UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

October 17, 2003

R. T. Ridenoure
Division Manager - Nuclear Operations
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
P.O. Box 550
Fort Calhoun, NE 68023-0550

SUBJECT: FORT CALHOUN STATION - NRC INTEGRATED INSPECTION REPORT 05000285/2003005

Dear Mr. Ridenoure:

On September 20, 2003, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fort Calhoun Station. The enclosed integrated inspection report documents the inspection findings which were discussed on October 1, 2003, with Mr. Rich Clemens, Division Manager, Nuclear Assessments, and other members of your staff.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the NRC identified two findings that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC also determined that there were violations associated with each of these findings. These violations are being treated as noncited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. These NCVs are described in the subject inspection report. If you contest the violation or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Fort Calhoun Station facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

Kriss M. Kennedy, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-285
License: DPR-40

Enclosure:
NRC Inspection Report 05000285/2003005
w/attachment: Supplemental Information

cc w/enclosure:
John B. Herman, Manager
Nuclear Licensing
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
P.O. Box 550
Fort Calhoun, NE 68023-0550

Richard P. Clemens, Division Manager
Nuclear Assessments
Fort Calhoun Station
P.O. Box 550
Fort Calhoun, NE 68023-0550

David J. Bannister, Manager - Fort Calhoun Station
Omaha Public Power District
Fort Calhoun Station FC-1-1 Plant
P.O. Box 550
Fort Calhoun, NE 68023-0550

James R. Curtiss
Winston & Strawn
1400 L. Street, N.W.
Washington, DC 20005-3502

Chairman
Washington County Board of Supervisors
P.O. Box 466
Blair, NE 68008

Sue Semerena, Section Administrator
Nebraska Health and Human Services System
Division of Public Health Assurance
Consumer Services Section
301 Centennial Mall, South
P.O. Box 95007
Lincoln, NE 68509-5007

Daniel K. McGhee
Bureau of Radiological Health
Iowa Department of Public Health
401 SW 7th Street, Suite D
Des Moines, IA 50309

Chief Technological Services Branch
National Preparedness Division
Department of Homeland Security
Emergency Preparedness & Response Directorate
FEMA Region VII
2323 Grand Boulevard, Suite 900
Kansas City, MO 64108-2670

Electronic distribution by RIV:
Regional Administrator **(BSM1)**
DRP Director **(ATH)**
DRS Director **(DDC)**
Senior Resident Inspector **(JGK)**
Branch Chief, DRP/C **(KMK)**
Senior Project Engineer, DRP/C **(WCW)**
Staff Chief, DRP/TSS **(PHH)**
RITS Coordinator **(NBH)**
Jim Isom, Pilot Plant Program **(JAI)**
RidsNrrDipmLipb
J. Clark **(JAC)**, OEDO RIV Coordinator
FCS Site Secretary **(NJC)**
Dale Thatcher **(DFT)**
W. A. Maier, RSLO **(WAM)**

ADAMS: ■Yes ☐ No Initials: __kmk___
■ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ■ Non-Sensitive

R:_FCS\FC2003-05RP-JGK.wpd

RI:DRP/C	SRI:DRP/C	C:DRS/PSB	C:DRP/C	
LMWilloughby	JGKramer	TWPruett	KMKennedy	
E to KMKennedy	***E to KMKennedy***	***E- MPShannon for***	***/RA/***	
10/17/03	10/17/03	10/17/03	10/17/03	

OFFICIAL RECORD COPY T=Telephone E=E-mail F=Fax

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	50-285
License:	DPR-40
Report:	05000285/2003005
Licensee:	Omaha Public Power District
Facility:	Fort Calhoun Station
Location:	Fort Calhoun Station FC-2-4 Adm. P.O. Box 399, Hwy. 75 - North of Fort Calhoun Fort Calhoun, Nebraska
Dates:	June 22 through September 20, 2003
Inspectors:	J. Kramer, Senior Resident Inspector L. Willoughby, Resident Inspector P. Elkmann, Emergency Preparedness Inspector R. Lantz, Senior Emergency Preparedness Inspector W. McNeill, Reactor Inspector
Approved By:	Kriss M. Kennedy, Chief, Project Branch C Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000285/2003005; 06/22/2003 - 09/20/2003; Fort Calhoun Station, Integrated Resident and Regional Report; Postmaintenance and Surveillance Testing.

