



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W., SUITE 2900  
 ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-269/95-16, 50-270/95-16 and 50-287/95-16

Licensee: Duke Power Company  
 422 South Church Street  
 Charlotte, NC 28242

Docket Nos.: 50-269, 50-270, and 50-287

License Nos.: DPR-38, DPR-47,  
 and DPR-55

Facility Name: Oconee Nuclear Station Units 1, 2 and 3

Inspection Conducted: July 10 - 14, 1995

Inspector: S. Rudisail  
 S. Rudisail

7/31/95  
 Date Signed

Accompanying Personnel: Virgil Beaston, NRR

Approved by: M. B. Shymlock  
 M. B. Shymlock, Chief  
 Plant Systems Section  
 Engineering Branch  
 Division of Reactor Safety

8-8-95  
 Date Signed

SUMMARY

Scope:

This routine, announced inspection was conducted in the areas of electrical design to review the licensee action in response to Electrical Distribution System Functional Inspection (EDSFI) findings and other EDSFI issues identified in NRC Inspection Report 50-269, 270, 287/93-02. These items were being resolved as part of the licensee's Power Upgrade Project (PUP). Other items completed as part of the PUP effort were also reviewed.

Results:

In the areas inspected, violations or deviations were not identified.

The inspectors reviewed various PUP items completed in response to EDSFI findings. These EDSFI findings were identified as Inspector Follow-up Item (IFI) 93-02-03.

The inspectors reviewed calculations, calculations revisions, procedures and design basis documentation which had been completed to address the EDSFI findings.

Enclosure

Overall, the calculations were of good quality with no problems identified during the calculation reviews. The licensee corrective actions for these items were technically sound and thorough.

In some cases, actions completed by the licensee substantiated the licensee previous conclusion that systems as designed were adequate. However, in some cases actions completed by the licensee in response to the EDSFI findings resulted in additional analysis and corrective actions to be completed by the licensee.

The inspectors reopened IFI 93-02-04 to document continuing staff evaluation of six EDSFI inspection items. This item was reopened as IFI 95-16-01.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*L. Azzarello, Mechanical Systems Engineering
- M. Bailey, Regulatory Compliance
- \*E. Burchfield, Regulatory Compliance Manager
- \*D. Coyle, Mechanical Systems Engineering
- J. Davis, Engineering
- T. Grant, Electrical Systems Engineering
- \*T. Ledford, Electrical Systems Engineering
- \*C. Little, Electrical Systems Engineering
- \*J. Peele, Plant Manager
- \*L. Underwood, Electrical Systems Engineering
- \*L Wilkie, Safety Review Manager

Other licensee employee contacted during this inspection included craftsmen, engineers, technicians, and administrative personnel.

#### NRC Employees:

- \*P. Harmon, Senior Resident Inspector
- L. Keller, Resident Inspector

\*Attended exit interview

Acronyms and abbreviations used throughout this report are identified in the last paragraph.

### 2. Background

During January 25 through March 5, 1993, the NRC conducted the Electrical System Distribution Functional Inspection (EDSFI). The purpose of this inspection was to assess the capability of the Oconee Electrical Distribution System to perform its functions during normal operations and accident conditions. The conclusion of the EDSFI team was that the electrical distribution system would perform its intended function pending further analysis and testing by the licensee. During the EDSFI inspection a violation and several deviations were identified. Additionally, findings identified during the EDSFI were collectively identified as IFI 93-02-03. Licensee actions to address these findings and NRC review of these actions are discussed within this report and in previous inspection reports 50-269, 270, 287/94-26 and 50-269, 270, 287/95-10.

### 3. Review of Inspector Follow-up Items (IP 92903, TI 2515/111)

The inspector reviewed the items identified at Oconee as Findings. IFI 93-02-03, EDSFI Findings consisted of six findings with several issues identified in each finding. This finding was closed in NRC inspection report 50-269, 270, 287/94-26 to document the findings which

were closed in that report. IFI 94-26-02 was opened to identify the EDSFI finding items which remain opened.

3.1 The inspectors reviewed PUP item 4.b which addressed EDSFI finding 2.g.

Finding 2.g of the Ocone EDSFI report recommended that the licensee "Identify the full scope [of electrical components supplied by the Keowee station batteries] and complete individual voltage component calculations for Keowee".

