P. Skinner
Oconee

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

JAN 09 1991

MEMORANDUM FOR: Ronald Lloyd
Diagnostic Evaluation and Incident
Investigation Branch
Office for Analysis and Evaluation
of Operational Data

FROM: Ken E. Brockman, Chief
Projects Section 3B
Division of Reactor Projects

SUBJECT: PLANT SPECIFIC ACTIONS FROM THE INVESTIGATION OF THE MARCH 20, 1990 INCIDENT AT VOGTLE UNIT 1 (NUREG-1410)

Enclosed is a summary of each of the actions completed by Region II to resolve the plant-specific issues which were identified by the EDO in his July 20, 1990 memorandum. As of this date, the Region has completed all planned activities.

Enclosures 2-8 are copies of each of the reports/memorandums/etc. (applicable sections only) which documented IIT follow-up activities. These documents should provide you with all of the information needed to establish the historical package which is needed to ensure that all requirements have been completed and can be substantiated.

If you need any additional information, please contact me (FTS 841-6299) or Mr. Alan R. Herdt, Chief, Projects Branch 3 (FTS 841-5583).

Ken E. Brockman

Enclosures:
1. Plant-Specific Actions from NUREG-1410
2. Georgia Power Letter dated April 9, 1990
3. USNRC Letter to Georgia Power dated April 12, 1990
4. USNRC Report 50-424,425/90-25
5. USNRC Report 50-424,425/90-28
6. USNRC Report 50-424,425/90-29
7. USNRC Report 50-424/OL-90-03
8. AEOD Memorandum to Region II dated August 8, 1990

cc w/encls: (see page 2)

A/10

cc w/encls (cont'd):
A. R. Herdt, DRP, RII
P. Skinner, DRP, RII
D. Hood, PD II-3, NRR

cc w/o encls:
D. B. Matthews, PD II-3, NRR
L. A. Reyes, DRP, RII

Georgia Power Company
333 Piedmont Avenue
Atlanta, Georgia 30308
Telephone 404 526 3195

Mailing Address
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201
Telephone 205 868 5581

Enclosure 2

April 9, 1990

W. G. Hairston, III
Senior Vice President
Nuclear Operations

ELV-01516
0012

Docket No. 50-424

U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N. W.
Atlanta, GA 30323
ATTN: Mr. S. D. Ebneter

Dear Mr. Ebneter:

VOGTLE ELECTRIC GENERATING PLANT
CONFIRMATION OF ACTION LETTER

On March 20, 1990, a site area emergency was declared due to a loss of offsite power concurrent with a loss of onsite emergency diesel generator capability. Following the event, GPC received a Confirmation of Action Letter dated March 23, 1990 concerning certain actions we were taking. We have reviewed the March 20th event and the appropriate corrective actions necessary for entry into Mode 2 have been accomplished. Therefore, we are requesting approval to return Unit 1 to Mode 2 and subsequent power operation. The following discussion provides justification for this request.

In accordance with Vogtle Electric Generating Plant procedures, an event review team has investigated the events leading up to and following the site area emergency. The event review team has presented the results of it's review to management and those recommendations considered important for continued safe plant operation have been implemented. These include establishment of a management policy on control and operation of vehicles (see attached letter from George Bockhold to site personnel); upgrading of emergency notification network communications (see attached letter from George Bockhold to Emergency Directors and Communicators); retesting and calibration of both Unit 1 emergency diesel generator control systems; temporary barricades to prevent unnecessary entry into low voltage switchyard areas; and communications of immediate corrective actions related to operations to licensed operators.

In addition, the event review team report also contains a number of longer-term recommendations which require additional management review and evaluation. These include the sequencing of outage activities; plant conditions during mid-loop operations; post-maintenance diesel functional testing; emergency notification system upgrades; changing diesel generator control logic; and re-evaluating the duties and responsibilities of the Emergency Director.

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Georgia Power

U. S. Nuclear Regulatory Commission
Region II
ELV-01516
Page Two

The most significant occurrence during the event of March 20, 1990, involved the failure of Diesel Generator (DG) 1A to remain running to support shutdown cooling. Georgia Power Company, utilizing utility and vendor technical experts has investigated the DG failure and has determined the following:

a. During bench testing, all three jacket water temperature switches were found to be set high during the DG maintenance inspection in early March 1990 (by approximately 6-10 degrees F above the setpoint). All three were adjusted downward using a calibration technique that may have differed from that previously used.

