the fact that both radiographs showed a common, unique spot on the fitting that was welded. This method of film acceptance was later identified as a possible ASME Code violation by the licensee staff and PER 292-592 was issued to evaluate this film acceptance. The licensee engineering staff evaluated the weld to be acceptable when using the two radiographs as a set. However, this method of examination/ film acceptance was not given adequate consideration with regard to compliance with the ASME Code.

- The section of weld in question was radiographed again during the same outage with the proper section markers. Examination of the second set of radiographs revealed no recordable indications. An inspector reviewed the second set of radiograph film during another inspection (Inspection report no. 92-25), and noted the film contained the required location markers.

- The radiography procedure will be revised by December 31, 1992, to require section markers as the only acceptable method of identification on the radiograph.

The inspector reviewed and discussed the information and corrective actions identified in the licensee response to this violation, and other associated documents, with the licensee and noted the following:

- Instructions had been added to Section 3.8 of Rev. 2 of licensee procedure QCI 5-1, "Instruction For Radiographic Examination", issued December 31, 1992, to specify lead location markers as the only method of identifying the area being radiographed.

- Applicable licensee staff had reviewed the new procedure QCI 5-1 instructions identified above.

After reviewing the above information, the inspector concluded that the corrective action implemented by the licensee to resolve this violation appeared satisfactory. This item is closed.

d. (Closed) Violation 50-397/92-025-06: Incorrect Gauge Used For ASME Code Inservice Testing

An NRC inspection identified that the licensee performed ASME Code inservice testing (IST) of ASME Code pumps using installed gauges that did not meet the requirements of Subarticle IWP-4120 of Division 1 of Section XI of the ASME Code. This section of the Code requires that the full-scale range of each instrument used to measure test parameters be three times the reference test parameter/value or less. Several ASME Code Class 1 pumps were tested with gauges that had a range greater than three times the measured test parameter. The licensee issued PER 292-984 to address these testing discrepancies. Additionally, the licensee performed a basis for continued operation (BCO) evaluation and a 10 CFR 50.59 review for the cited condition. The licensee stated the evaluation and review found the applicable pumps were operable, and that the incorrect instruments would be replaced or recalibrated to meet ASME Code requirements.

In a November 6, 1992, licensee response letter (G02-92-250) to this violation, the licensee stated the following:

- The first root cause for failure to satisfy the ASME Code accuracy requirements was a design deficiency of the affected systems. Appropriately ranged instruments were not provided with the systems to obtain operability test data within an acceptable accuracy. The second root cause of this condition was personnel work practices were less than adequate. The intended verification in the development and performance of the surveillance procedures was not performed to ensure the appropriate gauges were being used.

- Current design review practices require a more thorough review to ensure ASME Code requirements are satisfied before new or modified equipment is accepted for use.

- Evaluation determined that Transient Data Acquisition System (TDAS) data satisfied the technical accuracy requirements of the Code. The loop accuracy of the TDAS measurement is 1 percent of full scale of the sensor versus 2 percent for the panel gauges. The lower TDAS accuracy error satisfied the ASME Code accuracy error requirements even though the sensors may not satisfy the full scale range requirements of the Code. The panel gauges are outside both the full scale range and accuracy requirements of the Code, and therefore, are not suitable for use in performing Technical Specification surveillances.

- The appropriate surveillance procedures have been changed to only allow the use of TDAS data where corresponding panel gauges do not satisfy the Code accuracy requirements. Where TDAS instruments are unavailable, appropriately ranged instruments will be used to perform the surveillance tests.

- The accuracy of other instruments used in other Technical Specification surveillances were reviewed and found to be within the ASME Code acceptable values.

- A relief request for the IST program would be submitted by January 15, 1993, to obtain a waiver of the ASME Code requirements. Use of the Transient Data Acquisition System

(TDAS) data that exceed the full scale range requirements of the Code, but satisfy the accuracy requirements, would be requested.

The inspector reviewed the information and corrective actions identified in the licensee response to this violation and other associated documents. The inspector discussed the corrective actions with the licensee staff, and noted the following:

- Licensee personnel were briefed by the licensee as follows:
  - The corrective action response to this Notice Of Violation (NOV) was reviewed by individuals involved in preparing test procedures, to ensure the appropriate surveillance procedures were issued to only allow the use of TDAS data, or appropriate range gauges, where corresponding panel gauges do not satisfy the Code accuracy requirements.
  - This NOV was reviewed with individuals involved in assuring the ASME Code requirements were incorporated into the surveillance procedures which verify equipment operability as required by the Code.
- An IST program Relief Request, RP-10, was issued December 22, 1992, in licensee letter no. G02-92-269, for the use of TDAS data to measure pump discharge pressure during surveillance testing of pumps RHR-P-2A, 2B, 2C and HPCS-P-1. As of March 5, 1993, this relief request had not been approved by NRR.
- Applicable surveillance procedures have had instructions added on the use of TDAS data during pump surveillance testing.

After reviewing the above information and discussions with NRR, the inspector concluded that the corrective actions implemented by the licensee to address this violation appeared reasonable. This item is closed.

No violations or deviations from NRC requirements were identified.

4. Exit Meeting

An exit meeting was conducted on March 5, 1993, with the licensee representatives identified in paragraph 1 of this report. The inspector summarized the scope and findings of the inspection as described in this report. The licensee did not identify as proprietary any of the materials reviewed by or discussed with the inspector during this inspection.