Section 3.2.4.4 of the EDSFI report stated that the inspectors reviewed calculation KC-0076, Rev. 2, Keowee 125 VDC Auxiliary Power System Battery Voltage and Duty Cycle Calculation, and noted that there was no discussion in the calculation which addressed the voltage limitations of electrical equipment being supplied by the batteries. The adequacy of voltage being supplied to some of the Keowee electrical components (i.e.; the Keowee generators' field windings and field flashing breakers) was to be addressed in other calculations being developed at the time of the EDSFI inspection. The EDSFI inspectors stated in section 3.2.4.4 that "The comprehensiveness of the scope of the supplemental calculations to examine voltage adequacy at the component level should be considered."

The inspectors reviewed calculation/analysis KC-Unit 1-2-0093, Keowee 125 Volt DC Voltage Adequacy Calculation, dated May 18, 1995. The purpose of this calculation was to determine that under the worst case load profile for the 125 volt dc Keowee power system, all devices required to operated during an emergency start would have adequate voltage. The worst case configuration analyzed by the licensee was a Keowee Unit 2 black start (first minute load profile) with the unit 2 electrical equipment being supplied by the unit 1 battery through a cross connect. The unit 1 battery was assumed to have 59 cells available and to be supplying both its equipment and the unit 2 distribution center through the cross connect. This analysis was performed to bound the case where one of the Keowee batteries is out of service. It was assumed that the voltage drop to unit 2 loads was limiting due to longer cable runs associated with unit 2 equipment.

This calculation identified that the voltage supplied to the Keowee Unit 2 governor actuator cabinet would only be marginally acceptable during the worst case load profile analyzed and with the unit 1 battery near the end of its life (80% capacity). In particular, the 99SN solenoid was identified as the most limiting electrical component. The minimum voltage calculated for the 99SN solenoid was 77.8 volts dc. The minimum test voltage shown to be acceptable for the solenoid to operated was 76 volts dc. While the minimum calculated voltage available to operate the solenoid was above the minimum tested value, the licensee recognized that a system improvement could be made to increase the voltage margin. An additional calculation performed by the licensee showed that by replacing the 400 feet of cable running from bus 2DA to 2LC1 with a more direct cable of approximately 25 feet, the minimum calculated voltage

available to the solenoid would increase from 77.8 volts dc to 84.1 volts dc. The licensee is tracking this recommendation with PIP 0-095-0590, and plans to implement it at a future date.

The inspectors found the licensee's analysis acceptable which concluded all devices powered by the Keowee 125 volt dc system and required to operate during an emergency start would have adequate voltage. The inspectors had no further concerns as a result of reviewing this calculation. This item is closed.

3.2 The inspectors reviewed PUP item 4.e which addressed EDSFI item 2.b.

Finding 2.b of the Oconee EDSFI report stated "The team noted that there was no analysis nor test to verify that the rapid transfer (transfer of power to MFBs) timing was correct."

Section 2.5, "Bus Transfer," of the EDSFI report stated "The team noted there was no design limits nor verification of the residual voltage on the bus, and the phase angles between the outgoing and incoming voltages prior to the transfer."

The inspectors reviewed calculation/analysis OSC-5749, "6.9 and 4.16 kV Auxiliary System Transfer Analysis," dated May 24, 1995. The purpose of this calculation was to verify that excessive voltages would not be applied to motors during the fast and slow bus transfers of the Oconee auxiliary systems. This analysis was performed by the licensee using CYME computer analysis software. The results of this computer analysis were evaluated by the licensee using the 1.33 p.u. volts/hertz criteria contained in ANSI Standard C50.41-1992.

This analysis identified two instances in which the 1.33 p.u. volts/hertz criteria would not be met. The first instance was a fast transfer of the 4.16 kV bus during a unit shutdown. To correct this finding, the licensee's staff has proposed that the fast bus transfer be blocked during unit shutdowns when the plant's auxiliaries are being fed from the unit auxiliary transformer. The second instance was a slow transfer of the 6.9 kV bus during normal unit operations. In this case, the licensee's staff has proposed that the minimum bus deadtime be extended, or the slow transfer scheme be modified to include relays which would monitor the residual bus voltage and supervise the slow transfer. The implementation of these recommendations was being tracked by PIP 0-095-0585.

The inspectors found the licensee's analysis acceptable, and did not identify any additional concerns. Because the volts/hertz values for the two instances identified by the licensee where a bus transfer could exceed the ANSI C50.41-1992 recommended value of 1.33 p.u. volts/hertz only exceeded that recommended value by a small amount (approximately 5-10%) and because these two transfers were not expected to occur repeatedly prior to the licensee taking corrective actions, the inspectors agreed with the licensee's conclusion that these findings did not pose a significant safety concern. This item is closed.