b. Following the March 20 event, all three switches were again bench tested. Switch TS 19110 was found to have a setpoint of 197 degrees F which was approximately 6 degrees F below its previous setting. Switch TS 19111 was found to have a setpoint of 199 degrees F which was approximately the same as the original setting. Switch TS 19112 was found to have a setpoint of 186 degrees F which was approximately 17 degrees F below the previous setting and was readjusted. Switch TS 19112 also had a small leak which was judged to be acceptable to support diagnostic engine tests and was reinstalled.

c. During the subsequent test run of the DG on March 30, one of the switches (TS 19111) tripped and would not reset. This appeared to be an intermittent failure because it subsequently reset. This switch and the leaking switch (TS 19112) were replaced with new switches. All subsequent testing has been conducted with no additional problems.

d. The Unit 1 jacket water temperature switches have been recalibrated with the manufacturer's assistance to ensure a consistent calibration technique.

e. Subsequent testing indicated that the diesel annunicator indication of March 20, 1990 is reproduced on a high jacket water temperature trip.

f. A test of the jacket water system temperature transient during engine starts was conducted. The purpose of this test was to determine the actual jacket water temperature at the switch locations with the engine in a normal standby lineup, and then followed by a series of starts without air rolling the engine to replicate the starts of March 20. The test showed that jacket water temperature at the switch location decreased from a standby temperature of 163 degrees F to approximately 156 degrees F and remained steady.

Georgia Power

U. S. Nuclear Regulatory Commission
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Page Three

g. Since March 20, 1990, GPC has performed numerous sensor calibrations (including jacket water temperatures), extensive logic testing, special pneumatic leak testing, and multiple engine starts and runs under various conditions. Since March 20, the 1A DG has been started 18 times, and the 1B DG has been started 19 times. No failures or problems have occurred during any of these starts. In addition, an undervoltage start test without air roll was conducted on April 6, 1990 and the 1A D/G started and loaded properly.

Based on the above facts, we have concluded that the jacket water high temperature switches were the most probable cause of both trips on March 20, 1990.

In addition, the following actions have been or are being implemented to ensure a high state of diesel reliability.

1. Operators are being trained prior to their next shift to ensure that they understand that an emergency reset will override the high jacket water temperature trip. Alarm response procedures will be revised to address emergency reset functions prior to April 30, 1990.

2. The undervoltage start feature of the Unit 1 DGs has been modified such that the non-essential engine trips are bypassed. However, alarms are still provided to inform the operators of off normal conditions. (This change will be implemented on Unit 2 prior to April 30, 1990.)

3. GPC is evaluating the possibility of a design change and Technical Specification change to delete the jacket water high temperature trip as an essential engine trip.

4. GPC has reviewed air quality of the D/G air system including dewpoint control and has concluded that air quality is satisfactory. Initial reports of higher than expected dewpoints were later attributed to faulty instrumention. This was confirmed by internal inspection of one air receiver on April 6, 1990, the periodic replacement of the contol air filters last done in March, 1990 which showed no indication of corrosion and daily air receiver blowdowns with no significant water discharge.

5. Based on discussions with the NRC in Atlanta on April 9, 1990, GPC will finish reviewing the event review team's long term recommendations and will transmit a summary and schedule of the actions taken or to be taken to the NRC by May 15, 1990. The administrative procedures that specify control of vehicles in the perimeter area will also be revised by May 15.

Georgia Power

U. S. Nuclear Regulatory Commission
Region II
ELV-01516
Page Four

6. GPC will continue to work with the IIT and an independent lab to evaluate the instruments currently under quarantine. Upon completion of the the lab test, calibration procedures will be revised as necessary to ensure consistent performance.

Completion of these investigations, reviews, tests and corrective actions justify GPC's determination that the DG's are operable. GPC will continue to work with the Transamerica DeLaval Incorporated Owners Group to improve DG reliability. GPC will also review possible improvements to protective instrumentation and controls.

Based on the above discussion, we have completed the appropriate corrective actions necessary to safely operate the unit. We request NRC approval to allow Unit 1 to return to operation.

Should you have any questions, please inquire.

Sincerely,

W. G. Hairston, III

WGH,III/NJS/gm

Attachment

xc: Georgia Power Company
Mr. C. K. McCoy
Mr. G. Bockhold, Jr.
Mr. R. M. Odom
Mr. P. D. Rushton
NORMS

U. S. Nuclear Regulatory Commission
Document Control Desk
Mr. T. A. Reed, Licensing Project Manager, NRR
Mr. R. F. Aiello, Senior Resident Inspector, Vogtle

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

K. Brockman

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Docket No. 50-424
License No. NPF-68

Enclosure 3

Georgia Power Company
ATTN: Mr. W. G. Hairston, III
Senior Vice President -
Nuclear Operations
P. O. Box 1295
Birmingham, AL 35201

Gentlemen:

SUBJECT: COMPLETION OF CONFIRMATION OF ACTION LETTER COMMITMENT

In a letter from the NRC to Georgia Power Company (GPC), subject "Confirmation of Action letter," dated March 23, 1990, certain matters were agreed to be completed prior to Vogtle, Unit 1, reattaining criticality. Additionally, your commitments concerning the needs and requirements of the Incident Investigation Team dispatched to review the March 20, 1990. loss of vital AC power event on Unit 1, were delineated. This letter confirms the satisfactory resolution of item number 1 and documents the Regional Administrator's concurrence that appropriate corrective actions have been taken and the plant can safely return to operation.