The report covered a 3-month period of inspection by Resident and Regional office inspectors. Two Green noncited violations of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. A noncited violation of Technical Specification Surveillance Requirement 3.7(1)a.i was identified for the failure to adequately test the diesel generators. The licensee used a practice of alternating between the primary and secondary air start systems when performing the 184-day full speed starts of the diesel generators. In a normal alignment, only the primary air start system could start the diesel generator within the required 10-second Technical Specification requirement; the secondary air start system could not. When the diesel generators were tested using the secondary air start system, they were tested in an altered configuration with time delays disabled to ensure the diesel generators started within the required time and then were placed back into a normal untested configuration.

  This finding was more than minor since it is associated with the equipment performance attribute of the mitigating systems cornerstone. The finding was characterized under the Significance Determination Process as having very low safety significance because there was no actual loss of function or operability of any safety-related equipment (Section 1RST.1).

- Green. A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, was identified as a result of the diesel generator test procedure not containing appropriate quantitative or qualitative acceptance criteria to determine operability of diesel generators when conducting the full speed starts of the diesel generators. The licensee's acceptance criteria did not account for a 2 hertz speed droop of the fully loaded diesel generator when selecting the minimum acceptable frequency. In addition, the procedure did not recognize that the steady state unloaded frequency of greater than 63 hertz would require decreasing the maximum ambient operability temperature of diesel generators.

  This finding was considered more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone in that the procedure could not ensure the capability of the diesel generator to support emergency core cooling system components in response to an initiating event.

The finding was characterized under the Significance Determination Process as having very low safety significance because the as-found diesel generator frequency and voltage were adequate to support the emergency core cooling system loads and no actual loss of safety function occurred (Section 1RST.2).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

The unit began this inspection period at 100 percent power. On July 16, 2003, operators reduced power to approximately 90 percent to maintain adequate condenser vacuum as a result of a trip of Circulating Water Pump CW-1B (Section 1R14.1). On July 22 operators determined that adequate condenser vacuum existed and raised power to approximately 98 percent to increase unit output. On July 26 power was raised to 100 percent following completion of the repairs to the circulating water pump. On September 11 operators initiated a power reduction in preparations for a refueling outage. On September 12 the reactor was manually tripped from approximately 16 percent power (Section 1R14.2). The unit ended the inspection period in Mode 5.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1RST Postmaintenance and Surveillance Testing (71111.ST)

1. Diesel Generator Technical Specification Surveillance Testing

a. Inspection Scope

The inspectors reviewed Procedure OP-ST-DG-0001, "Diesel Generator 1 Check," Revision 37; Procedure OP-ST-DG-0002, "Diesel Generator 2 Check," Revision 38; and Technical Specification Surveillance Requirement 3.7(1)a.i. The inspectors discussed the diesel generator testing methodology with Operations, Engineering, and Licensing personnel.

b. Findings

Introduction. A Green noncited violation was identified for the failure to test the diesel generators in accordance with Technical Specification Surveillance Requirement 3.7(1)a.i.

Description. Each diesel generator contains two air start systems, a primary and a secondary. In a normal diesel generator alignment, the primary air start system would receive the emergency start signal to start the diesel generator. Should the primary air start system fail to start the diesel generator, the secondary air start system would attempt to start the diesel generator after a 2-second delay. In a normal alignment, only the primary air start system could start the diesel generator within the required 10-second Technical Specification requirement; the secondary air start system could not.

The licensee used a practice of alternating between the primary and secondary air start systems when performing the 184-day full speed starts of the diesel generators. When performing the full speed start using the secondary air start system, the licensee would prevent the primary air start system from operating and also disable the normal

2-second delay feature of the secondary air start system. The licensee disabled the 2-second delay feature to ensure the diesel generator would start within the 10-second requirement. Upon completion of the test using the secondary air start system, the licensee returned the air start system to a normal configuration which once again relied upon the primary air start system to start the diesel generator. The licensee also re-enabled the 2-second delay feature of the secondary air start system.

