APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report No. 50-482/92-09

Operating License No. NPF-42

Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)
P.O. Box 411
Burlington, Kansas 66839

Facility Name: Wolf Creek Generating Station (WCGS)

Inspection At: WCGS, Burlington, Kansas

Inspection Conducted: June 1-5, 1992

Inspectors: R. C. Stewart, Reactor Inspector, Materials and Quality Programs Section, Division of Reactor Safety

L. D. Gilbert, Reactor Inspector, Materials and Quality Programs Section, Division of Reactor Safety

P. L. Campbell, Mechanical Engineer, Mechanical Engineering Branch, Office of Nuclear Reactor Regulation

Approved: I. Barnes 7-24-92
I. Barnes, Chief, Materials and Quality Programs Date
Division of Reactor Safety

Inspection Summary

Inspection Conducted June 1-5, 1992 (Report 50-482/92-09)

Areas Inspected: Special announced inspection of the WCGS inservice testing (IST) of pumps and valves with particular emphasis on the licensee's response to the positions in NRC Generic Letter (GL) 89-04, "Guidance On Developing Acceptable Inservice Testing Programs," dated April 3, 1989. In addition, a followup review of previously identified inspection findings was conducted.

Results: Within the areas inspected, one violation was identified (paragraph 3.2.5) pertaining to the use during IST of a differential pressure gauge which did not conform to ASME Section XI Code range requirements. In addition, a noncited violation was identified (paragraph 3.3.1.1) pertaining to the failure to generate a procedurally required report for the initial surveillance of a vendor test facility that was performing pressurizer safety valve testing. An inspection followup item was identified (paragraph 3.3.1) pertaining to review of an evaluation that was performed on the reactor vessel head vent valves, and an unresolved item was also identified (paragraph 3.3.5)

concerning compliance with the test supervisor qualification requirements of PTC 25.3-1976 for main steam safety valve setpoint testing.

Implementation of the existing IST program was generally satisfactory. The licensee has previously recognized that weaknesses exist in the IST program and, as a result, committed in Licensee Event Report 91-007 to perform a complete review of IST procedures to ensure technical adequacy and compliance with ASME Section XI Code requirements. Issues noted during this inspection which licensee personnel committed to address in this review were as follows:

- Correlation of pump vibration limits with new pump test data points;
- Monitoring or trending local leak rate testing of valves (Appendix J testing) to establish appropriate limits for detecting degradation;
- Completion of valve surveillance test procedure revisions to include GL 89-04 guidance; and
- Clarification of interfaces between IST and other groups which have responsibility for IST activities.

The following previously identified inspection findings were dispositioned as indicated.

- Violation 482/9127-01 (CLOSED)
- Unresolved Item 482/9136-04 (CLOSED)

DETAILS

1. PERSONS CONTACTED

WCNOC

*T. Ansermi, Licensing Engineer
*R. Benedict, Manager, Quality Control
*M. Dingler, Manager, Nuclear Plant Engineering Systems
*R. Flannigan, Manager, Nuclear Safety Engineering
*B. Grieves, Supervisor, Component Performance
*R. Holloway, Manager, Maintenance and Modifications
*S. Koenig, Manager, Chemistry
*R. Lewis, Supervisor, Results Engineering
*W. Lindsay, Manager, Quality Assurance
*R. Logsdon, Manager, Chemistry
*T. Morrill, Manager, Radiation Protection
*W. Norton, Manager, Technical Support
*B. Pae, Engineer, In-Service Testing Program
*C. Parry, Director, Quality and Safety
*G. Pendergrass, Supervisor, Engineering, In-Service Inspection
*E. Peterson, Supervisor, Audits
*R. Schmidt, Surveillance Coordinator
*G. Seier, Results Engineer
*L. Payne, Manager, Supplier/Materials Quality Department
*J. Weeks, Manager, Operations
*S. Wideman, Supervisor, Licensing
*M. Williams, Manager, Plant Support
*B. Withers, President and Chief Executive Officer

NRC

*I. Barnes, Section Chief, Division of Reactor Safety
*L. Meyers, Resident Inspector
*G. Pick, Senior Resident Inspector

The inspectors also interviewed other employees during this inspection.

*Indicates those persons who attended the exit meeting conducted on June 5, 1992.

