APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

NRC Inspection Report: 50-285/89-32 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: August 1-31, 1989

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

Approved: R. P. Mullikin 9/27/89
for T. F. Westerman, Chief, Project Section B Date
Division of Reactor Projects

Inspection Summary

Inspection Conducted August 1-31, 1989 (Report 50-285/89-32)

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; and general employee training.

Results: During this inspection period, 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. Based on reviews of the actions taken by the licensee, it appeared that the licensee had appropriately implemented both the short- and long-term actions to prevent recurrence of the identified problems. Within this area of inspection, the inspectors identified an apparent violation of 10 CFR Part 55 with respect to the records system used to maintain the status of licensed operator physical

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examinations. Because the licensee identified and corrected the problem, the violation was not cited.

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 a professional manner to ensure safe plant operation. Within this inspection area, the inspectors identified two instances where the licensee failed to comply with regulations. The first case involved the failure to implement a surveillance test based on a requirement contained in a Technical Specification (TS) amendment. The second case involved the failure to maintain a fire watch for a nonfunctional safety-related fire barrier. In both cases, the violations were not cited.

The inspectors performed numerous tours of the plant during this inspection period. During the tours, no significant problems were noted. It appeared that housekeeping associated with the installation of modifications to the control room ventilation and the air system dryer was somewhat lacking but not to the degree that it constituted an industrial safety hazard. It also appeared that licensee management tours of the plant had decreased. In most areas of the plant, the inspectors noted that the licensee is continuing the ongoing efforts to upgrade plant appearance.

Maintenance and surveillance activities were observed by the inspectors during this inspection period. During observation of these activities, the inspectors noted that the activities were performed in a professional manner. From data obtained from surveillance testing, problems were noted with raw water system performance and an emergency diesel generator (EDG) operating parameter. In both instances, systems engineering provided prompt and thorough evaluations to determine operative restrictions. Systems engineering involvement with operations has been very successful in identifying plant problems and providing solutions to ensure continued safe plant operation. An unresolved item was identified that involved the failure to evaluate the effect on plant operations of suspect electrical breakers supplying Deaerating Pumps DW-46A and DW-46B.

From observations of security work activities, it appeared that the licensee was providing adequate security patrols and compensatory posts around the protected area perimeter during a period of heavy construction on the new security system. The security guard force was performing its duties adequately.

In the area of health physics, the inspector was notified by the licensee of a significant skin contamination. The licensee attributed the occurrence to poor guidance given the worker by health physics personnel. The licensee also identified that radioactive material was stored outside the protected area. In both cases, the licensee took prompt and effective measures to resolve the problems.

Based on the observations and reviews performed by the inspectors, it appeared that the licensee was implementing an effective radiological protection program. Even though two problems occurred during this inspection, the

licensee took prompt and comprehensive actions to identify the problems and to correct them. The performance of the HP technicians was noted to be professional.

The inspectors attended an accelerated requalification general employee training course and found some of the training material in need of revision. The handouts provided by the training department had not been revised since October 1987. With major changes occurring in the plant, it appeared that a more proactive role was needed in keeping the training material current. With respect to the health physics practical factors portion of the course, improvements were noted in administration and monitoring of the participants.

Overall, the licensee's performance has been adequate during this inspection period. The licensee has been proactive in identifying problems and has promptly implemented corrective actions to adequately resolve the problems. The licensee's staff continued to perform their duties adequately. Most notable was the performance of the systems engineering organization in identifying and resolving technical issues. The licensee should focus their attention on the timely resolution of identified problems such as the suspect electrical breakers for Deaerating Pumps DW-46A and DW-46B.

DETAILS

1. Persons Contacted

*K. Morris, Division Manager, Nuclear Operations
*G. Peterson, Manager, Fort Calhoun Station
J. Adams, Reactor Engineer
*D. Andes, Senior Specialist, Nuclear Safety Review Group
*J. Bobba, Supervisor, Radiation Protection
C. Brunnert, Supervisor, Operations Quality Assurance
*J. Chase, Acting Manager, Nuclear Licensing and Industry Affairs
*M. Core, Supervisor, Maintenance
*J. Friedrichsen, Staff System Engineer
*J. Gasper, Manager, Training
*L. Kusek, Manager, Nuclear Safety Review Group
R. Jaworski, Manager, Station Engineering
J. Kecy, Supervisor, System Engineering
*D. Matthews, Supervisor, Station Licensing
*W. Orr, Manager, Quality Assurance and Quality Control
T. Patterson, Assistant 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
*D. Trausch, Supervisor, Operations
*S. Willrett, Supervisor, 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 was operated continuously at 100 percent power. No plant perturbations or safety system demands were experienced.

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

a. (Closed) Open Item 285/8803-03: Revision of the Updated Safety Analysis Report (USAR) to describe the interface between the raw water (RW) and fire water (FW) systems.

This item was related to the issuance of a revision to the USAR to describe the interface between the RW and FW systems. The interface allows the components normally cooled by RW to be cooled by FW in the event that RW system flow is lost. Even though the capability for

interconnection of the systems has existed for a number of years, a description had not been provided in the USAR.

In July 1989, the licensee issued an update to Section 9.8.6 of the USAR. The update included a description of the interface capability of the RW and FW systems.

The inspector reviewed the USAR change made by the licensee. It appeared that the change adequately described the systems interface. No problems were identified during review of this item.

b (Closed) Unresolved Item 285/88201-04: Control of temporary modifications.

