APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

NRC Inspection Report: 50-285/89-38 Licensee: DPR-40

Docket: 50-285

Licensee: Omaha Public Power District (OPPD)
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Facility Name: Fort Calhoun Station (FCS)

Inspection At: FCS, Blair, Nebraska

Inspection Conducted: October 11-31, 1989

Inspectors: P. Harrell, Senior Resident Inspector
T. Reis, Resident Inspector
R. Mullikin, Project Engineer

Approved: T. F. Westerman 12/1/89
T. F. Westerman, Chief, Project Section B Date
Division of Reactor Projects

Inspection Summary

Inspection Conducted October 11-31, 1989 (Report 50-285/89-38)

Areas Inspected: Routine, unannounced inspection including review of previously identified items; licensee event report followup; operational safety verification; plant tours; monthly maintenance observations; monthly surveillance observations; security observations; radiological protection observations; in-office review of periodic, special, and nonroutine event reports; review of 10 CFR Part 21 reports; and review of onsite events.

Results: Of the 11 areas inspected, 1 violation (failure to comply with the TS LCO for two inoperable RPS channels, paragraph 13.c) of NRC requirements was identified.

The inspectors reviewed the areas discussed below. The discussion provides an overall evaluation of each area.

- The inspectors reviewed the actions taken by the licensee in response to previously identified items and licensee event reports, and it appeared

that the licensee had appropriately implemented both short- and long-term actions to prevent recurrence of the identified problems.

- During observations of activities and evolutions performed by the operations staff, the inspectors noted no problems with the performance of the staff. It appeared that the licensee's operations staff performed their duties in an adequate manner to ensure safe plant operation.

- The licensee discovered a nonconservatism in the value of a factor used to compute a RPS trip setpoint. Due to existing margins, no potential safety concern resulted. Analysis of the root cause of the error is considered an unresolved item.

- The inspectors performed numerous tours of the plant during this inspection period. During the tours, no significant problems were noted.

- During observation and review of maintenance and surveillance activities, the inspectors noted no problems with the procedures, documentation, or activities reviewed.

- In the area of security operations, the inspectors noted a potential weakness in the area of escort responsibilities. The licensee took prompt corrective action. Progress continues in the security upgrade program.

- During numerous tours of the radiologically controlled area, the inspectors found no problems with the implementation of the radiological protection program.

- The inspector reviewed the actions taken by the licensee to review potential problems identified in 10 CFR Part 21 reports. It appeared the licensee's review program was adequate.

- During review of onsite events, the inspector noted that the licensee took proactive measures in preparation for a planned outage of the 161-kV offsite power supply. The licensee's actions related to the inoperability of two RPS channels was found to be inadequate. The licensee failed to comply, in a timely manner, with the appropriate TS LCO, resulting in the issuance of a violation.

DETAILS

1. Persons Contacted

J. Bobba, Supervisor, Radiation Protection
C. Brunnert, Supervisor, Operations Quality Assurance
J. Chase, Manager, Nuclear Licensing and Industry Affairs
*M. Core, Supervisor, Maintenance
*D. Dale, Supervisor, Quality Control
*R. DeMeulmeester, Acting Supervisor, Operations
*J. Dyer, Senior Quality Control Inspector
*S. Ferguson, Construction Manager
*W. Gates, Executive Assistant to the President
*J. Geschwender, Licensing Engineer
*R. Jaworski, Manager, Station Engineering
J. Kecy, Supervisor, Systems Engineering
*T. Mathews, Station Licensing Engineer
*D. Matthews, Supervisor, Station Licensing
*T. McIvor, Manager, Nuclear Projects
*K. Morris, Division Manager, Nuclear Operations
*W. Orr, Manager, Quality Assurance and Quality Control
*G. Peterson, Manager, Fort Calhoun Station
A. Richard, Assistant Manager, Fort Calhoun Station
*J. Sefick, Manager, Security Services
*P. Sepcenko, Supervisor, Outage Projects
*C. Simmons, Station Licensing Engineer
*F. Smith, Plant Chemist
*K. Stultz, Supervisor, Radiological Services
D. Trausch, Supervisor, Operations
*S. Willrett, Manager, Administrative Services

*Denotes attendance at the monthly exit interview.

The inspectors also contacted other plant personnel, including operators, technicians, and administrative personnel.

2. Plant Status

During this inspection period, the plant operated at 100 percent power. No plant perturbations or challenges to safety systems were experienced.

3. Review of Previously Identified Items (92701 and 92702)

a. (Closed) Open Item 285/8836-03: Cracks found in the gear housing of Limitorque motor-operated valves (MOVs).