2. LICENSEE ACTIONS ON PREVIOUSLY IDENTIFIED INSPECTION FINDINGS (92701 AND 92702)

2.1 (Closed) Violation (482/9127-01): Lack of Control of Inservice Inspection (ISI) Plan and Nondestructive Examination (NDE) Procedures

The licensee's ISI Program Plan, WCRE-07, was found to contain improper listings of program plan revisions. In addition, NDE procedure revisions and superseded revisions lacked control.

During this inspection, the inspectors reviewed the licensee's corrective actions which included: (1) the generation of Performance Improvement Request (PIR) TS 91-0987 to address the lack of control for the ISI program plan and NDE procedures; (2) revisions to Procedures ADM 05-300, ADM 05-119, ADM 01-043, ADM 07-100, WCRE-07, and STS PE-300; (3) training of ISI engineers in the process for handling ISI program plan and procedures within the WCNOC document control system; and (4) the development of a procedural guideline for processing changes to the ISI program plan document.

Based on these documentation reviews, it was determined that the licensee had developed and implemented effective corrective actions in response to the violation. This item is considered closed.

2.2 (Closed) Unresolved Item (482/9136-04): Adequacy of Centrifugal Charging Pump Minimum Flow

During an inservice test conducted on January 3, 1992, inconsistencies were noted between the readings obtained from two Controlotron flow instruments that were placed in the same flow path on the minimum recirculation discharge flow lines of Centrifugal Charging Pump B. The flow measured directly upstream of Valve BGHB8111 by one flow instrument was 58.1 gpm. Valve BGV095, which is located directly downstream of Valve BGHV8111, was required to pass at least 60 gpm in order to mitigate pump damage at the shutoff head of the centrifugal charging pump. To verify this flow, an additional Controlotron flow instrument was located on a 3-inch line downstream of Valve BGV095, which measured the flow during the January 3, 1992, test to be 64.85 gpm. The inconsistency between the two readings raised the question of whether the centrifugal charging pump was meeting the manufacturer's manual indicated minimum flow requirement of 60 gpm.

Review during this inspection identified that the licensee had responded to the observed inconsistencies by initiation of PIR TS 91-0238 and Reportability Evaluation Request 92-004. It was noted from review of the licensee's evaluation that two different models of Controlotron flow instruments were utilized during the test (i.e., a Model 990 for the 58.1 gpm measured value with a calibrated accuracy of ±1.2 gpm, and a Model 480 for the 64.85 gpm measured value with a calibrated accuracy of ±3.2 gpm). This data would suggest that actual flows as low as 56.9 gpm may have occurred. The licensee's evaluation noted, however, that the 60 gpm minimum flow requirement was only an approximate value and that vendor examination of the previously

installed pump internal rotating assembly (which was removed for an unrelated reason after 4 years of service) showed only normal wear. The current internal rotating assembly had been in service for 6 months at the time of the test. Review of previous test data also did not indicate any evidence of performance degradation. The licensee concluded that excessive degradation was not occurring and that there were no safety concerns associated with the noted flow value. This item is considered closed.

3. INSERVICE TESTING OF PUMPS AND VALVES RELATIVE TO GENERIC LETTER (GL) 89-04 (TI 2515/114)

The objectives of this inspection were to ascertain whether the licensee's inservice testing (IST) of pumps and valves was: (a) consistent with the positions, criteria, and guidelines provided in GL 89-04; and (b) in conformance with the requirements of Subsections IWP and IWV of Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition through the Winter 1981 Addenda.

3.1 Background

GL 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," was issued April 3, 1989, for the purpose of addressing relief requests and generic concerns with licensee's IST programs. TI 2515/114 has been developed such that, by inspecting two to three safety-related systems for compliance with the guidelines of GL 89-04, an overall assessment of the licensee's implementation can be made.

The WCGS First Ten Year IST Program interval was initiated in 1985. The licensee's current IST Program for pumps and valves, Revision 8, has been in effect since September 4, 1991, and was developed to comply with the requirements of the 1980 Edition of the ASME Section XI Code through the 1981 Winter Addenda. However, the licensee also committed as corrective actions in Licensee Event Report (LER) 91-007, dated June 21, 1991, to undertake a complete technical review of IST procedures to ensure their technical adequacy and compliance with the ASME Code. In a letter dated March 27, 1992, the licensee indicated that the unexpected duration of the refueling outage and a subsequent forced outage had necessitated rescheduling completion of the IST procedure review. The licensee indicated that the review of the IST pump procedures had been completed, with the review of IST valve procedures to be completed by March 1, 1993.