3.3 The inspectors reviewed PUP item 4.g which addressed EDSFI item 2.c.

Finding 2.c of the Oconee EDSFI report stated "The licensee did not have a transient voltage study for the 4 kV safety load groups when they are supplied from the Lee gas turbine or from Central substation."

Section 2.6.1 of the EDSFI report states "during starting of a unit LOCA loads, or starting of two unit shutdown loads, the transient voltage dip could exceed 20% [when supplied from CT-5]. The licensee agreed to prepare a transient voltage study on the 4 kV safety load groups when they are supplied from Lee gas turbine or from Central substation."

The inspectors reviewed calculation/analysis OSC-3290, "Voltage Study for Oconee Auxiliary Power Systems When Fed From Lee Combustion Turbine Via CT5 Transformer," dated May 30, 1995. The purpose of this calculation was to validate the licensee's CYME computer modeling of the Lee combustion turbines supplying auxiliary power to Oconee and to simulate Oconee LOCA/LOOP and LOOP loading when supplied from Lee combustion turbines.

The licensee performed a series of four tests designed to evaluate the CYME modeling of the Lee combustion turbines and the electrical circuit that connects Lee combustion turbines to Oconee nuclear units. These tests were: (1) start of supercharger fan 5C [associated with Lee combustion turbine 5C] from Lee combustion turbine 6C; (2) start of supercharger fan 5C from the grid; (3) start of an ASW pump at Oconee from Lee combustion turbine 6C; and (4) trip supercharger fan 6C when supplied from Lee combustion turbine 6C while isolated from the grid. The CYME simulation results showed good agreement with the field data collected during the four tests listed above.

The results of calculation/analysis OSC-3290 showed that while bus voltage could momentarily drop below 50% for a worst case loading scenario voltage would recover quickly, and all motor loads would start without actuation of protective relaying. The analysis conducted by the licensee identified three recommendations that would improve system performance during periods when Oconee auxiliaries were being fed from Lee. These recommended improvements are listed below and were being tracked by PIP 0-095-0616 for further consideration by the licensee:

- (1) When LOCA and LOCA/LOOP loads are automatically loaded onto a Lee unit, the speed droops 2 to 3 percent. Before 4.16 kV manual loads are loaded onto Lee following a LOOP or LOCA/LOOP, the Oconee operator should make sure that the frequency of the Lee unit is restored to normal;
- (2) Field tests performed to verify the CYME program indicates that the reactive droop compensator on the voltage regulator is set between 5 and 6 percent. A setting of 0% or close to 0% would improve the Lee unit voltage response when the Oconee auxiliary loads are connected to Lee; and

- (3) The calculation results indicate that all motors would start and that motor protective devices would not trip, however, 4 kV motor protection settings should be reviewed and set closer to the motor thermal damage curves (where possible) so that more of the motor thermal capacity can be used during motor starts. Motors specifically mentioned in the calculation were LPSW and LPI pump motors.

The inspectors found the licensee's analysis adequate, and they agreed with the licensee's conclusion that Lee combustion turbines could supply adequate power to meet postulated Oconee LOOP or LOCA/LOOP accident scenarios. The inspectors did not identify any further concerns while reviewing this calculation. The adequacy of power supplied to Oconee from Central substation was addressed in Inspection Report 95-10. This item is closed.

- 3.4 The inspectors reviewed the licensee actions completed in response to EDSFI finding 6.a.

Finding 6.a of the EDSFI report stated "The team identified several components involved in the operation of the Keowee units during an emergency start which were not being tested."

Section 3.4.2.4 of the EDSFI report identified that testing procedures associated with ACBs 1, 2, 3, and 4 were noted to have weaknesses. Procedure MP/0/A/2001/2: Inspection and Maintenance of Keowee ACBs and Associated Disconnects and Bus did not provide sufficient detail for testing the check valves on the air accumulator in each breaker.

The licensee had revised maintenance procedure MP/0/A/2001/2: Inspection and Maintenance of Keowee ACBs and Associated Disconnects and Bus to include specific instructions for checking the operation of these check valves. The inspector reviewed the revised procedure and found the instructions adequate for resolution of the EDSFI concern. This item was closed.

- 3.5 The inspectors reviewed PUP item 18 which addressed EDSFI item 6.b.

Finding 6.b of the Oconee EDSFI report stated "Testing was not being performed on safety related mechanical components (i.e.; coolers and pumps)."