This unresolved item was generated to document that 3 of 11 electrical temporary modifications were either not installed per procedural requirements or, as in one case, was logged and verified as installed but had not actually been installed. The licensee attributed the latter nonconformance to personnel error. The other instances, where procedural requirements were not met, were attributed to both a weak procedure governing the installation of temporary modifications and an employee culture of not following procedures.

To address this and other concerns related to the temporary modification process, the licensee issued a major revision to Procedure SO-O-25, "Temporary Modification Control." The procedure specified that the cognizant system engineer is the responsible individual with clearly defined personal accountability to ensure proper temporary modification control. The issue of procedural compliance is an ongoing effort by the licensee which is being adequately addressed and results are being achieved. A indepth review of the problem related to procedural compliance will be performed during the closeout of Unresolved Item 285/88201-09 which was issued to specifically address this problem.

Based on a review of Procedure SO-O-25 by the inspector and the trend toward procedural compliance, this item is considered closed.

c. (Closed) Violation 285/88201-05 (Violation B.3): Failure of the Plant Review Committee (PRC) to review temporary modifications.

This item addressed procedural violations of licensee Procedure SO-O-25. The procedure stated that temporary modifications shall be reviewed and approved by the PRC within 14 days of installation. Inspectors found three instances where the review was not completed within 14 days.

As corrective action, the licensee revised Procedure SO-O-25 to require PRC approval of temporary modifications prior to authorizing

installations. Exceptions will be allowed for emergency modifications, in which case, the PRC must convene and approve the modification within 48 hours. The inspector has reviewed the revised temporary modification process and considers it to be adequate to prevent recurrence of this problem.

d. (Closed) Unresolved Item 285/88201-06: Operability of the steam generator blowdown radiation monitors.

This item was related to an inspector concern about the operability of the radiation monitors (RM-056A and RM-056B) for the steam generator blowdown system. The licensee had installed temporary modifications on RM-056A and RM-056B that caused both monitors to be inoperable. The inspector's concern was whether or not the licensee complied with the provisions of TS 2.9.1.e that requires grab samples be taken of liquid releases from the steam generators when the monitors are inoperable.

The inspector reviewed the chemistry logs generated from September 29 through October 2, 1988, the period when both monitors were inoperable, to verify that the grab samples had been taken, analyzed, and reviewed for compliance with the TS. During review of the logs, the inspector noted that the licensee had fully complied with the TS requirements for sampling steam generator liquid releases. No problems were noted during review of this item.

e. (Closed) Violation 285/88201-22 (Violation B.6): Failure to follow procedures with respect to pump vibration testing.

This violation was written when the inspector observed a machinist taking vibration measurements on a raw water pump shaft in a manner that deviated from procedural requirements. This item was another example of work being performed on safety-related equipment in a manner not in compliance with approved procedures. Additionally, it was found that the procedural step, as written, could not be performed.

The licensee has revised the Procedure ST-ISI-RW-3, "Raw Water Pump Inservice Inspection," to provide workable instructions. The inspector reviewed the procedure and found it to be satisfactory. The inspector also verified that the vibration readings had been properly taken, recorded, and reviewed. The resultant readings complied with the procedural acceptance criteria.

The licensee has stressed to its employees that procedural compliance is mandatory. The inspector has noted that instances of encountering failure to follow procedures is declining. Based on the licensee's efforts in this area, this violation is considered closed.

f. (Closed) Open Item 285/8903-04: Relief request for a modification to the RW system.

This open item was related to a relief request submitted by the licensee for a modification made to the RW system. The licensee welded new supply and return piping for the control room air conditioning to the RW header. In lieu of performing a hydrostatic test of the new welds, as required by Code USAS B31.7, the licensee performed radiography of the welds.

On January 18, 1989, the licensee submitted a relief request to the NRC's Office of Nuclear Reactor Regulation (NRR). The submittal requested that NRR approve a deviation from the code testing requirements.

On July 24, 1989, NRR issued a letter to formally approve the licensee's request. The letter stated that the staff had reviewed the request and the request was granted.

The licensee had generated Safety Analysis for Operability (SAO) 89-05 to verify that continued plant operation was safe without the performance of a hydrostatic test on the RW system. Based upon receipt of the letter from NRR, the licensee closed out SAO 89-05.

g. (Closed) Unresolved Item 285/8913-03: Screens for the component cooling water (CCW) pump motors.

This item involved a concern identified by the inspector related to an apparent requirement that screens be installed on the air inlet ports of the CCW pump motors to maintain the environmental equipment qualification (EEQ) status of the motors. The apparent requirement for screen installation was established during the performance of an EEQ inspection by NRC personnel in 1985. During a plant tour, the inspector noted that all the screens for the CCW pump motors were not in place.

To address this concern, the licensee provided a response to this unresolved item in a letter dated July 13, 1989. The letter stated that the licensee had contacted the motor manufacturer and established that the screens were not required to maintain the EEQ status. The letter further stated that the screens are used to prevent large debris and rodents from entering the motor windings and causing problems. Based on discussions with the motor manufacturer, the licensee concluded that the screens were not required; however, the screens would be kept in place for good housekeeping practices.

The inspector reviewed the information provided by the licensee. Based on the review, it appeared that the licensee has adequately addressed this item. The inspector also verified that the licensee had installed screens on all the CCW pump motors.

h. (Closed) Unresolved Item 285/8917-01: Toxic gas monitors (TGM) declared inoperable.