The most recent NRC Safety Evaluations relating to the WCGS IST relief requests were issued January 15, 1988, and September 20, 1989, respectively. There are no pending or planned additional Safety Evaluations to be issued for the WCGS IST program changes. The licensee has indicated that there are no current relief requests submitted or pending NRC approval.

3.2 Review of IST Program for Pumps and Valves

The inspectors reviewed the licensee's IST program for pumps and valves which consisted of a program plan, an administrative procedure, and various surveillance test procedures. The IST program plan, WCOP-02, Revision 8, designated the pumps and valves included in the program for testing to ASME Section XI Code requirements. The administrative procedure, ADM 05-200, "ASME Code Testing of Pumps and Valves," Revision 1, defined the responsibilities for testing of ASME Code Class 1, 2, and 3 pumps and valves in accordance with Subsections IWP and IWV of the ASME Section XI Code. In addition, the procedure defined the records that were to be generated from testing of pumps and valves, including pump and valve events logs and test summaries. In reviewing the administrative and other related procedures, the inspectors noted that the program documents did not address the interface between the IST engineer and other groups which have responsibility for IST activities. This is considered a weakness of the IST program.

3.2.1 Establishing Post-Maintenance Testing Requirements

The maintenance program procedures were reviewed to determine if inservice testing is specified as a requirement for post-maintenance testing of applicable components. Procedure ADM-01-057, "Work Request," Revision 24 and Revision 25 (Draft) were reviewed. The administrative procedure for the IST program (ADM-05-200) was not referenced in the procedure. The maintenance group leader is responsible for identifying post-maintenance testing. Other referenced procedures on surveillance testing and post-maintenance testing (ADM-08-213/08-240/02-300) were reviewed, but did not establish an interface between the maintenance activity and IST. This is considered a weakness of the IST program.

3.2.2 Design Process

The procedures which describe the requirements for the WCGS design process were reviewed to determine if IST requirements were included as an item for design engineers to consider when modifying plant systems. It was noted from this review that the procedures did not specify the responsibility for ensuring the requirements of 10 CFR 50.55a are addressed for the design or for post-modification testing. This is considered a weakness of the IST program. Procedures reviewed included KPN-C-301/307/311, KPN-D-304, KGP-1220, and KGP-1131.

3.2.3 Review by Consulting Firm

An independent review was performed by an engineering consulting firm just prior to the NRC inspection. Several weaknesses were identified and recommendations were provided to address enhancements and improvements in the IST program. Because the review had just been completed and was current, the NRC inspection did not focus on the issues which appeared to be addressed by the consultants. One recommendation that the NRC inspectors found meritorious was that WCNOC establish a "Bases Document" which identifies the testing

requirements for each component and the basis for inclusion or exclusion in the IST program. Licensee personnel indicated that this recommendation is expected to be implemented and completed along with the actions committed for LER 91-007, due to be completed by March 1, 1993.

3.2.4 Cold Shutdown Testing Definition

The definition of cold shutdown testing frequency used in the IST program incorporated a provision in ANSI/ASME OM-10, "Inservice Testing of Valves in Light-Water Reactor Power Plants," paragraph 4.2.1.2(g), stipulating that cold shutdown testing will commence within 48 hours and, if not completed when the plant is ready to startup, permitting testing to be delayed to the next cold shutdown. This provision is not in the 1980 Edition, 1981 Addenda, of the ASME Section XI Code, and though it is a position which has been accepted by the NRC staff, relief is required. The licensee agreed to submit a relief request with the next IST program revision.