Section 3.4.2.4 of the EDSFI report stated "It was noted that performance monitoring testing was not routinely performed on the safety related mechanical components (coolers and pumps) at Keowee . . . During the inspection, the team identified several valves which were required to change position for Keowee to provide emergency power, which were not included on the Keowee active valve list (KC-0085)." Valves 1 and 2 OG-7 (the Keowee governor oil tank float valves) were specifically mentioned in the report.

The function of valves 1 and 2 OG-7 is to close on low oil level in the governor oil tank and prohibit air entrainment into the Keowee governor. Should air displace oil in a governor, control of that unit's wicket gates could be adversely affected. In a worst case scenario, the wicket gates of the affected Keowee unit could be driven closed at such a rapid rate that an excessive pressure surge would be created in the penstock, potentially damaging the penstock which is common to both Keowee units. At the time of the inspection, testing of these two valves was required to be performed annually as a part of the governor actuator inspection and maintenance procedures (MP/1/A/2200/003 and MP/2/A/2200/003). Acceptable operation of valves 1 and 2 OG-7 had been verified on February 20, 1995, and February 15, 1995, respectively. The inspectors had no further concerns regarding the testing of these two valves.

The licensee had initiated PIP 0-094-1162 to track EDSFI item 6.b which had a tentative completion date of November 1, 1995. Corrective actions stated in the PIP required the inclusion of appropriate Keowee equipment into the licensee's inservice testing program, development of inspection and test procedures, and performance of any necessary modifications and initial testing. Since the licensee has not completed its corrective actions to finding 6.b, this item will remain open until the licensee completes these actions, and they have been reviewed. This item is open.

- 3.7 Item 3.b identified that a controlled document for the setpoints at Keowee (except for electrical relay settings) was not available. This item was addressed by the licensee as PUP item 1h. The licensee developed setpoint document changes which added all Keowee instrumentation that have adjustable setpoints to the Oconee Alarm and Setpoint Document. The inspector reviewed these setpoint document changes and compared the setpoint values and process descriptions to Keowee drawings, DBDs, annunciator response procedures, and equipment settings in the field. With only a few exceptions the information was correct and consistent between the various sources. For the discrepancies identified, the licensee appropriately dispositioned the items through their Problem Identification Process (PIP). This item was closed.

Item 3.c identified that bulletins, information notices and generic letters had not been reviewed for applicability to Keowee. The licensee subsequently performed a comprehensive search of their Licensing Correspondence files and their Integrated Commitment Index in order to identify the population of items that might be applicable to Keowee. The licensee identified a total of 502 items for review. These items were distributed to Engineering mechanical, electrical, and civil groups for review of applicability to Keowee. If the item was found to be applicable, then a review of Oconee's response was performed. If the Oconee response included Keowee or if the actions taken covered Keowee, then no further corrective action was taken. Items that were found to be applicable to Keowee, and no action for Keowee had been taken, were then reviewed for appropriate corrective action. The inspector found the approach taken by the licensee to identify all potential items



applicable to Keowee to be acceptable. The inspector performed a spot check of several bulletins and generic letters and determined that they were dispositioned correctly in regard to Keowee. This item was closed.

4. Review of Power Upgrade Project Items not Identified as EDSFI Findings (IP 92903)
  - 4.1 The inspectors reviewed PUP item 66 which related to a preliminary initial scope document that identified the need for a modification of the Keowee voltage regulators.

The Keowee generators are designed to operate as the onsite emergency power sources for the Oconee Nuclear Power Plants. As such, they must be able to act as isolated power sources and maintain adequate output voltage during a postulated accident scenario. Maintaining adequate output voltage is the function of the Keowee voltage regulators. During an emergency start of the Keowee units, the voltage regulators are placed in automatic control.

Between the dates of September 9, 1992, and May 8, 1993, the Keowee Units 1 & 2 voltage regulators failed a total of six times to transfer to automatic control following normal automatic starts as documented by PIPs 92-0455, 92-0490, 92-0647, 92-0718, 93-0340, and 93-0385. The cause for these failures was not known at the time, but it was thought to be due to an unreliable voltage adjuster (70V) cam switch. As a result of these repeated failures, on May 8, 1993, a condition of operability was placed on the Keowee units. This condition required operators to verify that the S8 contacts on both the base adjuster (70B) and the voltage adjuster (70V) of a Keowee voltage regulator closed following a unit shutdown. Since the root cause of the voltage regulators to transfer to automatic upon startup was believed to be due to misposition of the voltage adjuster following a unit shutdown, this condition of operability was implemented to ensure the Keowee units would be ready for any subsequent emergency starts. To remove this condition of operability and to improve the reliability of the Keowee units, the licensee started development of modification package NSM ON-52965 to upgrade the Keowee voltage regulators.