Cracks in Limitorque gear housings were identified during the performance of preventive maintenance activities by the licensee. The cracks were located axially along the bolt holes in the gear

housing in four valve operators, which are in the high-pressure safety injection (HPSI) system. In addition, in one of the four operators, multiple cracks were found in the upper housing of the operator. The cracks were found only in Model SMB-00 Limitorque MOVs.

This item was reviewed in NRC Inspection Report 50-285/89-05. The inspector was satisfied with all of the licensee's corrective action taken to date. However, this item remained open pending the completion of the licensee's documentation of the final root cause analysis and the reason for the valve operator gear housing cracks.

The licensee, in an internal memorandum (PED-SSE-89-673S), dated August 31, 1989, documented the results of their root cause analysis. The licensee concluded that the four valve actuators cracked due to the effects of overthrusting. Historically, the valves experienced repeated challenges to the capacity of the valve motor operator. The thrust requirements for the actuator application were high into the range of the capacity of the actuator. Performance requirements at this level placed the motor operator at risk for overthrust. The HPSI valve actuators were unique to the group of the installed safety-related, motor-operated valves because the HPSI actuators were required to operate at the high end of their capacity. These were the only operators required to perform near their maximum capacity.

The licensee's analysis resulted in the following recommendations:

- Perform a design review of HPSI motor operator requirements
- Establish testing procedure restraints to prevent overthrusting possibilities.
- Develop testing procedures and/or acquisition of a more accurate set of MOV test equipment.
- Install four rotor switching in each MOV.

The actions taken by the licensee were sufficient to close this open item. However, the four recommendations listed above are considered an open item pending disposition by the licensee. (285/8938-01)

b. (Closed) Unresolved Item 285/88201-09 (Violation B.4): Failure to use procedures for operation of the CCW and resin transfer systems.

This violation involved the following examples of the licensee's inattention to procedural requirements:

- An operator performed the steps of Procedure OI-CC-4, "Component Cooling Systems Outage for Maintenance," without having the procedure in hand.

- An operator failed to follow the procedure during the spent resin transfer. Procedure OI-CH-6, "CVCS Resin Transfer," provided certain steps in the prerequisite section, rather than as clearly defined steps in the procedure. The problem was compounded when the individual involved continued on his own rather than stopping work and obtaining an approved on-the-spot-change before proceeding.

- An auxiliary operator returned the dechromating system for the CCW system to service without the use of a procedure. In addition, the operator was apparently unfamiliar with the installation.

The licensee's corrective actions included revising Procedure SO-O-29, "Conduct of Operations," to provide additional guidance on procedure use. It defined when personnel were required to have the procedure in hand and what actions can be taken outside of the scope of procedures, such as during an emergency. The procedure revision also emphasized the requirements for verbatim compliance with procedures. In addition, Procedure OI-CH-6 was revised to correct identified deficiencies.

The corrective actions taken by the licensee appeared to adequately address the problems identified by this violation.

c. (Closed) Followup Item 285/8928-02: Administrative controls for raw water (RW) flow.

Due to concerns with elevated Missouri river temperatures, the licensee performed an analysis to verify that the design basis upper limit of 85°F could be raised. It was determined that the design basis accident (DBA) cooling capability could be maintained above a river temperature of 85°F, provided there was adequate raw water flow. The licensee generated a curve of river temperature versus flow requirements necessary to maintain DBA cooling capabilities. The curve was included in Safety Analysis for Operability (SAO) 89-012, "Elevated Component Cooling Water Temperature." The licensee incorporated a verification of the required RW conditions into the official control room log, Form FC-75. This verification is performed on a daily basis to verify that adequate RW flow exists for a given river temperature.

Based on the above, it appeared that the licensee had implemented adequate administrative controls to ensure that sufficient RW flow was continuously provided to meet DBA conditions.

d. (Closed) Unresolved Item 285/8932-01: Potential problems with the electrical supply breakers for Pumps DW-46A and DW-46B.

This item was related to the identification of potential problems with the breakers for Pumps DW-46A and DW-46B. The breakers were

supplied by the Satin American Company and the types of potential defects with the breakers were described in NRC Information Notice 89-45, Supplement 1, "Metalclad, Low-Voltage Power Circuit Breakers With Substandard Parts." Pumps DW-46A and DW-46B are used as deareating pumps in the pure water system. The pumps are not safety-related equipment; however, the pumps are connected to safety-related electrical buses and must be isolated during an accident. In the event that offsite power is lost, the emergency diesel generator would provide power to all safety-related loads, but the DW-46A and DW-46B breakers may not trip due to defects in the breaker. The emergency diesel generator may be subsequently lost due to an overload on the bus since the generator can not supply the engineered safeguards equipment and a deareator pump. Therefore, it was necessary to ensure that the breakers for Pumps DW-46A and DW-46B trip to protect the integrity of these vital buses. The potential problems were identified by personnel from the NRC's Vendor Program Branch during an onsite inspection of the breakers.