The inspectors reviewed the method that the licensee used to test the diesel generators. The inspectors identified that, when the diesel generators were tested using the secondary air start system, they were tested in an altered configuration with time delays disabled to ensure the diesel generators started within the required time. The licensee would then return the diesel generator to a normal configuration that relied on the untested primary air start system to start the diesel generator.

The inspectors reviewed the licensee's diesel generator test frequency to determine the last time the diesel generator was tested using the primary air start system for the 184-day full speed start. The licensee tested Diesel Generator 1 on August 7, 2002, and Diesel Generator 2 on August 21, 2002. After the inspectors informed the licensee that the diesel generator testing requirements were not met, the licensee performed a full speed start of both diesel generators on July 7, 2003. The inspectors determined that the licensee had not performed the 184-day full speed start test using the primary air start system within the required surveillance interval plus the grace period.

In addition, the inspectors reviewed the testing methodology that the licensee used to comply with the monthly testing requirements of Technical Specification Surveillance Requirement 3.7(1)a.i. The licensee alternated the use of the primary and secondary air start systems on a monthly basis. The inspectors determined, after consultation with the Office of Nuclear Reactor Regulation, that the practice of alternating the air start systems used to start the diesel generators during the monthly test was an acceptable practice and did not violate the requirements of the surveillance test.

Analysis. The inspectors evaluated the safety significance of the finding. This finding affected the mitigating systems cornerstone and was considered more than minor since it is associated with the equipment performance attribute. This finding was characterized under the Significance Determination Process as having very low safety significance because there was no actual loss of function or operability of any safety-related equipment.

Enforcement. Technical Specification Surveillance Requirement 3.7(1)a.i requires, in part, that at least once per 184 days the licensee shall demonstrate that the diesel generator can be started and accelerated to rated speed and voltage in less than or equal to 10 seconds without a prior warm-up. Contrary to the above, the licensee failed to test the diesel generator every 184 days as required by Technical Specifications. The licensee performed diesel generator full speed starts using the primary air start system (the only air start system capable of starting the diesel generator in the required time interval in the normal air start alignment) on an annual basis. This violation of Technical

Specifications is being treated as a noncited violation, consistent with Section VI.A of the Enforcement Policy (NCV 285/2003005-01). This violation is in the licensee's corrective action program as Condition Report 200302557.

2. Diesel Generator 184-day Surveillance Test Procedure

a. Inspection Scope

On July 7, 2003, the inspectors observed operators perform a full speed start of Diesel Generator 2 using Procedure OP-ST-DG-0002, "Diesel Generator 2 Check," Revision 38. The inspectors reviewed the procedure, recorded data, computer captured data, and Technical Specifications. In addition, the inspectors reviewed acceptance criteria to verify that it demonstrated operational readiness of the diesel generator.

b. Findings

Introduction. A Green noncited violation was identified as a result of the diesel generator test procedure not containing appropriate quantitative or qualitative acceptance criteria to determine operability of the diesel generators as required by 10 CFR Part 50, Appendix B, Criterion V.

Description. On July 7, 2003, the licensee conducted the full speed start of Diesel Generator 2 in accordance with Procedure OP-ST-DG-0002 to demonstrate that the diesel generator could start and accelerate to rated speed and voltage in less than or equal to 10 seconds without prior warm-up. A plant computer printout was used to record the diesel generator output voltage and frequency every one tenth of a second. After the diesel generator was started, the test coordinator calculated and recorded the time it took the diesel generator to achieve a frequency of 57 to 63 hertz and a voltage of 3990 to 4410 volts. Using the computer printout, the test coordinator determined that the diesel generator reached 58.2 hertz in 6.27 seconds and 4027.7 volts in 8.17 seconds.

The inspectors observed that after 16 seconds the diesel generator unloaded frequency and voltage stabilized at 63.19 hertz and 4242.0 volts. Since Procedure OP-ST-DG-0002 listed the acceptable frequency band between 57 and 63 hertz, the inspectors asked the licensee if operation of the diesel generator at a frequency of 63.19 hertz was acceptable. The licensee entered the observation into the corrective action program for evaluation. The licensee evaluated the diesel generator frequency and determined that, with the diesel generator operating at 63.19 hertz, the maximum allowable outside ambient temperature to ensure operability had to be reduced from 114°F to 110°F. The inspectors found that the procedure did not specify actions to be taken if frequency exceeded 63 hertz.