On April 9, 1990, Georgia Power Company briefed NRC management on their event critique results and the short- and long-term corrective actions they plan to implement. These items were specified in a letter from GPC to the NRC, dated April 9, 1990, and included additional items which GPC has committed to submit to the NRC.

Based upon the information provided by GPC and the short-term actions which have been implemented, Georgia Power Company is authorized to return Unit 1 to Mode 2, attain criticality, and proceed to subsequent power operation. Items 2-5 of the March 23, 1990, Confirmation of Action Letter remain applicable and are not relieved by this letter.

If your understanding differs from that set forth above, please call me immediately.

Sincerely,

Stewart D. Ebneter

Stewart D. Ebneter
Regional Administrator

CAL-50-424/90-01

cc: (See page 2)

A 8904240435

cc: IIT Leader
NRC Office Directors
Regional Administrators

R. P. McDonald
Executive Vice President-Nuclear
Operations
Georgia Power Company
P. O. Box 1295
Birmingham, AL 35201

C. K. McCoy
Vice President-Nuclear
Georgia Power Company
P. O. 1295
Birmingham, AL 35201

G. Bockhold, Jr.
General Manager, Nuclear Operations
Georgia Power Company
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Waynesboro, GA 30830

J. A. Bailey
Manager-Licensing
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Ashmore
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D. Kirkland, III, Counsel
Office of the Consumer's
Utility Council
Suite 225, 32 Peachtree Street, NE
Atlanta, GA 30302

(cc cont'd - see page 3)

cc: (Continued)
Office of Planning and Budget
Room 615B
270 Washington Street, SW
Atlanta, GA 30334

Office of the County Commissioner
Burke County Commission
Waynesboro, GA 30830

J. Leonard Ledbetter, Director
Environmental Protection Division
Department of Natural Resources
205 Butler Street, SE, Suite 1252
Atlanta, GA 30334

Attorney General
Law Department
132 Judicial Building
Atlanta, GA 30334

State of Georgia

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

NOV 21 1990

Enclosure 4

Docket Nos. 50-424, 50-425
License Nos. NPF-68, NPF-81

Georgia Power Company
ATTN: Mr. W. G. Hairston, III
Senior Vice President -
Nuclear Operations
P. O. Box 1295
Birmingham, AL 35201

Gentlemen:

SUBJECT: NRC INSPECTION REPORT NOS. 50-424/90-25 AND 50-425/90-25

This refers to the Nuclear Regulatory Commission (NRC) inspection conducted by Messrs. B. Bonser, R. D. Starkey and P. Balmain on September 29 - October 26, 1990. The inspection included a review of activities authorized for your Vogtle facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed inspection report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

The enclosed Inspection Report identifies activities that appeared to violate NRC requirements but are not cited; therefore, no response is required for these items.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

Alan R. Herdt

Alan R. Herdt, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Enclosure:
Inspection Report

cc w/encl: (See page 2)

9012180027

Mode 5 or unnecessarily defueling the reactor. As compensatory action, the licensee ensured that RCS temperature was less than 115 degrees F, that both trains of RHR were operable, and that water level in the reactor cavity was at least 23 feet above the reactor vessel flange, prior to commencing the test. In addition, the licensee felt the waiver was not safety significant because TS 3.9.8.1 already contained a footnote which allowed removal of the RHR train from service for up to 1 hour per 8-hour period during the performance of core alterations in the vicinity of the reactor vessel hot legs. The waiver of compliance was granted, the surveillance test was performed with satisfactory results and one train of RHR was returned to shutdown cooling mode within 1 hour on October 15, 1990.