The licensee tested the breakers and found that they satisfactorily passed all tests. However, the NRC identified to the licensee that the types of latent defects found in the breakers may not be detectable during testing.

To address this problem, the licensee replaced the breaker for Pump DW-46A with an unused spare breaker that was installed in a motor control center. The licensee obtained a spare breaker from the warehouse and used it to replace the breaker for Pump DW-46B. Prior to installation of the breakers, the licensee verified that none of the conditions identified in Information Notice 89-45 existed.

Based on the actions taken by the licensee to replace the apparent deficient breakers, it appeared that the licensee had adequately resolved the breaker problem. The inspector reviewed the actions taken by the licensee and noted no problems.

During review of the actions taken by the licensee to address previously identified items, the inspectors noted that appropriate actions had been taken to resolve the identified concerns. The actions taken by the licensee appear to be conservative and provide adequate controls to prevent recurrence of previously identified problems.

No violations or deviations were identified.

4. Licensee Event Report (LER) Followup (92700)

Through direct observation, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished.

The LERs listed below are closed:

88-032 Design Deficiency in the Safety Injection/Containment Spray Recirculation Piping

89-018 Failure to Perform an Hourly Firewatch

89-019 Manual Reactor Trip Due to High Temperature Indication on the Thrust Bearing for Reactor Coolant Pump (RCP) RC-3C

A discussion of the review performed by the inspectors for each LER is provided below:

a. LER 88-032 reported a design deficiency in the safety injection/containment spray recirculation piping. The deficiency was that, under conditions in which all safety injection (SI) and containment spray (CS) pumps were running in the recirculation mode, calculations indicated that the recirculation line would not be able to pass the minimum flow required for all the pumps. The licensee's corrective actions were reviewed in NRC Inspection Report 50-285/89-05 during the closure of Open Item 285/8836-04. A portion of the corrective action was that a modification to the electrical circuitry was made such that the CS pumps would start only after receipt of a CS actuation signal. This would prevent the CS pumps from being run in the recirculation mode when the SI pumps were running.

   Region IV requested that the NRC's Office of Nuclear Reactor Regulation (NRR) review the design modification since the start of the CS pumps was modified so the pumps started 30 seconds after an actuation signal was received. This delay ensured that sufficient time was available for the CS valves to open. By letter dated September 12, 1989, NRR concluded that the licensee's analyses were in conformance with NRR staff guidelines and satisfactorily indicated that peak containment pressure was within the design limits with the delayed start of the CS pumps. This LER is considered closed.

b. LER 89-018 reported an event where an hourly firewatch patrol was not performed for a nonfunctional fire barrier in accordance with TS 2.19(7). The patrol was missed for approximately 5 days due to a fire door being removed from the firewatch patrol log. The licensee attributed the cause of the event to inadequate procedural control over the release of firewatches, ineffective communications between involved personnel, and procedural noncompliance.

   The inadequate procedural control occurred when the firewatch was released per a telephone conversation between a security sergeant and a licensed operator. The miscommunication occurred when the fire door that the operator wanted removed from the firewatch log was not the door the security sergeant understood it to be. The applicable procedure stated that the shift supervisor and the fire protection

system engineer (or their designees) were the only persons authorized to terminate an hourly firewatch patrol. In addition, the shift security supervisor was required to be notified. These procedural requirements were not performed.

The missing of firewatch patrols has been an ongoing problem at FCS. Previous corrective actions, such as procedure changes, have not been totally effective. The licensee, due to this event, implemented the following corrective actions to prevent recurrence of the problem:

- Revised Form FC-1140, "Current Fire Protection Impairments Log," to require that the fire protection system engineer be contacted prior to terminating an hourly firewatch.

- Revised Procedure SO-G-58, "Control of Fire Protection System Impairments," to reflect the above requirements.

- Revised Form FC-1006, "Hourly Fire Watch Log," and its associated procedure to require that the signature of the fire protection system engineer or the operations shift supervisor be obtained to clear a firewatch. Telephone approval is no longer permitted.

The actions taken by the licensee should significantly reduce the probability of missed firewatches due to the erroneous terminating of firewatches. This LER is considered closed.

c. LER 89-019 reported an event where the plant was manually scrammed due to a high temperature indication on the thrust bearing for RCP RC-3C. Subsequent investigation by the licensee indicated that the high temperature problem was due to faulty wiring connected to the bearing resistance temperature indicator. The licensee replaced the wiring and restarted the plant.