The inspectors asked the licensee for the basis of the 57 to 63 hertz band and 3990 to 4410 volts band. The licensee indicated the bands were based on the ANSI/NEMA MG 1-1998, "Motors and Generators," Section 12.45, "Variation from Rated Voltage and

Rated Frequency" standard. The standard indicated that induction motors operate successfully under running conditions at rated load with voltage variations of plus or minus 10 percent at rated frequency and frequency variations of plus or minus 5 percent at rated voltage.

The inspectors noted that the diesel generator has a 2 hertz frequency droop when going from unloaded to fully loaded during accident conditions based on the governor design. If the diesel generator comes up to speed at the minimum acceptable frequency of 57 hertz, as stated in the surveillance procedure, and emergency core cooling systems loads are placed on the diesel generator, the frequency seen by the emergency core cooling system motors would be approximately 55 hertz. This frequency would be outside the ANSI/NEMA MG 1-1998 criteria (57 hertz) for motor operation.

The inspectors asked the licensee if all the emergency core cooling system loads would function properly when the diesel generator was running loaded at 55 hertz, the minimum acceptable frequency allowed in the surveillance procedure minus the 2 hertz speed droop. The licensee indicated that there was no calculation or design basis information to support equipment operability at 55 hertz; therefore, it was unknown if the equipment would perform its designed function at the lowest value of the procedure acceptance criteria. The inspectors also asked the licensee what was minimum and maximum voltage and frequency to support the most limiting component in the emergency core cooling system. The licensee again indicated that there was no calculation or design basis information to answer that question.

Analysis. The inspectors evaluated the safety significance of the finding. This finding affected the mitigating systems cornerstone and was considered more than minor because the procedure did not contain appropriate quantitative acceptance criteria to ensure the capability of the diesel generator to meet its design basis requirements. The finding was characterized under the Significance Determination Process as having very low safety significance because the as-found diesel generator frequency and voltage were adequate to support the emergency core cooling system loads and no actual loss of safety function occurred.

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that procedures shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Contrary to the above, Procedure OP-ST-DG-0002 did not include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. The acceptance criteria did not account for the 2 hertz speed droop of the fully loaded diesel generator when selecting the minimum acceptable frequency. In addition, the procedure did not recognize that the steady state unloaded frequency of greater than 63 hertz would require decreasing the maximum ambient operability temperature of Diesel Generator 2. This violation of 10 CFR Part 50, Appendix B, Criterion V, is being treated as a noncited violation, consistent with

Section VI.A of the Enforcement Policy (NCV 285/2003005-02). This violation is in the licensee's corrective action program as Condition Reports 200302602 and 200302623.

3. Other Surveillance Tests

a. Inspection Scope

The inspectors observed and/or reviewed the performance and documentation for the following two surveillance tests to verify that the structures, systems, and components were capable of performing their intended safety functions and to assess operational readiness:

- OP-ST-FO-3001, "Diesel Generator 1 Fuel Oil System Pump Inservice Test," Revision 18
- OP-ST-CH-3003, "Chemical and Volume Control System Pump/Check Valve Inservice Test," Revision 35

b. Findings

No findings of significance were identified.

4. Postmaintenance Tests

a. Inspection Scope

The inspectors observed and/or reviewed four postmaintenance tests to verify that the test procedures adequately demonstrated system operability. The inspectors also verified that the tests were adequate for the scope of the maintenance work performed and that the acceptance criteria were clear and consistent with design and licensing basis documents. The following activities were included in the scope of this inspection:

- Work Order 00150765-01, to replace the yoke sleeve for Charging Pump CH-1B suction Valve CH-173 on July 21, 2003
- Work Order 00141496-01, to replace the Component Cooling Pump AC-3C motor on July 29, 2003
- Work Order 00095304-01, to refurbish Hydrogen Analyzer VA-81B sample pump on August 21, 2003
- Work Order 00137883-01, to troubleshoot the slow response of the Steam-Driven Auxiliary Feedwater Pump FW-10 Speed Control Loop on September 10, 2003