3.2.5 Utilization of Incorrect Range Instrument

During data review, the inspectors noted that an incorrect range instrument had been utilized on May 20, 1992, for measuring the flow of an ASME Code Class 2 pump, Containment Spray Pump A. The inspectors ascertained that the IST engineer became aware of this discrepancy in early 1991 and had subsequently initiated an order for ultrasonic flow instrumentation which would meet the Code requirements. Identification of the problem and an assessment of the impact on the operability of the pumps had not, however, been documented in accordance with Procedure KGP-1210, "Performance Improvement Requests," which establishes requirements and responsibilities for reporting, analyzing, and correcting nonhardware problems. IWP-4120 in Section XI of the ASME Code requires that the full-scale range of each instrument shall be three times the reference value or less. The gauge used for the test was a differential pressure gauge (converted to flow) with a range of 0-10 inches water column, which was in excess of three times the applicable reference value of 2.24 inches water column (320 gpm). This is an apparent violation of Technical Specification (TS) 4.0.5, which requires that IST of ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code. (482/9209-01)

3.2.6 Pressure Isolation Valves

The pressure isolation valves are listed in TS Table 3.4-1 and discussed in SAR section 6.3.4.2. The licensee's response to Generic Letter 87-06, "Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves," dated June 5, 1987, did not identify any additional valves not listed in TS. Each of the pressure isolation valves are included in the IST program as Category A in accordance with the guidance contained in GL 89-04, Position 4.

3.2.7 Containment Isolation Valves

Technical Specification Table 3.6-1 lists each penetration and the associated containment isolation valves, as well as identifying the type of leak test required by 10 CFR 50, Appendix J. The valves which are subject to a Type C (local leak rate) test were verified to be included in the IST program as Category A as delineated in GL 89-04, Position 10. Relief Request VR-5 was approved in the NRC Safety Evaluation dated January 15, 1988, allowing the licensee to perform testing in accordance with Appendix J, provided the requirements of IWV-3426 and IWV-3427 were met. The current revision of VR-5 does not specify this provision. An internal memorandum discussing the provision to meet IWV-3426 and IWV-3427 described the methodology of assigning a leakage limit. The methodology applies the limits based on the Appendix J 0.6 La limit. The limits are such that degradation would likely be masked.

The IST engineer indicated that he had identified this as an item for further review as part of the overall review and evaluation of the IST program resulting from LER 91-007. The limits for the local leak rate testing are based on a large percentage of the maximum allowable per Appendix J. The licensee plans to establish limits for monitoring for degradation.

3.2.8 Use of Pump Curves

The IST of pumps was based on utilization of curves for each pump being tested. During the review of the WCGS IST program, the testing method was discussed with NRC staff and additional information was provided in a letter dated September 11, 1987, describing how the pump curves would be established and how the requirements of IWP-3100 and IWP-3200 would be met. The use of the curves was considered to be in accordance with ASME Section XI Code.

The pump test procedures have been reviewed and revised due to a condition identified in LER 91-007 relating to an inadequate inservice test. Revisions were completed by June 1, 1992, as committed by WCNOC. The tests no longer utilize pump curves or multiple reference points, but establish test conditions at a single point. Pump curves are provided in the test procedures for information, but are not used to establish acceptance criteria. One of the reasons WCNOC changed the testing was that the reference values for vibration had not been established based on a curve, but at a single point. Problems had been experienced when test conditions varied along the curve from the point where vibration values had been verified. This is an issue being evaluated by the ASME Operations and Maintenance Codes and Standards Committee, and it is now the position of the NRC that relief is required to utilize pump curves when it is impractical to return to a single set of reference values for differential pressure and flow. The licensee agreed that if pump curves are determined necessary, relief would be requested in the future.

3.3 Review of IST Records

The inspectors reviewed the piping and instrumentation diagram drawings and surveillance test procedures for the reactor coolant system, chemical and volume control system, and high pressure coolant injection system. The inspectors verified that the pumps and valves required for pressure isolation, containment isolation, and safe shutdown were included in the WCGS IST program for pumps and valves. The IST records were reviewed for selected components in each system. These records included pump and valve surveillance tests, calibration of test instruments, test data trending, test summary sheets, and events log sheets. In addition, the inspectors reviewed the set point testing of the main steam system safety/relief valves.

3.3.1 Reactor Coolant System

The WCGS reactor coolant system portion of the inservice testing program consists of a total of 68 valves. Seven relief requests and six cold shutdown justifications apply to the valves in this system. The relief requests have been approved by NRC in Safety Evaluations dated January 15, 1988, and September 10, 1989. The bases for deferring testing of certain valves from quarterly at power, to cold shutdown conditions, were reviewed and appeared adequate. However, the basis for deferring testing for the reactor vessel head vent valves included an error and raised a concern that was further reviewed.