The inspector reviewed the actions taken by the licensee's operating staff in response to this event immediately after the occurrence. As noted in NRC Inspection Report 50-285/89-33, the inspector noted that the operations staff performed their duties and responded to the event in a professional manner. Based on the review previously performed by the inspector, this LER is considered closed.

Based on the reviews performed by the inspectors, as described above, it appeared that the licensee took appropriate actions in response to the identified events to provide timely corrective actions and implementation of controls to prevent recurrence of the event.

No violations or deviations were identified.

5. Operational Safety Verification (71707)

The inspectors conducted reviews and observations of selected activities to verify that facility operations were performed in conformance with the requirements established under 10 CFR, the licensee's administrative procedures, and the TS. The inspectors made several control room observations to verify the following:

- Proper shift staffing was maintained and conduct of control room personnel was appropriate.
- Operator adherence to approved procedures and TS requirements was evident.
- Operability of reactor protective system, engineered safeguards equipment, and the safety parameter display system was maintained. If not, the appropriate TS LCO was met.
- Logs, records, recorder traces, annunciators, panel indications, and switch positions complied with the appropriate requirements.
- Proper return to service of components was performed.
- Maintenance work orders (MWO) were initiated for equipment in need of maintenance.
- Management personnel toured the control room on a regular basis.
- Control room access was properly controlled.
- Control room annunciator status was reviewed to verify operator awareness of plant conditions.
- Mechanical and electrical temporary modification logs were properly maintained.
- Engineered safeguards systems were properly aligned for the specific plant condition.

During review of this area, the inspectors identified the following items:

a. On October 18, 1989, the licensee confirmed that the value of 1.8 for the total integrated radial peaking factor upper limit given by TS 2.10.4(2) and Figure 2.9 of the TS was nonconservative. The total integrated radial peaking factor (FrT) is a component of the equation used to calculate the RPS setpoint for the thermal margin/low pressure (TM/LP) trip function. The licensee found that if the Cycle 12 core were allowed to develop an FrT of 1.8 in a depressurization scenario, the reactor would not trip until primary plant pressure dropped to 46 psia below the required setpoint. The licensee investigated and found that the current core arrangement was

not capable of producing an FrT of 1.8 and the highest value to date had been 1.65 Therefore, a safety concern did not result from the error in the TS.

In performing the recalculation, the licensee determined, with concurrence from Combustion Engineering, that the appropriate upper limit of FrT was 1.77. The licensee implemented administrative controls to restrict FrT to a value of 1.75 or less for the remainder of the cycle. Operations Memorandum 89-03 was issued by the licensee to provide explicit instructions that clearly modify the TS requirements in a conservative manner.

The inspector verified that the operations memorandum was approved by the plant review committee, the memorandum was placed in the control room copy of the TS, and training was provided to operations personnel. The inspector considered that the actions taken by the licensee were appropriate, conservative, and satisfactory for the remainder of the current fuel cycle. The TS value will be changed when the licensee submits its license amendment request for the upcoming Cycle 13, if necessary.

In June 1988 the licensee discovered that the actual setpoint of the TM/LP trip function was set nonconservatively. NRC Inspection Report 50-285/88-22 discussed this error, its cause, the safety-related implications, and the corrective actions taken by the licensee. Severity Level III Violation 285/8822-01 was issued as a result of the NRC followup inspection on this occurrence. It was determined that an inadequate design control program caused the setpoint to be incorrectly determined. Additional review is required to determine if the present incorrect value of FrT resulted from design control inadequacy or another programmatic problem.

Additional review of this problem is considered an unresolved item. (285/8938-02)

b. On October 24, 1989, the licensee requested an extension of a commitment made to the NRC in response to Violation 285/8725-01. The violation involved the licensee's failure to correct deficiencies with safety-related fire doors.

The licensee's response to the violation stated that the safety-related fire doors located in the auxiliary building would be replaced by October 31, 1989. The licensee requested an extension of the commitment until January 31, 1990.

On October 27, 1989, the Chief, Project Section B, Division of Reactor Projects, Region IV, approved the extension of the commitment based on the licensee's problems encountered with purchasing the necessary materials. The licensee was notified of the approval on October 27, 1989.

No violations or deviations were identified.

6. Plant Tours (71707)

The inspector conducted plant tours at various times to assess plant and equipment conditions. The following items were observed during the tours:

- General plant conditions, including operability of standby equipment, were satisfactory.
- Equipment was being maintained in proper condition, without fluid leaks and excessive vibration.
- Valves and/or switches for safety-related systems were in the proper position.
- Plant housekeeping and cleanliness practices were observed, including no fire hazards and the control of combustible material.
- Performance of work activities was in accordance with approved procedures.
- Portable gas cylinders were properly stored to prevent possible missile hazards.
- Tag-out of equipment was performed properly.
- Management personnel toured the operating spaces on a regular basis.