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

a. Inspection Scope

The inspectors performed three partial walkdowns of the following trains of equipment during outages, operation, or testing of redundant trains. The inspectors verified that the following systems were properly aligned in accordance with system piping and instrumentation drawings and plant procedures:

- Diesel Generator 1 during a monthly surveillance and outage of Diesel Generator 2 on August 20, 2003
- Motor-Driven Auxiliary Feedwater Pump FW-6 during an outage of Steam-Driven Auxiliary Feedwater Pump FW-10 on September 10, 2003
- Alternate train of shutdown cooling while in reduced reactor coolant inventory on September 15, 2003

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors performed six routine fire inspection tours and reviewed relevant records for plant areas important to reactor safety. The inspectors observed the material condition of plant fire protection equipment, the control of transient combustibles, and the operational status of barriers. The inspectors compared in-plant observations with commitments in the licensee's Updated Fire Hazards Analysis Report. The following fire areas were inspected:

- Fire Area 1 - Safety Injection and Containment Spray Pump Area, Room 21
- Fire Area 2 - Safety Injection and Containment Spray Pump Area, Room 22
- Fire Area 6.8 - Heat Exchanger and Pump Area, Room 5
- Fire Area 31 - Intake Structure
- Fire Area 32 - Compressor Area, Room 19
- Fire Area 35B - Diesel Generator 2, Room 64

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the Probabilistic Risk Assessment Summary Notebook for internal flooding events. The inspectors performed walkdowns of the spent fuel pool cooling heat exchanger area (Room 5) to verify that equipment was not subject to damage as a result of internal flooding. The inspectors reviewed the internal flooding analysis that demonstrated safety-related equipment in other rooms were not vulnerable to this internal flooding.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

The inspectors performed one licensed operator requalification observation. On August 18, 2003, the inspectors observed licensed operator requalification training activities, including the licensed operators' performance and the evaluators' critique. The inspectors compared performance in the simulator with performance observed in the control room during this inspection period. The focus of the inspection was on high-risk licensed operator actions, operator activities associated with the emergency plan, and previous lessons-learned items. These items were evaluated to ensure that operator performance was consistent with protection of the reactor core during postulated accidents. In addition, the inspectors observed licensed operator training on the identification and indications of degraded containment emergency sumps during a loss of coolant accident. The training included a discussion on the anticipated indications of a blocked sump and a simulator demonstration of the plant and core response to sump blockage.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the requirements of the Maintenance Rule (10 CFR 50.65) to verify that they had conducted appropriate evaluations of equipment functional failures, maintenance preventable functional failures, the unplanned capacity loss factor, and system unavailability. The inspectors discussed the evaluations with the licensee personnel. The following two maintenance rule items were reviewed:

- Condenser Evacuation In-Line Gas Radiation Monitor RM-057

- Component Cooling Heat Exchanger AC-1A CCW Inlet Valve HCV-489A, Component Cooling Heat Exchanger AC-1B CCW Inlet Valve HCV-490A, Component Cooling Heat Exchanger AC-1C CCW Inlet Valve HCV-491A, and Component Cooling Heat Exchanger AC-1D CCW Inlet Valve HCV-492A

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13)

a. Inspection Scope

The inspectors reviewed five risk assessments by the licensee for equipment outages as a result of planned and emergent maintenance to evaluate the licensee's effectiveness in assessing risk for these activities. The inspectors compared the licensee's risk assessment and risk management activities against requirements of 10 CFR 50.65 (a)(4). The inspectors discussed the planned and emergent work activities with planning and maintenance personnel. The inspectors verified that plant personnel were aware of the appropriate licensee-established risk category, according to the risk assessment results and licensee program procedures. The inspectors reviewed the effectiveness of risk assessment and risk management for the following activities:

- Outage of diesel generators during fast start testing and Safety Injection Pump SI-2A on July 7, 2003

- Outage of 480 v Bus 1B4C, Safety Injection Pump SI-2B, Charging Pump CH-1B, and Containment Air Cooling and Filtering Unit VA-3B on August 26, 2003

- Outage of Diesel Generator 1, Safety Injection Pump SI-2A, Charging Pump CH-1A, Containment Air Cooling and Filtering Unit VA-3A, and Fire Pumps FP-1A and FP-1B on September 3, 2003