This item involved the apparent degradation of the booster pumps for the TGMs (Hydrogen Fluoride Monitor A, Hydrogen Fluoride Monitor B, Chlorine Monitor A, and Chlorine Monitor B). It was discovered that the air sampling lines for the Channel B TGMs were disconnected inside the control room. Thus, the air for these monitors was being drawn from inside the control room and not from outside, as designed. During the repair of these monitors, a technician found that the booster pumps had not been previously tested to verify the pump flow rate. The licensee subsequently tested the pumps and found that the flow rate was approximately 4.5 liters per minute. The acceptance criteria for the booster pumps is a minimum of 6.5 liters per minute.

The TGMs were declared inoperable but, since the control room ventilation system was already in the 100 percent recirculation mode, no further action was needed to satisfy the TS. The licensee replaced the booster pumps and reperformed the flow rate tests. The pumps successfully passed the test.

The inspector made this item unresolved due to a licensee commitment of an evaluation to determine if the response time of the TGMs with a reduced flow rate was within the specified limit.

The licensee performed Engineering Study ES-FC-89-34 and concluded the following:

(1) The monitors were sampling control room air flowing due to the positive pressure maintained in the control room. The monitors would respond eventually as the control room concentration increased; however, the air flow and mixing patterns made it impossible to calculate response times.

(2) Chlorine Monitor A operated with a degraded booster pump and the resulting reduced sample flow would initiate control room isolation in time to prevent accumulation of a hazardous concentration of chlorine after a postulated accident.

(3) During the period of time the Channel B monitors were inoperable, the Channel A hydrazine and acid monitors were operating properly.

Based on the licensee's analysis that control room isolation would have occurred in time to prevent a hazardous concentration of chlorine, this item is considered closed.

i. (Closed) Violation 285/8922-02: Failure to provide a fire watch patrol for nonfunctional fire doors.

This violation involved the licensee's failure to establish a fire watch when modifications to newly installed fire doors made the doors potentially nonfunctional. The licensee had accepted the 3-hour

Underwriter's Laboratory (UL) rating, even though the hardware had not been installed. The licensee had purchased new fire doors with 3/4-inch unprotected holes in the frame. The holes were made by the manufacturer so an electrical cable could be installed through the frame for electrical supervision of the door locks. The intent was that a conduit would be attached to the frame, thus making the 3-hour UL label valid. However, the doors were installed without the conduits connected to the frame, thus making the UL rating invalid. The licensee subsequently performed an evaluation that determined, due to the combustible loading on both sides of the doors and the presence of fire detectors and suppression, that the doors could perform their intended function even though the doors were degraded. The inspector agreed that, due to the evaluation, a fire watch was not necessary. However, a fire watch should have been in effect until the evaluation was completed.

The licensee issued a revision to Maintenance Procedure GM-RR-FP-0502, "Firedoor Replacement," to require the connection of hardware and conduit to the door as a condition of acceptance for operability. The inspector reviewed this procedure and found that it adequately addressed the concern identified by this violation.

j. (Closed) Unresolved Item 285/8922-04: Licensee's record system for the completion of physical examinations for licensed operators.

This item involved the inadequacy of the records system utilized for maintaining the status of the completed physical examinations for licensed operators. This item was identified by the licensee when an operator failed to receive a physical examination within the 2-year interval specified in 10 CFR Part 55.

Based on the identification of this problem by the licensee, the inspector performed a followup review of the records system and noted that the records indicated that 8 operators had not had their physical examinations within the specified 2-year period, and that 3 operators had not had physical examinations. This records information was inaccurate in that the 11 operators had completed their required physical examinations.

Section 55.27 of 10 CFR Part 55 states, in part, that the facility licensee shall document and maintain the results of medical qualifications data, test results, and each operator's or senior operator's medical history for the current license period. It appears, based on the inspector's review, that the licensee did not adequately maintain the results of the operators' medical history.

Upon notification of this problem, the licensee implemented corrective actions to address the apparent inadequate records system. A review was performed and the records system was updated to reflect the present status of operator physicals. The licensee has instituted a 60-day look-ahead report. Each week, a computer

printout is reviewed to determine which operators require examinations during the next 60 days. Based on the review, the operator is notified and arrangements are made for completion of the appropriate examinations.

The inspector reviewed the actions taken by the licensee and it appeared that the actions adequately implemented corrective steps to address this licensee identified problem.

Since this item was identified by the licensee and appropriate corrective actions taken, a Notice of Violation is not being issued because the licensee satisfied the criteria of Section V.G.1 of the NRC's Enforcement Policy.

k. (Closed) Open Item 285/8922-07: Concerns identified with Procedure AOP-6.

This open item involved concerns identified by the inspector with the adequacy of Procedure AOP-6, "Emergency Fire Procedure." Procedure AOP-6 was revised to reflect the corrective actions taken by the licensee in response to deficient conditions identified with the cabling for the instrumentation installed for the alternate shutdown panel (ASP).

The inspector noted that actions specified to be taken in Procedure AOP-6 did not provide clear and concise instructions for the following items:

(1) Procedure AOP-6 stated that a cable shall be installed on terminals in Panel AI-179. The terminals in Panel AI-179 were not clearly labeled.