During tours of the plant, the inspector noted the items listed below:

The results of the plant tours performed by the inspector indicated that the licensee was providing adequate attention to the physical condition of the plant. Work continued on painting and clean up of the plant to improve the overall appearance. Plant housekeeping has been very good.

a. On October 24, 1989, the inspector accompanied a cognizant licensee employee on a comprehensive tour of the warehouse. Warehouse personnel were in the process of segregating safety-related from nonsafety-related material. The inspector considered the new system a significant improvement which will further reduce the likelihood of interchanging nonsafety- for safety-related components.

   The inspector toured the chemical storage area to gain a working knowledge of how the licensee implements its chemical control program in accordance with Procedure SO-G-70, "Chemical Control." No problems were noted.

b. On October 6, 1989, it was observed that the licensee used an absorbent material to soak up spilled diesel fuel and lube oil in the emergency diesel generator rooms. The flame retardancy of the material was questioned. The station fire protection engineer was

aware of its use and provided the inspector with the manufacturer's literature verifying the flame retardancy of the material. It appeared that the material was being appropriately used.

No violations or deviations were identified.

7. Monthly Maintenance Observations (62703)

The inspector reviewed selected station maintenance activities on safety-related systems and components to verify that maintenance was conducted in accordance with approved procedures, regulatory requirements, and the TS. The following items were considered during the reviews:

- The TS LCOs were met while systems or components were removed from service.
- Approvals were obtained prior to initiating the work.
- Activities were accomplished using approved MWOs and were inspected, as applicable.
- Functional testing and/or calibrations were performed prior to returning components or systems to service.
- Quality control records were maintained.
- Activities were accomplished by qualified personnel.
- Parts and materials used were properly certified.
- Radiological and fire prevention controls were implemented.

The inspector examined the following MWOs from a random selection to verify compliance with licensee Procedure SO-M-101, "Conduct of Maintenance."

- Adjustment of the flow for the containment stack monitor flow (MWO 894853)
- Projected oil leak from RCP RC-3D motor (MWO 894516)
- Alarm trouble on plant security Door 1007-5 (MWO 894390)
- Installation of the compressed air temporary air dryer (MWO 894262)

As a result of the review of the sample of MWOs, it appeared that licensee was implementing its maintenance program in accordance with approved procedures resulting in documentation that was fully auditable. For each of the MWOs reviewed, the attributes listed above appeared to be met.

No violations or deviations were identified.

8. Monthly Surveillance Observations (61726)

The inspector observed selected portions of the performance of the TS-required surveillance testing on safety-related systems and components. The inspector verified the following items during the testing:

- Testing was performed by qualified personnel using approved procedures.
- Test instrumentation was calibrated.
- The TS LCOs were met.
- Removal and restoration of the affected system and/or component were accomplished.
- Test results conformed with TS and procedure requirements.
- Test results were reviewed by personnel other than the individual directing the test.
- Deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.
- Test was performed on schedule and complied with the TS required frequency.

The inspector observed the following surveillance test activities. The procedures used for the test activities are noted in parenthesis:

- Monthly check of the high containment pressure channels (ST-RPS-8)
- Monthly check of the high containment pressure channels (ST-ESF-3)

A discussion of each surveillance observed is provided below:

a. On October 23, 1989, the inspector observed a technician perform Procedure ST-RPS-8, "Monthly Check of the High Containment Pressure Channels." The test verified the proper operation of the channels within each of four RPS trip units. This was done by electronically inputting pressure signals to the respective pressure switches associated with each channel and verifying that each channel tripped and provided the appropriate alarms and indications. No problems were noted with either system performance or execution of the test.

b. On October 23, 1989, the inspector observed the performance of Procedure ST-ESF-3, "Monthly Check of the Containment Pressure Channels." This test verified the operability of the containment pressure channel inputs to the engineered safeguards features system. The technician properly executed the test and the system performed as designed. No problems were noted.

Based on the observations made by the inspector it appeared that the licensee was adequately implementing an effective surveillance testing program. In each test observed, the inspector noted that licensee personnel were performing the testing evolutions in accordance with the appropriate procedure, as written.

No violations or deviations were identified.

9. Security Observations (71707)

The inspectors verified that the physical security plan was being implemented by selected observation of the following items:

- The security organization was properly manned.
- Personnel within the protected area (PA) displayed their identification badges.
- Vehicles were properly authorized, searched, and escorted or controlled within the PA.
- Persons and packages were properly cleared and checked before entry into the PA was permitted.
- The effectiveness of the security program was maintained when security equipment failure or impairment required compensatory measures to be employed.
- The PA barrier was maintained and the isolation zone kept free of transient material.
- The vital area barriers were maintained and not compromised by breaches or weaknesses
- Illumination in the PA was adequate to observe the appropriate areas at night.
- Security monitors at the secondary and central alarm stations were functioning properly for assessment of possible intrusions.