The cold shutdown justification for performing an IST at cold shutdown conditions includes a statement that exercising either of the upstream reactor vessel head vent valves (two redundant trains) at power tends to burp the system, possibly unseating the closed downstream valve in that train, and that failure of a vent valve at power would also put the reactor in a small break LOCA situation. The design of the vent system includes an orifice which limits the discharge to below the capacity of the makeup system, such that a LOCA cannot be created by the failure of the vent system. The IST engineer agreed to correct this error.

The reactor vessel head vent valves are solenoid operated valves that, by design, are susceptible to pressure changes, depending on the orientation of valves. Recently, the downstream valves have been evaluated for possible reorientation to preclude their spurious opening due to pressure spikes created by opening the upstream valves. An engineering evaluation determined that reorientation was not required, in part, because opening these valves at power can be controlled. One means of control is to prohibit IST at power conditions, thereby making the cold shutdown justification necessary. Inadvertent actuation of the upstream valve, creating a potential unintended opening of the downstream valve, had not been addressed in the licensee's evaluation against the single failure criteria required by the Safety Analysis. Review of the bases for the determination that reorientation of the downstream valves was not required is considered an inspection followup item. (482/9209-02)

3.3.1.1 Review of Test Results

Test data from a number of previous reactor coolant system valve tests were reviewed. Stroke time test results were compared to the alert and limiting values. Although the required action limits are included in test procedures, alert values are not specified, which requires the IST engineer to identify these values during review of the test package. The appropriate actions appeared to have been taken for stroke time which required increased test frequency. A weekly report is issued by the IST engineer which identifies those components that are in an increased test frequency.

Surveillance Test CV-210 performs the full stroke exercise for the four safety injection to reactor coolant system 6-inch check valves, 8949 A/B/C/D. The procedure did not include 8949 B/C in the attachment which provides acceptance criteria and the operability determination for tested valves. The testing for these valves was subsequently ascertained to have been moved to CV-211, but CV-210 had not been revised to delete the reference to these two valves. This is an example of a weakness in the IST program, in that there is currently no document which cross-references components with the applicable surveillance test procedures.

Surveillance Test Procedure EP-210 is for performance of the accumulator discharge test which "full-stroke" exercises a number of check valves in the safety injection/reactor coolant system. The test methodology and acceptance criteria is the same as the startup test performed for the system. Relief Request VR-9 was granted in the September 20, 1989, NRC Safety Evaluation, provided the licensee evaluate test data and establish acceptance criteria to ensure that these valves are being full-stroke exercised. The test procedure includes acceptance criteria, and a Westinghouse document which indicates that the test verifies full-stroke of the valves. Therefore, the provisions of the granting of relief appear to be met.

The tests performed for the three pressurizer safety valves (and spare valves) were reviewed, including preservice test results. For the three valves currently installed, testing was performed on the valves at a vendor test facility using steam prior to the 1991 refueling outage. The purchase order (PO) for the setpoint testing was reviewed with respect to the technical requirements imposed on the vendor. The purchase order required that, if valve leakage failed acceptance criteria, the vendor would request WCNOC approval to jack and lap the valve seats. One jack and lap was allowed to be performed without reverifying the setpoint, with additional lapping requiring reverification. The licensee's review of NRC Information Notice 91-74, "Changes in Pressurizer Safety Valve Setpoints Before Installation," indicated that there are no current requirements in the station procedures which would ensure setpoint reverification following leakage testing and corrective actions. WCNOC is monitoring industry progress in this area through the Westinghouse Owners' Group. The test data sheets for each of the three valves currently installed indicated that a jack and lap was performed following setpoint testing.