(2) Procedure AOP-6 stated that an operator shall monitor steam generator pressure locally. The procedure did not state what actions should be taken by the operator while monitoring the readings.

(3) A discrepancy existed between the readings on the local steam generator pressure gages and the gages installed in the control room.

In response to the concerns identified by the inspector, the licensee took the following actions:

(1) The terminals in Panel AI-179 were clearly labeled to indicate the connection points for the cable.

(2) Procedure AOP-6 was revised to clarify what actions the operator should take while monitoring steam generator pressure locally. The revised instructions stated that the operator should keep the senior licensed operator stationed at the ASP informed of the pressures.

(3) The local gages for steam generator pressure were calibrated and now indicate approximately the same pressure as do the gages in the control room.

The inspector reviewed the actions taken by the licensee to verify adequate completion. The review included field verification and documentation review activities. No problems were noted during the reviews performed by the inspector.

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

During this inspection, a problem was identified with the licensee's records program for the status of the completion of physical examinations by licensed operators. Since the licensee identified the problem, took the appropriate corrective actions to address the problem, and the violations were Severity Level IV or V, the violation was not cited in accordance with Section V.G.1 of the NRC's Enforcement Policy.

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 in accordance with the TS.

The LERs listed below are closed:

89-008 Failure to Perform a Surveillance Test Within the Prescribed Frequency

89-010 Inoperability of the Toxic Gas Monitors

89-013 Missed Surveillance Test on the Toxic Gas Monitors

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

a. LER 89-008 reported the failure to perform Surveillance Test ST-FP-2 within the required interval. Procedure ST-FP-2, "Fire Protection Diesel Fire Pump Battery," requires that the electrolyte level in the diesel fire pump battery be verified at least once per month. The test performed in December 1988 was completed 10 days early and the test performed in January 1989 was completed as scheduled. This exceeded the monthly interval, plus the 25 percent extension, by 6 days. The surveillance test coordinator was not aware of the early

completion of the December test since the tracking system did not flag tests that were completed early, only tests not performed by their due date.

To reduce the probability of recurrence of this problem, the licensee revised Procedure SO-G-23, "Surveillance Test Program," to define the group supervisor's responsibilities to ensure that surveillance tests are completed on time. The changes to Procedure SO-G-23 should reduce the chances of missed surveillances. This LER is considered closed.

b. LER 89-010 reported the inoperability of the TGMs due to inadequacies in the modification process. This item is discussed in paragraph 3.h of this inspection report. This LER is considered closed.

c. LER 89-013 reported a missed surveillance test on a TGM due to personnel errors. A control room operator failed to take TGM readings as required by procedure. Both the onshift shift supervisor (SS) and the shift technical advisor (STA) were responsible for reviewing the results of completed surveillance tests. However, they failed to note that the surveillance was missed.

To prevent recurrence, the licensee revised Procedure SO-G-23 to define the SS and STA responsibilities for ensuring that surveillance tests are completed on time. In addition, the operations surveillance form has been made more easily readable so personnel can readily determine that a shift surveillance test has been completed. 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 limiting condition for operation (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 this inspection period, the following items were reviewed by the inspectors:

a. In NRC Inspection Report 50-285/89-28, problems were discussed relating to elevated jacket cooling water temperatures on the EDG. It was determined that elevated cooling water temperatures correlated linearly to ambient air temperatures. As a result, it was found that in hot weather, 97°F or greater, EDG 2 could not meet station loading requirements and maintain a continuous or 2000 hour-kilowatt (hr-kW) rating.

   In NRC Inspection Report 50-285/89-28, it was reported that the EDG vendor, Morrison-Knudsen Company, performed an analysis and determined that the upper limiting temperature for the jacket cooling water was 215°F. The vendor reevaluated the analysis and determined that data were not available to support a temperature of 215°F and, therefore, the upper limit should be 208°F.

   By analysis of the data obtained over several months of testing, the licensee has determined that jacket water temperatures of 208°F correlate to ambient air temperatures of 97°F and 100°F for EDG 1 and EDG 2, respectively. On August 25, 1989, the inspector was notified of the revised finding and, as a result, the EDGs would be declared inoperable if the outside air temperatures reached the established values.

The inspector has been monitoring the licensee's action on this issue for several months and considers the evaluations to be thorough and the action plans prudent and conservative.

During review of the 2000 hr-kW loading requirement for the EDGs, the inspector noted that the licensee had not formally implemented the surveillance test specified by TS 3.7.(1).c.iii. The TS requires that the licensee perform, during each refueling outage, an evaluation to verify that the emergency loads on each EDG do not exceed the 2000 hr-kW rating of the engine. The requirements of TS 3.7.(1).c.iii were established by the issuance of TS Amendment 111 on September 24, 1987.

TS 5.8.1 states, in part, that procedures shall be established that meet or exceed the requirements of Appendix A to Regulatory Guide 1.33. Section 8.b of Appendix A to Regulatory Guide 1.33 states, in part, that specific procedures for surveillance tests should be written for each surveillance test listed in the TS. It did not appear that the licensee complied with this requirement.

During review of this problem, the inspector noted that, even though the licensee did not verify EDG loading during the last refueling outage using a formally issued surveillance test procedure, a formal calculation (FC-04242) was prepared by the licensee. A calculation is not routinely performed each outage, but was done for load verification due to ongoing problems with the EDGs. The results of the calculation indicated that the load for EDG 1 was 2574 kW and EDG 2 was 2452 kW. The 2000 hr-kW rating for the EDGs is 2654 kW.