- Outage of Steam-Driven Auxiliary Feedwater Pump FW-10, Lift Testing of Main Steam Safety Valves, and Removal of the High Pressure Turbine Housing on September 10, 2003

- Outage risk assessment and management for the refueling outage, September 10, 2003

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Nonroutine Evolutions and Events (71111.14)

1. Circulating Water Pump Trip

a. Inspection Scope

On July 16, 2003, Circulating Water Pump CW-1B tripped. Operators entered Procedure AOP-26, "Turbine Malfunctions," Revision 4, Section I, "Loss of Vacuum," as a result of the circulating water pump trip and lowering condenser vacuum. In addition, operators entered Procedure AOP-05, "Emergency Shutdown." An equipment operator reported observing smoke in the intake structure coming from Pump CW-1B with no evidence of flames. In addition, an operator reported that the motor breaker for Pump CW-1B displayed an instantaneous motor overcurrent on all three phases. Control room operators observed that CW-1B Air Assisted Discharge Check Valve FCV-1904B failed to close when the pump tripped; therefore, CW-1B Discharge Valve HCV-1905B closed to aid in the recovery of the lowering condenser vacuum.

The inspectors responded to the control room as a result of the events and monitored the operators' performance. The inspectors discussed the events with shift supervision and plant management. The inspectors observed as the operators reduced reactor power to 90 percent in order to increase the condenser vacuum.

b. Findings

No findings of significance were identified.

2. Plant Shutdown and Manual Reactor Trip

a. Inspection Scope

On September 11, 2003, operators initiated a plant power reduction at approximately 3 percent power per hour in preparation for a refueling outage that was scheduled to begin at 9 p.m. on September 12. During the downpower, the operators encountered challenges in maintaining the axial shape index above the axial power distribution trip setpoint of -0.58 ASI units. The licensee initiated Condition Report 200303492 to

address the unexpected challenges in maintaining the axial shape index. On September 12 at approximately 8:55 p.m. with power at approximately 16 percent and axial shape index trending in the positive direction and away from axial power distribution pre-trips or trips, the shift manager and plant management decided to manually trip the reactor and commence the refueling outage.

The operations crew entered Procedure EOP-00, "Standard Post Trip Actions," Revision 15, following the reactor trip and then transitioned to Procedure EOP-01, "Reactor Trip Recovery," Revision 8, with all safety functions verified. When the operators completed Procedure EOP-01, they entered Procedure OP-3A, "Plant Shutdown," Revision 48. The inspectors observed aspects of the plant downpower and the reactor trip.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed four operability evaluations to verify that the evaluations provided adequate justification that the affected equipment could still meet its Technical Specification, Updated Safety Analysis Report, and design bases requirements. The inspectors also discussed the evaluations with cognizant licensee personnel. The inspectors reviewed the operability evaluations and cause assessments for the following:

- The trisodium phosphate calculation (EA-FC-96-002) used nonconservative values for borated water volumes (Condition Report 200303163).

- The analytical model for piping stress calculations used incorrect and nonconservative values for valve weight for 10 check valves (Condition Report 200303337).

- No-load full speed of Diesel Generator 2 exceeded the speed value used in determining the design basis accident load calculation of Diesel Generator (Condition Report 200302623).

- Pieces of the concrete ceiling above Screen Wash Pump CW-3B in the seismic Class 1 intake structure were falling to the floor (Condition Report 200303097).