During the review of the procurement documents, it was noted that neither the PO nor the vendor documentation specifically addressed an applicable requirement of ASME PTC-23.5-1976 for the test supervisor to have an engineering degree and 2 years of practical experience. This subject is additionally discussed in paragraph 3.3.5 with respect to main steam safety valve setpoint testing. A review was also performed by the inspectors of the basis for approval of the vendor for furnishing the safety-related testing services. It was noted during this review that a supplier surveillance report had not been issued for the initial surveillance of the vendor in July 1991 during performance of the pressurizer safety valve testing. Generation of source surveillance reports is a requirement of Procedure SMQP 10.2 "Source Surveillance," Revision 4. The licensee documented this discrepancy in PIR QS 92-0437 dated June 5, 1992, and prepared the missing report on the same date. A review was also initiated to determine whether any other programmatically-required vendor documentation had not been prepared. The failure to generate the supplier surveillance report in accordance with procedural requirements is an apparent violation of Criterion V of Appendix B to 10 CFR Part 50. The violation is not being cited because the criteria specified in section VII.B.1 of the Enforcement Policy were satisfied.

3.3.1.2 Review of Maintenance Work Requests

A number of maintenance activities associated with reactor coolant system valves were reviewed for post-maintenance testing requirements. The applicable surveillance procedures were specified in the "Retest Instructions" section and testing was verified complete before the work request was signed by Operations.

3.3.2 Chemical and Volume Control System

The chemical and volume control system portion of the IST program consists of 4 centrifugal charging pumps and a total of 51 valves. One pump and four valve relief requests apply to this system. The relief requests have been approved in Safety Evaluations dated January 15, 1988, and September 20, 1989. The bases for deferring testing of certain valves from quarterly at power, to cold shutdown conditions, were reviewed and appeared adequate.

3.3.2.1 Review of Test Results

Test data review included the "A" train centrifugal charging pump (PBG05A) and 15 valves in the safety injection flow path that included that portion of the "A" pump suction from the refueling water storage tank to the regenerative heat exchanger. Eight prior test results for each of the components selected were reviewed in conjunction with WCOP-02, "IST Program for Pumps and Valves," Revision 8. Pump and valve test results were compared to the alert and limiting values. As noted in paragraph 3.3.1.1 above, although the required action limits are included in the test procedures, alert values are not specified which requires the IST engineer to identify the values during review of the test results. For the pump and valve testing results reviewed,

the test results were in the acceptable ranges which was consistent with the weekly IST reports reviewed for the chemical and volume control system.

3.3.4 High Pressure Coolant Injection System

The WCGS high pressure coolant injection system portion of the IST program consists of 2 safety injection pumps and a total of 47 valves. Ten relief requests and three cold shutdown justifications apply to the valves in this system. The relief requests have been approved in Safety Evaluations dated January 15, 1988, and September 20, 1989. The bases for deferring testing of certain valves from quarterly at power, to cold shutdown conditions, were reviewed and appeared adequate.

3.3.4.1 Review of Test Results

Test data from a number of previous surveillance tests were reviewed. The pump and valve test results were compared to the alert and limiting values. As noted in paragraphs 3.3.1.1 and 3.3.2.1 above, the required action limits were included in the test procedures, but alert values were not specified which requires identification of the values by the IST engineer during review of the test results. A weekly IST report was issued by the IST engineer to document the evaluation of the pump and valve testing results. For the pump and valve testing reviewed, the test results were in the acceptable range which was consistent with the weekly IST reports reviewed for the high pressure coolant injection system components.

Surveillance Procedure STS EM-100A/B was used for quarterly testing the safety injection pumps. Surveillance Procedure STS EM-210 was used for performing a quarterly partial-stroke exercise test of the safety injection pump suction check valves to the open position. Surveillance Procedure STS CV-210 was used for performing a full-stroke exercise test of the safety injection pump suction check valves to the open position during refueling outages. Surveillance Procedure STS PE-019E was used for performing a leakage test at least every 18 months on each reactor coolant system pressure isolation check valve in the high pressure coolant injection system. Surveillance Procedure STS EM-201 was used for performing the following: stroke time testing to the open and close positions during cold shutdowns, fail-safe testing quarterly, and position indication testing every two years for valves in the high pressure coolant injection system designated as Category A or B that were not passive. Surveillance Procedure STS PE-058 was used for performing seat leakage testing of the containment isolation valve at Penetration P-58 every 2 years.