To address this problem, the licensee has initiated a change to the EDG surveillance tests to include a requirement for the verification of EDG loads during a refueling outage. At the end of this inspection period, the procedural changes had not been completed. The licensee stated the procedural revisions would be implemented in the near future.

With respect to the implementation of surveillance tests specified in TS amendments, the licensee established a system in June 1988, after the issuance of Amendment 111, where the assistant plant manager was given the responsibility to ensure that appropriate procedure changes were made as specified in an amendment. This previously established system should prevent recurrence of this problem. The licensee reviewed Amendments 112 through 122 to verify that the appropriate procedure changes had been completed. Separately, previous amendments were also reviewed. No problems were noted by the licensee. The inspector reviewed a sampling of the TS amendments to verify that the requirements had been properly implemented. No problems were noted during the review.

Normally, a Notice of Violation would be issued for failure to comply with TS 5.8.1 and Regulatory Guide 1.33. However, the licensee had

verified the EDG loads, had corrective actions in place to address this problem, and was in the process of implementing corrective actions; therefore, the violation is not being cited in accordance with the criteria specified in Section V.A of the NRC's Enforcement Policy.

b. During this inspection period, the inspector was notified of an incident at another facility where a licensed operator, who had become disqualified due to failure of his most recent requalification examination, had assumed the watch in the control room as the "operator at the controls."

The inspector reviewed licensee procedures to determine what administrative controls were in place to prevent a similar occurrence. It was determined that the Supervisor, Operations and the technical training department maintain records of licensed operators and, either quarterly or at an individual status change, whichever is sooner, the technical training department notifies the Supervisor, Operations via memorandum of the status of operator licenses. With this information, the Supervisor, Operations creates a weekly shift schedule. The inspector interviewed the Supervisor, Operations and, from the discussion, it was evident that the supervisor understood that he verified the status of each of the licensed operators. Based on the above described procedure and the relatively small licensed staff, the inspector considers that the licensee's controls will prevent an ineligible operator from assuming the controls.

c. On August 10, 1989, the licensee identified a problem where an hourly fire watch patrol, required by TS 2.19(7), was inadvertently cancelled due to miscommunication between the SS and security personnel. The hourly fire watch patrols are performed by security personnel. Because fire patrols are performed by security, coordination between the operations and security organizations is required.

The problem identified by the licensee involved the premature removal of a fire watch patrol by the SS. A fire barrier impairment was repaired and the SS was notified. Based on the repair of the impairment, the SS cancelled the fire watch without realizing that other impairments existed in the same fire barrier.

TS 2.19(7) states, in part, that all penetration fire barriers protecting safety-related areas shall be functional (intact). With a fire barrier nonfunctional, the establishment of an hourly fire watch patrol is required. It appears that the licensee did not comply with the TS requirement.

In NRC Inspection Report 50-285/89-26, a problem was discussed where inadequate communications between the SS and the security supervisor resulted in a fire watch being prematurely removed. At the time of

the occurrence, the licensee implemented short-term corrective actions to address this problem. However, the licensee had not implemented the long-term actions. When the problem with the fire watch was identified on August 10, 1989, the licensee immediately implemented the long-term corrective actions. These actions included a requirement that the fire protection engineer verify, in writing, that a fire watch is no longer needed prior to the fire watch being secured by the SS or security personnel. The requirement has been included in Procedure SO-G-58, "Control of Fire System Impairments."

The inspector reviewed the actions taken by the licensee. The actions appeared to adequately address this licensee identified problem.

Normally, this problem would have been cited as a Notice of Violation for failure to provide an hourly fire watch in accordance with TS 2.19(7). However, this problem was identified by the licensee and corrective actions were implemented. Therefore, in accordance with the NRC Enforcement Policy stated in Section V.G.1 of Appendix C to 10 CFR Part 2, this item is considered to be a noncited violation.

d. On August 16, 1989, the licensee notified the inspector that an individual standing a training watch in the auxiliary building was found asleep by the assistant plant manager during a tour of the plant. The individual was not performing any onshift duties, but was standing a training watch to become qualified as an auxiliary building watchstander. In response to this incident, the licensee terminated the individual. The inspectors routinely monitor plant personnel for sleeping or inattentiveness to duty. The inspectors have not noted any problems in this area.

During this inspection period, the inspectors noted that the licensed operations staff performed their duties in a professional manner. The operations personnel were observed to be following procedures during the performance of their duties.

Within this area of inspection, two cases were identified where the licensee failed to comply with the appropriate regulations. In one case, the licensee failed to formally implement a surveillance test required by TS 3.7.1.c.iii. In the other case, the licensee failed to maintain an hourly fire watch patrol as required by TS 2.19(7). In both cases, the violations were not cited in accordance with Section V.G.1 of the NRC's Enforcement Policy because the problems were identified by the licensee, the problems were classed as Severity Level IV or V violations, and the licensee implemented or was in the process of implementing corrective actions.

6. Plant Tours (71707)

The inspectors 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 inspectors noted the following:

a. The inspectors noted that, as a result of work proceeding on MR-FC-87-20, "Installation of Control Room Ventilation," the affected area of Room 81, as well as portions of the electrical penetration areas, were cluttered with tools, work supplies, and trash. The inspector considered these areas to be in need of housekeeping attention. Licensee management stated that additional attention would be provided in these areas.