On October 12, 1989, the inspector observed activities in the construction area within the PA. The inspector noted at least two contract workers, who were in the PA on visitor passes, were possibly out of the line-of-sight of their designated escorts. The inspector summoned a nearby member of the security force who took prompt action by escorting several persons in question off site for retraining in security requirements and escort responsibilities.

Additionally, the licensee issued Security Communications Notice 029-89 on October 19, 1989, reinforcing ways in which the security force can help prevent escort/visitor violations. Also, a statement reiterating the

vulnerability of escort/visitor violations in the construction area was published in the station plan-of-the-day and will remain there until the end of the year. All badged personnel will be made aware of their escort responsibilities in their annual general employee training. Visitors are made aware of their responsibilities upon processing in.

On October 20, 23, and 25, 1989, the inspector revisited the area, found no violations, and noticed an increased security presence to protect against this vulnerability. It appeared the licensee took aggressive actions to correct what was perceived as a weakness.

It appeared, based on the observations made by the inspector, that the licensee's guard force was adequately performing its duties. The security system is currently being extensively modified and the extent of the modifications require extensive compensatory measures be taken. The inspector noted that the compensatory measures have been very good and compensate for all security system degradations.

No violations or deviations were identified.

10. Radiological Protection Observations (71707)

The inspector verified that selected activities of the licensee's radiological protection program were implemented in conformance with the facility policies and procedures and in compliance with regulatory requirements. The activities listed below were observed and/or reviewed:

- Health physics (HP) supervisory personnel conducted plant tours to check on activities in progress.
- HP technicians were using calibrated instrumentation.
- Radiation work permits contained the appropriate information to ensure that work was performed in a safe and controlled manner.
- Personnel in radiation controlled areas (RCA) were wearing the required personnel monitoring equipment and protective clothing, and were properly frisked prior to exiting an RCA.
- Radiation and/or contaminated areas were properly posted and controlled based on the activity levels within the area.

Based on the observations and reviews performed by the inspector, it appeared that the licensee was implementing an effective radiological protection program.

No violations or deviations were identified.

11. In-Office Review of Periodic, Special, and Nonroutine Event Reports (90712 and 90713)

In-office review of periodic, special, and nonroutine event reports was performed by the inspectors to verify the following, as appropriate:

- Correspondence included the information required by appropriate NRC requirements.
- Test results and supporting information were consistent with design predictions and specifications.
- Planned corrective actions were adequate for resolution of identified problems.
- Whether or not any information contained in the correspondence report should be classified as an abnormal occurrence or additional reactive inspection is warranted.
- Correspondence did not contain incorrect, inadequate, or incomplete information.

The inspectors reviewed the following correspondence:

- Inservice Testing Program for Pumps and Valves, dated October 2, 1989
- Failure to Maintain Compensatory Action Due to Inattentive Security Officer (LER 89-S07), dated September 21, 1989
- Auxiliary Feedwater Panel Instrumentation Outside Design Basis (LER 89-014, Revision 1), dated September 29, 1989
- Failure to Maintain Compensatory Action (LER 89-S08), dated September 20, 1989
- Followup to Special Reports on Inoperability of Fire Barriers and Fire Detection Systems, dated September 19, 1989
- Monthly Operations Report for September 1989, undated
- September Monthly Operating Report, dated October 13, 1989
- Feedwater Valve HCV-1386 Inoperable Due to Maintenance Program Deficiency (LER 89-012, Revision 1), dated October 13, 1989
- Manual Unit Trip Due to High Indicated Reactor Coolant Pump Motor Bearing Temperature (LER 89-019), dated October 24, 1989

- Update to Revision 4 of the Inservice Testing Program, dated October 23, 1989

No violations or deviations were identified.

12. Review of 10 CFR Part 21 Reports (36100)

The inspector reviewed the licensee's activities related to the processing of Part 21 reports. The review was performed to verify that the licensee had processed, in accordance with the appropriate procedures, the Part 21 reports that had been provided to the licensee by the inspector. The Part 21 reports were identified by a regional specialist as potentially affecting the safety of the FCS.

The Part 21 reports reviewed by the inspector are listed below:

- The Foxboro Company issued a Part 21 report (Region IV Log No. 87-03) on problems with E-Line and H-Line instruments. The manufacturer's letter was dated June 4, 1986.