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors performed a selected review of operator Workaround 03-20 that resulted from operators having to fill Safety Injection Tanks SI-6A, SI-6C, and SI-6D approximately every third day due to leakage. The inspectors discussed the planned corrective actions for the deficiency with Operations Department supervision. The inspectors specifically evaluated the effect of the operator workaround on the operator's ability to implement abnormal or emergency operating procedures.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed Engineering Change 26232 and the associated 10 CFR 50.59 screen and safety evaluation that installed equipment to inject zinc into the reactor coolant system for the purpose of radiation dose reduction. The inspectors performed a walkdown of the installed equipment. The inspectors discussed the modification with operations, engineering, and chemistry personnel. The documents reviewed during the inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the licensee's refueling outage shutdown risk assessment to verify that the licensee appropriately considered risk in planning and scheduling the outage activities. The inspectors observed and reviewed the plant shutdown, drain to midloop, and shutdown maintenance activities. The inspectors verified that the activities were performed in accordance with approved procedures and Technical Specification requirements. Periodically, the inspectors evaluated plant conditions to verify that safety systems were properly aligned and that maintenance activities were controlled in accordance with the outage risk control plan.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed Temporary Modification EC 32589 R0, for the neutron detector well cooling system temperature indicator and alarms and its associated 10 CFR 50.59 screening. The inspectors verified the modification had no affect on system operability or availability. The inspectors reviewed the postinstallation test results to confirm that the test was satisfactory and that there was no adverse impact of the temporary modification on the permanent system.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2003 biennial emergency plan exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario simulated a reactor coolant system leak outside containment, loss of all offsite power, a large reactor coolant system leak inside containment, a station blackout, loss of containment integrity, and a large release of radioactive materials to the environment.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of classification, notification, protective action recommendations, and offsite dose consequences in the Simulator Control Room and in the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed personnel recognition of abnormal plant conditions, the transfer of emergency responsibilities between facilities, communications, protection of emergency workers, emergency repair capabilities, and the overall implementation of the emergency plan.

The inspectors attended the June 24, 2003, postexercise critiques in each of the above facilities to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended the June 26, 2003, preliminary presentation of the exercise evaluation results to plant management.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors performed a review of the following revisions to the Fort Calhoun Radiological Emergency Response Plan against the previous revisions and 10 CFR 50.54(q) to determine if the revisions decreased the effectiveness of the emergency plan: (1) Revisions 17 and 18 to Section J, (2) Revision 12 to Section I, (3) Revision 16 to the Definitions and Abbreviations Section, (4) Revision 10 to Section K, and (5) Revisions 16d and 16e to Appendix A.

These changes were primarily administrative in nature, correcting minor word processing errors, updating letters of agreement, and altering table formats for consistency in the emergency plan. Section K was changed to clarify and enhance the method for tracking exposures of emergency responders and allowed for the director of each emergency facility to be able to grant dose extensions up to 5 Rem.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

1. Barrier Integrity and Mitigating Systems Cornerstones

a. Inspection Scope

The inspectors reviewed the licensee's performance indicator data to verify its accuracy and completeness for the following three indicators:

- BI1 Reactor Coolant System Activity
- BI2 Reactor Coolant System Leakage
- MS5 Safety System Functional Failures

The inspectors reviewed the performance indicator data for the last two quarters of 2002 and the first two quarters of 2003. The inspectors reviewed NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee operating logs. The inspectors discussed the status of the performance indicators and compilation of data with licensee personnel. The inspectors reviewed Condition Reports 200303019, 200303416, and 200303347.

b. Findings

No findings of significance were identified.

2. Emergency Preparedness Cornerstone

a. Inspection Scope

The inspectors sampled licensee submittals for the three performance indicators listed below for the period from July 2002 through March 2003. To verify the accuracy of the performance indicator data reported during that period, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 2, were used to verify the basis in reporting for each data element.

- Drill and Exercise Performance
- Emergency Response Organization Drill Participation
- Alert and Notification System

The inspectors reviewed a sampling of drill and exercise scenarios, licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspectors reviewed selected emergency responder qualification, training, and drill participation records, and Emergency Planning Department Manual, EPDM-14, "Performance Indicator Program." The inspectors reviewed siren test and maintenance records and procedures. The inspectors also interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution (71152)

Emergency Preparedness

a. Inspection Scope

The inspectors reviewed one assessment report and a summary list of condition reports related to the licensee's corrective action program, to determine the licensee's ability to identify and correct problems in accordance with the requirements of 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E. Documents reviewed during the inspection are listed in the attachment.

b. Findings and Observations

No findings of significance were identified.

4OA3 Event Followup (71153)

(Closed) Licensee Event Report 050000285/2003002-00, Inadequate Testing of Diesel Generator Due to Unique Design of the Air Start System

On July 7, 2003, the inspectors informed the licensee that the testing of the diesel generators was not in compliance with the requirements of Technical Specification 3.7(1)a.i. The finding is documented in Section 1RST.1. The licensee documented the issue in Condition Report 200302557. No new findings were identified in the inspectors review of the licensee event report. This licensee event report is closed.