   Other areas of the plant were being well maintained and improved. The licensee's industrial coatings program is continuing and the inspector frequently observed personnel employed in housekeeping activities.

b. The inspectors noted that tours by management personnel appeared to decline during this inspection period compared to previous inspection periods. This was confirmed by a review of the security printout for the period of August 1-4, 1989. Licensee management stated at the exit meeting that actions would be taken to increase the tour frequency by management. The results of the plant tours performed by the inspectors indicate that the licensee is providing adequate attention to the physical condition of the plant. Work continues on painting and cleanup of the plant to improve the overall appearance. Except for a few areas, plant housekeeping has been very good.

No violations or deviations were identified.

7. Monthly Maintenance Observations (62703)

The inspectors reviewed and/or observed 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 observations:

- 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 inspectors observed the following maintenance activities:

- Inspection of Breakers DW-46A and DW-46B (MWO 894190)
- Installation of the control room ventilation system modification (MR-FC-87-020)
- Installation of a plant air dryer (MR-FC-88-049)
- Installation of a temporary air dryer (TM-89-M-039)
- Upgrade of the security system (MR-FC-85-049)
- Calibration of the motor overload for the EDG 2 fuel oil transfer pump (MWO 893629)
- Replacement of the cooling water temperature switches for EDG 2 (MWO 894002 and 894000)

A discussion of each item is provided below:

a. On August 16, 1989, the inspector observed the performance of MWO 894190 to inspect the electrical breakers for Deaerating Pumps DW-46A and DW-46B. The inspection was based on information

provided in NRC Information Notice 89-45, Supplement 1, "Metalclad, Low Voltage Power Circuit Breakers Refurbished With Substandard Parts."

The results of the maintenance showed differences between authentic trip device nameplates versus those installed in these two breakers. It was also observed that the instantaneous trip settings had been changed from 9 times the coil current rating to 12 times. This was apparently done by the supplier. However, the licensee had calibrated the breakers at a setting of 11 times the coil current rating. All of these settings were apparently within the manufacturer's specifications.

To alleviate the concern as to the breakers' interrupting capability (the deaerating pumps are not safety-related equipment, but the breakers are required to trip in order to load shed upon receipt of an engineered safeguards signal), the licensee performed Calibration Procedures CP-DW-46A Bkr and CP-DW-46B Bkr. No problems were noted.

Due to the types of problems identified with these breakers, the NRC has determined that testing of the breakers may not always reveal the latent problems that can exist with the breakers. The types of problems identified with the breakers may prevent tripping when an engineered safeguards load shed signal is received.

On August 18, 1989, the licensee stated that a review would be performed to evaluate continued plant operation based on the assumption that the breaker would not trip. By the end of this inspection period, the licensee had not performed an evaluation to determine if continued plant operation was appropriate. During discussions with licensee management at the exit meeting, the inspectors established that the evaluation would be generated in the near future. This item remains unresolved pending issuance of the evaluation by the licensee and review of the evaluation by the NRC. (285/8932-01)

b. Throughout this inspection period, the inspector examined work in progress per Modification MR-FC-87-020, "Installation of Control Room Ventilation." The majority of this work was being done in Room 81 where it was noted that housekeeping was lacking. The remainder of the work involves wiring controls to the control room and the electrical penetration areas. These areas appeared to be well policed. In numerous spot checks, craftsmen were found to be working per an approved procedure.

c. On August 24 and 25, 1989, the inspector observed work being performed on Modification MR-FC-88-049, "Installation of Plant Air Dryer" and Temporary Modification TM-89-M-039, "Installation of a Temporary Air Dryer." The work was observed to be performed in a professional manner. Quality control inspectors arrived at the jobsite when required by procedure and the system engineer was often present, overseeing the installations. No problems were noted.

d. The licensee is currently heavily involved with construction and installation associated with Modification MR-FC-85-049, "Security System Upgrade." The upgrade includes relocation of the protected area fences, installation of new intrusion detection systems, and installation of new security computers. The inspector frequently examined the protected area boundaries to ensure that compensatory measures were posted during this transition period. No problems were noted.

The licensee utilizes fire doors inside the protected area that are electronically supervised with time delayed alarms that are displayed on a continuously manned panel. As part of the security system upgrade, the electronic supervision for the fire doors will be changed from the old to the new computer system. This change will require disabling the system for 1 to 2 weeks. During this transition period, the licensee has committed to inspect the affected doors and verify them closed on a daily basis. This daily inspection is an acceptable alternative to electronic supervision per the requirements of NUREG 0800, "Fire Protection Program." This daily inspection approach has been reviewed and approved by NRR.

e. On August 9, 1989, the inspector observed technicians calibrate the motor overload for the EDG 2 fuel oil transfer pump in accordance with MWO 893629. The overload calibration was performed to verify that the setpoint was within specification.

The inspector noted that the technicians performed the calibration in accordance with the procedure, as written. The inspector also noted that the system engineer was present at the work location to oversee the maintenance evolution. No problems were noted during the inspector's observations.

f. On August 9, 1989, the inspector observed the replacement of the cooling water temperature switches on EDG 2. The switches are used to provide a high cooling water temperature alarm and a high cooling water temperature trip for EDG 2. The work was accomplished in accordance with MWOs 894002 and 894000 and the instructions attached to the MWOs, Procedures CP-3346 and CP-6127, "EDG 2 Engine Jacket Water Temperature."