  During previous inspection activities, the concern with the instruments was identified as Open Item 285/8523-02 in NRC Inspection Report 50-285/85-23. This open item was reviewed and closed by an inspector as the actions taken by the licensee to address this item were adequate.

- Gibbs and Hill identified a potential problem with the containment spray system recirculation lines not being classified as safety-related piping. The Part 21 report (Region IV Log No. 87-13) was issued on March 17, 1986.

  The licensee reviewed this potential problem and noted that the problem did not exist at the FCS since the recirculation lines had been fabricated, installed, and maintained as a safety-related installation.

- Morrison-Knudsen identified a potential problem with saturable core transformers installed on emergency diesel generators and submitted a Part 21 report (Region IV Log No. 87-83) on September 29, 1987. The transformers with potential problems were manufactured by the Bassler Electric Company.

  The licensee reviewed this report and noted that it did not apply to FCS since saturable core transformers were not installed on the licensee's emergency diesel generators.

- The Westinghouse Company issued a Part 21 report (Region IV Log No. 87-82) on October 16, 1987. The report described problems that were identified with Westinghouse W-2 type circuit breaker cell switches.

  The licensee reviewed the appropriate documentation and noted that the type of cell switches installed at FCS were not the ones identified by the Part 21 report.

- On October 19, 1987, the Peach Bottom Atomic Power Station issued a Part 21 report (Region IV Log No. 87-81) regarding nondestructive examination services provided by Eastern Testing and Inspection (ETI).

  By review of purchasing documents, the licensee determined that ETI had not performed any activities at FCS.

- The Gamma-Metrics Company issued a Part 21 report (Region IV Log No. 88-07) that described problems with leaking cable assemblies. The report, dated May 10, 1988, stated that the solder joints for the connectors for the RPS cabling may leak.

  The licensee performed a leak test on the connectors and noted that leakage occurred. To address this deficiency, the licensee generated SAO 88-01 to address continued plant operation with the leaking connectors. The results of the evaluation provided by SAO 88-01 indicated that continued plant operation was acceptable.

  The inspector performed a review of the actions taken by the licensee with respect to this problem. The results of the review are documented in NRC Inspection Report 50-285/88-46.

- On October 18, 1988, the Automatic Switch Company issued a Part 21 report (Region IV Log No. 88-16) to document a problem identified with ASCO NP-8314 series solenoid valves. The specific problem identified in the report was that the solenoid may not shift positions when deenergized if the solenoid had been energized for a long period of time.

  The licensee performed a review of the types of ASCO solenoids installed at FCS. The review identified three valves that had solenoids installed that were the subject of the report. The valves were replaced. The licensee also reviewed the stock supplies in the warehouse and removed the appropriate solenoid-operated valves.

- On November 3, 1988, the Limitorque Corporation generated a Part 21 report (Region IV Log No. 88-18) that addressed inadequate starting torque at elevated temperatures for RH-insulated motors. The report stated that the motors were operated by dc power.

The licensee reviewed the report and noted that no dc Limitorque motors were installed at FCS.

The inspector reviewed the actions taken by the licensee to address the Part 21 reports listed above. Based on the review, it appeared that the licensee had taken the appropriate actions to address these identified potential problems. The review of the Part 21 reports listed above is considered closed.

No violations or deviations were identified.

13. Review of Onsite Events (93702)

During this inspection period, the inspector reviewed the onsite events discussed below:

a. On October 11, 1989, the licensee removed the 161-kV offsite power supply from service for maintenance. The 161-kV supply is one of the two offsite power sources available to the plant. The 161-kV line was removed from service so three transmission line poles could be replaced prior to the onset of the harsh winter months. The poles had been slightly damaged by a grass range fire during the summer months. The actions taken by the licensee were preventive measures to maximize the reliability of the 161-kV power supply.

Prior to removal of the offsite power supply, the licensee took proactive measures to ensure that guidance was given to operations personnel on what actions to take in the event that the remaining offsite power supply was lost. Loss of the second power supply would cause the plant to enter the natural circulation mode of operation. The guidance provided to the operations staff included items such as no work was to be conducted on electrical equipment, operability of both emergency diesel generators was to be verified, routine rotation of electrical equipment in service was not to be performed, and review of the appropriate emergency and abnormal operating procedures was to be performed.

The inspector reviewed the actions taken by the licensee and it appeared that the actions were adequate. The inspector also verified that the licensee took the actions specified by the LCO for a loss of the 161-kV power supply as specified by TS 2.7(2)n. No problems were noted.

b. On October 12, 1989, the licensee determined that the component cooling water (CCW) inlet and outlet valves (HCV-489A and HCV-489B) for CCW Heat Exchanger (HX) AC-1A could not be operated from the control room. The inoperability of the valves resulted in the inoperability of CCW HX AC-1A. At the time of discovery, CCW HX AC-1B was also inoperable due to maintenance activities being performed on the HX. Based on the inoperability of two CCW HXs, it

appeared that the licensee did not comply with TS 2.3, which requires the plant to be placed in a cold shutdown condition.