4OA5 Other

1. Third-Party Reviews

The inspectors reviewed the final report of the Institute of Nuclear Power Operations November 2002 evaluation for the Fort Calhoun Station.

4OA6 Meetings

Exit Meeting Summary

The results of the emergency plan exercise and inspection were presented to Mr. G. Gates, Vice President, Nuclear, and other members of licensee management on June 26, 2003. The licensee's management acknowledged the inspection findings and stated that none of the material examined during the inspection was considered proprietary.

The results of the resident inspector activities were presented to Mr. R. Clemens, Division Manager, Nuclear Assessments, and other members of licensee management on October 1, 2003. The licensee's management acknowledged the inspection findings and stated that some of the material examined during the inspection was considered proprietary. The inspectors indicated that, although examined, no proprietary information was documented in the inspection report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Bannister, Plant Manager
R. Clemens, Division Manager, Nuclear Assessments
M. Core, Manager, System Engineering
M. Frans, Assistant Plant Manager
R. Haug, Manager, Chemistry
J. Herman, Manager, Nuclear Licensing
R. Phelps, Division Manager, Nuclear Engineering
M. Puckett, Manager, Radiation Protection
R. Ridenoure, Division Manager, Nuclear Operations
H. Sefick, Manager, Security and Emergency Planning

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000285/2003005-01	NCV	Inadequate Testing of Diesel Generator (Section 1RST.1)
05000285/2003005-02	NCV	Inadequate Diesel Generator Surveillance Test Acceptance Criteria (Section 1RST.2)

Closed

05000285/2003002-00	LER	Inadequate Testing of Diesel Generator (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R17: Permanent Plant Modifications

Procedures:

ARP-CB-1,2,3/A2, “Annunciator Response Procedure A2 Control Room Annunciator A2,” Revision 22

EOP-00, “Standard Post Trip Actions,” Revision 15

CH-ANL-AS-0006, “Determination of Trace Metals by Graphite Furnace Using the Perkin Elmer Analyst 800 Atomic Absorption Spectrometer,” Revision 1

OI-CH-1, “Chemical and Volume Control System Normal Operation,” Revision 50

OI-CH-2, “CVCS Purification System Normal Operation,” Revision 37

OI-CH-8, “Chemical Addition,” Revision 6

SO-O-44, “Administrative Controls for the Locking of Components,” Revision 71

Drawing: E-23866-210-120 Sheet 1

Condition Reports: 200302427 and 200303066

Work Instructions: CWO 02-0085 and CWO 02-0087

Updated Safety Analysis Report: Sections 4.3.14 and 9.2.3.12

Assessment of Low-Concentration Zinc Injection for Fort Calhoun, Framatome ANP, Framatome Engineering Document Number 51-5022354-00, dated January 2003

Section 1EP1: Exercise Evaluation

Fort Calhoun Station Radiological Emergency Response Plan
EPIP-OSC-1, “Emergency Classification,” Revision 35
EPIP-OSC-2, “Command and Control Position Actions/Notifications,” Revision 42
EPIP-OSC-9, “Emergency Team Briefings,” Revision 7
EPIP-OSC-15, “Communicator Actions,” Revision 22
EPIP-OSC-21, “Activation of the Operations Support Center,” Revision 12
EPIP-TSC-1, “Activation of the Technical Support Center,” Revision 24
EPIP-EOF-1, “Activation of the Emergency Operations Facility,” Revision 13
EPIP-EOF-6, “Dose Assessment,” Revision 32
EPIP-EOF-7, “Protective Action Guidelines,” Revision 14
EPIP-EOF-21, “Potassium Iodide Issuance,” Revision 4

Section 4OA2: Problem Identification and Resolution - Emergency Preparedness

Summary of Emergency Preparedness related condition reports for 2002 and 2003

Emergency Preparedness Assessment Report, September 3-6, 2002

Condition Reports: 200202672, 200202862, 200202863, 200202864, 200203466, 200203956, 200204043, 200204044, 200300328, 200300446, 200300449, 200300656, 200300668, 200301152, 200301498, 200301678, 200301679, 200301683, and 200301686