The inspector observed technicians remove the old switches and replace them with new switches. The inspector verified that the new switches had been properly calibrated and installed. No problems were noted during the observations.

During observation of the maintenance activities performed by licensee personnel, the inspectors observed that the maintenance evolutions were performed in accordance with the appropriate procedures, as written. The inspectors also noted that the technicians performed their duties in a professional manner.

No violations or deviations were identified.

8. Monthly Surveillance Observations (61726)

The inspectors observed selected portions of the performance of TS-required surveillance testing on safety-related systems and components. The inspectors 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.
- Testing was performed on schedule and complied with the TS-required frequency.

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

- Monthly test of the power range safety channels (ST-RPS-1)
- Monthly test of the Channel B safety injection actuation signal (ST-ESF-2)
- Monthly test of the Channel B containment spray actuation signal (ST-ESF-4)
- Monthly test of the Channel B recirculation actuation signal (ST-ESF-13)
- Monthly inservice inspection testing of the RW pumps (ST-ISI-RW-3)
- Monthly testing of the narrow range containment sump level indication (OP-ST-CWL-0001)
- Monthly testing of EDG 2 (ST-ESF-6)

A discussion of each surveillance observed is provided below:

a. On August 10, 1989, the inspector observed a technician performing Procedure ST-RPS-1, "Power Range Safety Channels." The test was

found to be appropriately logged out to the technician, the technician maintained good communications with the operations staff, and the test was performed as written. No problems were noted.

b. On August 24, 1989, the inspector witnessed the concurrent performance of Procedures ST-ESF-2, "Safety Injection Actuation," ST-ESF-4, "Containment Spray Logic," and ST-ESF-13, "Recirculation Actuation Logic." The tests were performed by a recently licensed operator with guidance from an experienced operator. The test was performed as written and no anomalies were observed.

c. On August 24 and 25, 1989, the inspector observed the performance of, and reviewed the data obtained from, Procedure ST-ISI-RW-3, "Inservice Inspection of Raw Water Pumps." The purpose of this test was to demonstrate repeatability of pump and system characteristics obtained during the previous performance of Special Procedures SP-RW-3, "Raw Water Pumps AC-10A, -B, -C, and -D Baseline Performance Test," and SP-RW-4, "Raw Water Flow Performance Test," performed on July 24 and 25, 1988. The baseline data obtained from these test procedures indicated that RW flow, from two pumps on a common emergency bus flowing through three RW/component cooling water (CCW) heat exchangers, was not as high as was assumed in SAO 89-012. In SAO 89-012, the licensee determined that the Missouri River temperature could reach 92°F and still provide adequate cooling to meet design basis accident (DBA) conditions. The analysis assumed RW flow through three heat exchangers would be at least 7200 gpm; whereas, actual testing revealed flow could be as low as 5000 gpm depending on the lineup of the heat exchangers used and the condition of the heat exchangers at the time.

From further testing on August 24 and 25, 1988, it appeared that heat exchangers had degraded further, to the extent that, with two pumps supplying flow through three heat exchangers, insufficient flow was available to provide cooling for the DBA for the current river temperature of 77°F. Upon learning of the situation, the licensee implemented a comprehensive air sparging program for the heat exchangers and caution tagged open all four RW inlet valves to the RW/CCW heat exchangers. With four heat exchangers on line, the flow was adequate to meet DBA conditions. Additionally, the licensee has officially revised one of the control room logs, Form FC-75, to require licensed operators, on each shift, to compare flow through two pumps and three heat exchangers to that required to meet DBA conditions. If the required flow cannot be met, operators were instructed to initiate sparging for a minimum of 2 hours. The licensee believes adequate flows can be maintained by a comprehensive sparging program.

The inspector has evaluated the licensee's corrective actions with respect to this problem and considers them safe and appropriate for the short term. Long-term corrective actions include the existence of procedural controls for all ranges of river temperatures to ensure that DBA cooling capabilities are maintained. Inspector Followup

Item 285/8923-02 was previously issued to track the corrective actions being implemented by the licensee.

d. On August 10, 1989, the inspector reviewed completed Procedure OP-ST-CWL-0001, "Containment Sump Narrow Range Level Check," and found no anomalies with the completed document. The equipment was found to operate within specifications.

e. On August 9, 1989, the inspector observed the surveillance testing of EDG 2. The testing was performed in accordance with Procedure ST-ESF-6, "Diesel Start and Fuel Oil Transfer Pump."

During observation of the test in the control room and the EDG room, the inspector noted that the test was performed in accordance with the procedure, as written. During the test, no anomalies were noted and the EDG parameters met the testing acceptance criteria. It appeared that the test was performed in a professional manner.

Based on the observations made by the inspectors, it appeared that the licensee was adequately implementing an effective surveillance testing program. In each test observed, the inspectors 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.

It appeared, based on the observations made by the inspectors, that the licensee's guard force was adequately performing its duties. The security system was being extensively modified and the extent of the modifications required extensive compensatory measures. The inspectors 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 inspectors 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.

The inspectors reviewed the following items:

a. In NRC Inspection Report 50-285/89-28, it was reported that the licensee had discovered radiologically contaminated material outside the protected area in nonposted zones. At that time, the licensee initiated a plant wide survey to search for additional radioactive material. The areas surveyed included all yard and laydown areas within the owner controlled property, the training center, the new warehouse, the security building, and the maintenance shop area.