Subsequent to the implementation of the condition of operability on the Keowee units, the failure of the voltage regulator to transfer to automatic did not reoccur until April 20, 1995. At this time the failure persisted. With the ability to repeat the failure to assist in troubleshooting, the licensee was able to identify the root cause of the problem. The problem was identified as a bad module in the voltage regulator's synchronizer which caused the voltage adjuster (70V) to be driven out of its preset position before the regulator could transfer to automatic. A document review by the licensee showed that the on December 23, 1992, the synchronizer from Unit 1 was replaced with the one from unit 2. This finding was consistent with the fact that the failures on unit 2 occurred prior to that date, and the failures on unit 1 occurred after that date.

Since the root cause of the failures had been identified and it was not due to an unreliable voltage adjuster, the licensee removed the condition of operability originally placed on the Keowee units. The initial reason for the voltage regulator modification had been to remove this condition of operability. Since the voltage regulator problem has been identified and corrected, implementation of NSM ON-52965 is not considered necessary for closer of this item. The licensee still planned however to implement the modification. Also planned as a part of NSM ON-52965 was the replacement of Keowee components identified as seismically suspect and implementation of recommendations made by the licensee's Keowee lockout relay study (KC-0107). This item is closed.

- 4.2 The inspectors reviewed PUP item 91 which evaluated the effect of a momentary loss of voltage on one of the 120 volt ac vital I&C busses caused by the current limiting feature of an inverter.

The inspectors reviewed section 13.1.2, 7.5 kVA Safety-Related Inverter Output Fault, of calculation OSC-3120, Oconee Relay Settings and Breaker Coordination, dated June 1, 1995. If a fault occurred on a load connected to the 120 volt ac vital I&C busses, the inverter could go into a current limit condition before the load breaker connecting the fault tripped and cleared the fault. If this were to occur, the output voltage of the inverter would be degraded and could be low enough to prevent operation of some of the supplied loads. Loads that would be of concern in this situation are the Reactor Protection System (RPS) and Inadequate Core Cooling Monitor (ICCM) instrument channels.

There are four RPS channels (2-out-of-4 logic) supplied from four different inverters and two ICCM channels supplied from two of these inverters which provide inputs to the Diverse Scram System (DSS) (2-out-of-2 logic) of ATWS. Two of the four inverters, therefore, supply both one channel of RPS and one channel of ICCM. The licensee's analysis documented that a momentary loss of voltage to one of these loads (RPS or ICCM) would not be a problem for RPS because RPS has three other redundant channels and would still be capable of performing its safety function. The safety function of DSS is to provide backup for RPS in the event of a common-mode failure of all channels of RPS. Since a fault in a single channel of RPS is not a common-mode failure of RPS, RPS would still be capable of performing its safety function, and operation of the ICCM channel effected by the momentary loss of voltage would not be required. The licensee's analysis also concluded that any postulated fault would be cleared by a load breaker prior to tripping the inverter or the 125 volt dc panelboard supplying the inverter. The inspectors had no concerns with the licensee's analysis. This item is closed.

- 4.3 The inspectors reviewed PUP items 75 and 78. These items identified licensee action to review Design Basis Documentation (DBD) against test procedures and calculations to ensure that the ability to meet the design basis was either tested or demonstrated with calculations.

The inspectors selected a sample of electrical DBDs to review the methodology taken by the licensee for this review. The following DBDs were reviewed:

- (1) 120 VAC Instrumentation and Control Power
- (2) 125 VDC SSF Auxiliary Power
- (3) 230 kV Switchyard 125 VDC Power System
- (4) 230 kV Switchyard
- (5) 4 kV Essential Auxiliary Power System
- (6) 4160/600/120V SSF Essential Power System
- (7) Keowee Emergency Power
- (8) Lee Emergency Power System
- (9) Keowee 125 VDC Power System
- (10) 250 VDC Auxiliary Power System

The inspector reviewed the testing and calculations identified in the DBD Testing/Calculation Matrix for each DBD. The design basis requirements were identified with the relevant calculation and/or test procedures to document the testing or calculation which demonstrated the ability of the system to meet the design basis requirements.

The inspector considered the methodology for cross referencing the testing and calculation to the design basis requirement as adequate. The inspector did not review the test procedures for adequacy of scope or procedural content.