During the review of surveillance tests and test summary records for the two safety injection pumps in the high pressure coolant injection system, the inspectors noted two anomalies: the test pressure gauge accuracy specified in a test procedure was inconsistent with that required by the applicable Code and a pump test was not documented on the pump test summary record. The pressure gauge accuracy specified in Surveillance Test Procedure STS EM-100A, Revision 7, for Safety Injection Pump PEM01A was plus or minus 25 percent of

full scale when the Code accuracy requirement was plus or minus 2 percent of full scale. After further review of other test procedures and instrument calibration records, the inspectors determined that the pressure gauge instruments were being calibrated to an accuracy of plus or minus 0.25 percent of full scale which was consistent with the accuracy specified in the other test procedures reviewed. The licensee stated that the decimal point had been omitted in error and a change would be issued to the lasted revision of the procedure, Revision 8, to correct the 25 percent to 0.25 percent. In the second case, the pump test summary record for Safety Injection Pump PEM01B did not list a quarterly pump test as having been performed for the 6-month period between January and July 1991, although the trending report indicated that a test had been performed on April 17, 1991. The IST engineer provided the inspectors with a copy of the surveillance test performed on April 17, 1991, and the weekly IST report issued on April 18, 1991, that documented the test as acceptable. The licensee stated that the test would be added to the pump test summary record.

3.3.4.2 Review of Post-Maintenance Testing

The maintenance history of selected pumps and valves included in the IST program was reviewed to determined if post-maintenance testing was being performed. The inspectors found that post-maintenance testing had been performed using the applicable surveillance procedure.

3.3.5 Main Steam Safety Valve Setpoint Testing

The setpoint testing for the previous two refueling outages was reviewed. In 1990, one valve lifted high, and the scope of 5 valves was increased to 10 as required by IWV-3513 (1980 Edition, Winter 1981 Addenda). In 1991, 4 valves lifted high, and all 20 valves were tested per IWV-3513. The valves were tested and the setpoint readjusted to within limits, however, the licensee had not performed a root cause of the condition, attributing the high lift to setpoint drift.

The testing was performed with the valves installed using system pressure and an assist device. The purchase order for the contracting firm which performed the setpoint testing was reviewed. The purchase order specified that the activities were subject to the requirements of 10 CFR Part 21, and that the work was to be performed in accordance with the vendor QA program. The calibration data sheets for the equipment were reviewed, and indicated that the calibrations were current at the time of testing.

The inspectors reviewed the test data to determine whether the test supervisor met the qualification requirements of PTC 25.3-1976 for an engineering degree and 2 years practical experience. It was noted from this review that the individual performing the signoff for the vendor did not meet this requirement. The licensee took the position that the assigned licensee maintenance engineer met these qualification requirements and was the "test supervisor." The available documentation did not indicate, however, that this qualification requirement had been recognized as being applicable. This

matter is considered unresolved pending further review of the licensee's bases for this position. (482/9209-03)

3.4 Test Observation

3.4.1 Emergency Service Water (ESW) Pump Test

The performance of Surveillance Test EF-100B, "ESW System in Service Pump B Test and ESW B Service Water Cross Connect Valve Test," was observed. This test was the first test using the revised procedure which required establishing a fixed reference flow. Previous tests had utilized pump curves. The instrument range for the local gauge measuring discharge pressure was within acceptable limits. The vibration points were clearly marked with a permanent marker; however, the licensee determined that the upper motor bearing housing cover of this vertical line shaft pump had been rotated. This had shifted the markings of the vibration measurement locations. The test which was observed was accordingly determined to be inadequate and is to be repeated following the correction of the rotated cover. The licensee indicated that necessary corrective actions would be determined for the rotated cover in order to prevent invalid tests in the future.

3.4.2 Turbine-Driven Auxiliary Feedwater (TDAFW) Pump

Surveillance Test AL-103, "TDAFW Pump Inservice Pump Test," performance was observed. The test was the first one using the revised procedure which is based on a single set of reference values. The instrumentation used for differential pressure and flow met the range requirements for inservice testing and were verified to be within calibration. Vibration measurements were taken at points indicated on the bearing with permanent markers. It was noted that the drawing in the procedure incorrectly showed the markers to be on the north side of the bearings, whereas the markings were actually on the south side. This discrepancy was not considered a technical error, but the licensee indicated that the drawing would be changed to reflect that the points are physically located on the south side of the pump.

4. EXIT INTERVIEW

An exit interview was conducted on June 5, 1992, with those personnel denoted in paragraph 1, in which the inspection findings were summarized. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspectors during this inspection.