   On August 30, 1989, the licensee provided the inspector a copy of the survey report which was completed on August 23, 1989. The report indicated contaminated material was found in the old warehouse, the

training center, the maintenance shop, and the yard area outside the old warehouse. Approximately 45 contaminated items were found outside the protected area.

A preliminary review of the report by the inspector indicated that all the contaminated material found exhibited radioactive levels which would have been considered unconditionally releasable by previous standards.

The licensee's current proceduralized standards for release of material is no loose surface contamination or detectable radiation levels above background. All the contaminated material was inventoried and properly stored or brought directly into the plant for decontamination and/or disposal.

The licensee's survey report was forwarded to NRC Region IV health physics specialists for further review.

b. On August 23, 1989, the inspector learned of a significant skin contamination which occurred while an individual was compacting trash on August 21, 1989. The individual was washed clean on the first attempt and a subsequent whole body count indicated that no internal contamination had been received.

The licensee investigated the incident and attributed the contamination to inadequate directions given to workers on the radiological work permit (RWP), insufficient guidance given workers by health physics personnel, and inappropriate supervision in assigning inexperienced radiological workers to a task involving advanced skills. The investigation resulted in work stoppage, RWP revision, retraining of health physics personnel, and disciplinary action taken against an individual. The inspector reviewed the licensee's investigation and considered it to be thorough and the actions taken by the licensee to be effective in addressing the root cause of this incident.

Based on the observations and reviews performed by the inspectors, it appeared that the licensee was implementing an effective radiological protection program. Even though two problems occurred in this inspection area, the licensee took prompt and comprehensive actions to identify and correct the problems. The performance of the HP technicians was noted to be professional.

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 NRC 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:

- Plant Emergency Lighting Outside Design Basis (LER 89-015), dated July 13, 1989
- Auxiliary Feedwater Pump FW-10 Outside Design Basis (LER 89-016), dated July 17, 1989
- Raw Water System Outside Its Design Basis (LER 89-017), dated July 31, 1989
- Monthly Operations Report for June 1989, undated
- June Monthly Operating Report, dated July 14, 1989
- Response to Generic Letter 89-08, "Erosion/Corrosion Induced Pipe Wall Thinning," dated July 20, 1989
- Notification of IST Program Changes: Valves IV-HCV-712A-C, IV-HCV-385-C, and IV-HCV-386-C, dated July 19, 1989
- July Monthly Operating Report, dated August 14, 1989
- Monthly Operations Report for July 1989, undated
- Fort Calhoun Station Radiation Protection Enhancement Program, Bimonthly Status Report, dated August 14, 1989
- NRC-OPPD Public SALP Meeting, dated August 17, 1989

No violations or deviations were identified.

12. General Employee Training (41400)

On August 21, 1989, the inspectors attended the general employee training (GET) accelerated requalification course. The purpose of this course was to review basic plant requirements related to industrial safety, quality control, emergency preparedness, radiological requirements, and employee responsibilities and to have employees demonstrate fundamental radiological work practices. The course, or a similar course, is required to be taken annually by all employees with unescorted plant access.

The inspectors noted that the handouts provided by the training department for GET Level I (site specific information) and GET Level II (radiation worker information) contained out-of-date information. The handouts had not been revised since October 1987. The OPPD organization and plant physical structure has undergone numerous changes since 1987 and the handouts did not reflect these changes. The curricula contained errors on current licensee policy with respect to maintenance procedures and site evacuation. These anomalies were not addressed by the instructor during the course, even though other incorrect information was verbally corrected by the instructor.

The licensee stated that the training material for Levels I and II training was in the process of being revised at the time this problem was identified. The licensee stated that a revision would be issued in the near future.

In GET Level II, which consists of basic radiation and radiological protection training, the inspectors were concerned with a practical factor being taught on how to read a pocket dosimeter. The method being taught, which involved wearing multiple pairs of surgeon gloves, was acceptable for a few scenarios but was generally not feasible for a task which would require multiple checks of a pocket dosimeter. When the technique was questioned by students, the instructor indicated that this was the method radiological protection management wanted employed.

On August 21 and 29, 1989, the inspector discussed the situation with the Supervisor, Radiological Protection. The supervisor stressed that the practice was intended to be taught as an acceptable method of performing the task but not a requirement. The inspector indicated that the impression given the class was that the multiple gloving was the method to be used. On August 29, 1989, a discussion was held between the inspector; the Supervisor, Radiation Protection; and the GET instructors. As a result of the meeting, it was established that the method taught in GET was to be classed as an acceptable method by the instructors.

During the presentation of classroom training, the inspectors noted that the instructor did not discuss the continuous, ongoing problems being experienced at the FCS. The licensee has experienced problems with control room access, procedure compliance, and the introduction of contraband into the PA by visitors. The inspectors felt that, since all

personnel attend GET at least annually, the GET class would provide an excellent opportunity for a discussion of ongoing problems. This issue was discussed with licensee management. Licensee management stated that a discussion on ongoing problems would be considered for implementation into the GET accelerated requalification program. Licensee management also stated that a discussion of ongoing problems is presented in other GET requalification classes.

No violations or deviations were identified.

13. Exit Interview

The inspectors met with Mr. K. J. Morris (Division Manager, Nuclear Operations) and other members of the licensee staff on September 8, 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.