The inspector's review of the apparent failure to comply with TS 2.3 is discussed in NRC Inspection Report 50-285/89-48.

c. At approximately 9:45 a.m. on September 13, 1989, the licensee experienced a problem where a power level deviation between the delta T power and nuclear power meters on the RPS was as high as 4 percent. For Channels A and B, the delta T power meter indicated up to 4 percent less than nuclear power. For Channels C and D, the delta T meter indicated up to 4 percent above nuclear power. Due to the magnitude of the deviation, an annunciator alarm was received on the control board to alert the operations staff of the problem. The operations staff, in conjunction with the reactor engineer and engineering support personnel, reviewed the status of the appropriate plant systems to verify that no system problems existed. The review included an analysis of core performance, reactor coolant system flow rates, and a plant walkdown to verify no systems were leaking. After reviewing the appropriate data, the licensee's staff determined that the alarm was most likely caused by instrumentation problems and no actual plant problem existed. Based on the data available, the operations shift supervisor declared all RPS channels operable and continued to operate the plant at 100 percent power. The operability determination was made by the shift supervisor at approximately 10:30 a.m.

At approximately 12:20 p.m., the acting plant manager, who was in a meeting at the corporate offices in Omaha, Nebraska, was notified of the problem. Subsequent discussions were held between plant supervision, the acting plant manager, and the plant manager over the telephone. The plant manager was attending a meeting in Washington, D.C. Based on discussions between licensee management, it was decided to declare RPS Channels A and B inoperable since the delta T meter on these channels provided a nonconservative indication of reactor power. At 2:25 p.m., the channels were officially declared inoperable.

The action specified by the LCO in Table 2-2 of TS 2.15 requires that one inoperable channel be placed in the tripped condition within 1 hour and the other channel be placed in bypass. The LCO also states that, if two channels are inoperable, load shall be reduced to 70 percent or less of rated power.

Within 1 hour, the licensee placed one RPS channel in bypass and one in the tripped condition. An actual power reduction was not initiated until 1 hour after the RPS channels were declared inoperable. During this 1-hour period, it was not evident that the licensee initiated timely actions to reduce the power. Although the licensee took actions to prepare for the power reduction, the actions appeared to be directed toward allowing technicians to take

measurements of the RPS input signals before power was reduced. At the end of the 1-hour requirement for placing one channel in bypass and one channel in trip, the operations shift supervisor directed the technicians to stop the measurement activities so that the power reduction could be initiated.

It appeared that the licensee complied with the TS requirement for placing one RPS channel in bypass and one channel in trip. However, it did not appear that the licensee's actions in complying with the TS requirement for reducing power to 70 percent or less was timely. This is an apparent violation for failure to meet a TS LCO. (285/8938-03)

At approximately 3:33 p.m., the operations staff initiated injection of boric acid to reduce the power level. A power level of less than 70 percent was achieved at approximately 6:55 p.m.

Table 2-2 of TS 2.15 states that plant power must be reduced to less than 70 percent of rated power; however, the TS does not state a time period in which the power reduction must be achieved. In discussions with licensee management, the inspector determined that an assumption was made by management that since no time requirement was specified, the power reduction should be performed conservatively. Management decided that a power reduction over a 4-hour period was satisfactory to comply with the TS. This interpretation of the TS appeared to be inappropriate since the TS did not specify a time period when the power reduction should be initiated.

On October 5, 1989, licensee management met with NRC management in the Region IV office to discuss the event and the actions taken by the licensee in response to the event. At this meeting, the licensee stated that the items listed below contributed to the problems experienced during response to this event:

- Final operability determination of the RPS was not timely.
- Power reduction was not commenced immediately after the inoperability determination.
- A procedure did not exist to address TS interpretation.
- A procedure upgrade is required to define the specific line of authority during the absence of the plant manager.

The licensee has initiated actions to implement requirements to address the items listed above. In a letter to the NRC dated October 31, 1989, the licensee committed to taking actions to resolve their identified problems.

14. Exit Interview

The inspectors met with Mr. K. J. Morris, (Division Manager, Nuclear Operations) and other members of the licensee staff on November 3, 1989. The meeting attendees are listed in paragraph 1 of this inspection report. At this meeting, the inspectors summarized the scope of the inspection and the findings. During the exit meeting, the licensee did not identify any proprietary information to the inspectors.