- 4.4 The inspector reviewed PUP item 85. This item was identified as a PUP item to resolve a problem with the Keowee 125 VDC breaker settings and drawing discrepancies. The licensee identified that various Keowee 125 VDC Distribution Center load breaker types were different than those shown on one-line diagrams and vendor drawings. Additionally, breaker coordination analysis has revealed that coordination could be significantly improved by increasing battery breaker and tie-breaker instantaneous settings to the HI setting.

The inspectors reviewed the licensee actions taken for this PUP item. Minor modification OE-8047 was being implemented to revise drawings and change breaker settings to address the identified discrepancies. The actions were being tracked under PIP NO. 0-094-1655 and 2-093-0438. The inspectors reviewed the scope of the corrective actions identified in the PIPs and the minor modification. The actions were adequate to address the concerns. This item was closed.

5. Review of Inspector Followup Item 93-02-04: EDSFI Items identified for further NRC Review

IFI 93-02-04 identified various items during the EDSFI for additional NRC review. This IFI was closed in NRC inspection report (IR) 50-269, 270, 287/94-26. This item was closed because no corrective actions were required by the licensee. However, NRC review of these items was not complete. The specific items below will be addressed as additional NRC reviews are completed. Therefore, this item is reopened as IFI 95-16-01 Followup EDSFI Open Issues.

Item 1: (page 25) The SSF make-up pump is rated at 29 gpm. TS 3.1.6.9 allows leakage not exceeding 30 gpm.

Item 2: (page 12) The MFBMP logic is designated as non-safety related. The licensee basis for this designation is (1) during a LOOP only DBE there is no established time period necessary for automatic power restoration and (2) during a LOCA the EPSL would automatically restore power to the bus.

Item 3: (page 15) The feeder cables for the switchyard battery chargers are non-safety related and the chargers are load shed during a LOOP. TS requires the battery chargers be operable for the switchyard batteries to be operable. The licensee considers the battery chargers to be safety related. The basis for designating the feeder cables as non-safety related is that manual action in the switchyard could be taken to operate switchyard breakers if the switchyard batteries are unavailable.

Item 4: (page 23) The licensee does not analyze smart failures within control systems when analyzing for single failure. This item was identified in regard to the voltage regulator but captured a broader issue applying to Oconee implementation of single failure. (Finding 5.a is related)

Item 5: (page 25) The definition of single failure and how it is applied in reference to the 230 kV switchyard was questioned. The team identified that the licensee did not consider a failure concurrent with the initiating event in their single failure analysis in regard to the 230 kV switchyard as detailed in the FSAR. The licensee considers part of the switchyard to be on-site even though the UFSAR analyzes part of the off-site system. The team considered it to be off-site until isolated by the switchyard logic and that a single failure should be considered with the initiating LOCA/LOOP.

Item 6: (page 22) The team questioned the licensee's conformance to the single failure criteria as stated in the UFSAR. Section 8.3.1.2 of the UFSAR states " The basic design criteria of the entire emergency power system of a nuclear unit, including the generating sources, distribution equipment, and controls is that a single failure of any component, passive or active, will not preclude the system from supplying emergency power when required. The team found the licensee had not fully analyzed the controls consistent with this requirement specifically in regard to the governor control systems. (Finding 4.a and 5.a are related.)

## 6. Exit Meeting

The inspection scope and results were summarized on July 14, 1995, with those individuals indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection findings. There was no dissenting comments received from the licensee. Proprietary information is not contained in this report.

Items opened/closed in this report Inspection Report IFI 95-16-01,  
Followup of Open EDSFI Issues (IFI 93-02-04).

7. Acronyms and Abbreviations

CFR	Code of Federal Regulations
ECCS	Emergency Core Cooling System
EDSFI	Electrical Distribution System Functional Inspection
FSAR	Final Safety Analysis Report
IFI	Inspector Follow-up Item
IP	Inspection Procedure
IR	Inspection Report
kA	Kiloamperes
kV	Kilovolts
KVA	Kilo- Volt- Amperes
LOCA	Loss of Coolant Accident
MCC	Motor Control Center
MVA	Mega Volt Amperes
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
MW	Mega-Watts
PIP	Problem Investigation Process
PUP	Power Upgrade Project
SSF	Safe Shutdown Facility
TI	Temporary Instruction
V	Volts
VAC	Volts Alternating Current
VDC	Volts Direct Current
VPC	Volts Per Cell