9. Followup of Events

After the March 20, 1990, Site Area Emergency, the Resident Inspectors were tasked with followup of certain licensee corrective actions. The specific corrective actions are as follows: (1) The licensee has written a site specific Safety Manual which includes the requirement, Section VII - Mobile Equipment, of a flagman for any vehicle larger than a pick-up truck when operating in reverse. General Employee Training, lesson plan GE-LP-00116-15-C, was revised to include training on conditions when a flagman is required. (2) Procedures 20407-C, Maintenance Conduct of Operations added a step that requires that welding machines and other materials shall be staged at the East and West ends of the turbine building, whenever possible, to avoid traffic in the low voltage switchyard. (3) Licensed operator requalification training incorporated additional training on diesel generator sequencer operation. All pertinent licensed operator initial training lesson plans will be revised by the end of 1990 to reflect this additional sequencer training. On March 23, 1990, an entry was made in the Control Room Shift Briefing Book to explain operator actions to be taken when a situation requires a sequencer reset. (4) Procedures 10001-C, Logkeeping and 00057-C, Event Investigation, were revised to include steps concerning proper acknowledgement and recording of annunciators prior to resetting those annunciators.

10. Exit Interview (30703)

The inspection scope and findings were summarized on October 26, 1990, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

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

K. Brockman
Scott

DEC 13 1990

Enclosure 5

Docket Nos. 50-424, 50-425
License Nos. NPF-68, NPF-81

Georgia Power Company
ATTN: Mr. W. G. Hairston, III
Senior Vice President -
Nuclear Operations
P. O. Box 1295
Birmingham, AL 35201

Gentlemen:

SUBJECT: NOTICE OF VIOLATION
(INSPECTION REPORT NOS. 50-424/90-28 AND 50-425/90-28)

This refers to the Nuclear Regulatory Commission (NRC) inspection conducted by R. Bonser on October 27 - November 23, 1990. The inspection included a review of activities authorized for your Vogtle facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed inspection report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of this inspection, certain of your activities appeared to be in violation of NRC requirements, as specified in the enclosed Notice. We are concerned about the violation because both of the failures to follow procedure led to Engineered Safety Feature (ESF) actuations. We note that you have recognized procedural compliance as a significant problem and are taking steps to reduce the number of errors. Both of the inadvertent actuations of safety related equipment, however, unnecessarily placed the plant in an unplanned configuration. Fortunately, neither instance led to unsafe operation.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. In your response, you should document the specific actions taken and any additional actions you plan to prevent recurrence. After reviewing your response to this Notice, including your proposed corrective actions and the results of future inspections, the NRC will determine whether further NRC enforcement action is necessary to ensure compliance with NRC regulatory requirements. In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosures will be placed in the NRC Public Document Room.

The response directed by this letter and the enclosures are not subject to the clearance procedures of the Office of Management and Budget issued under the Paperwork Reduction Act of 1980, PL 96-511.

9012270077

Should you have any questions concerning this letter, please contact us.

Sincerely,

for Alan R. Herdt, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Enclosures:
1. Notice of Violation
2. Inspection Report

cc w/encls:
R. P. McDonald
Executive Vice President-Nuclear
Operations
Georgia Power Company
P. O. Box 1295
Birmingham, AL 35201

C. K. McCoy
Vice President-Nuclear
Georgia Power Company
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General Manager, Nuclear Operations
Georgia Power Company
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Waynesboro, GA 30830

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Manager-Licensing
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Office of Planning and Budget
Room 615B
270 Washington Street, SW
Atlanta, GA 30334

(cc w/encls cont'd - see page 3)

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

Enclosure 6

Report Nos.: 50-424/90-29 and 50-425/90-29

Licensee: Georgia Power Company
P.O. Box 1295
Birmingham, AL 27602

Docket Nos.: 50-424 and 50-425 License Nos.: NPF-63 and NPF-81

Facility Name: Vogtle 1 and 2

Inspection Conducted: December 3 - 7, 1990

Inspector: R. Aiello for L. Mellen 12/17/90
L. Mellen, Team Leader Date Signed

NRC Team Members: R. Aiello
D. Starkey

Approved by: L. Watson 12/17/90
L. Watson, Chief Date Signed
Operational Programs Section
Division of Reactor Safety

SUMMARY

Scope:

This was a special announced training inspection. Its purpose was to verify that the training related corrective actions for the March 20, 1990, Loss of Vital AC Power and the Residual Heat Removal System during Mid-Loop Operations event were technically adequate and that changes would preclude the occurrence of similar events.

Results:

The overall assessment concluded that with few exceptions the licensee has aggressively pursued the training aspects related to the March 20, 1990, Loss of Vital AC Power and the Residual Heat Removal System during Mid-Loop Operations event. The licensee went beyond the original commitments and recommendations of NUREG 1410 by including lessons learned in applicable training areas.

One area that was incomplete was the formalization of the methodology required to close the Containment Equipment Hatch during Loss of Offsite Power and the subsequent formalization of the required training. This will be completed prior to the next refueling outage.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*H. Beacher, Senior Plant Engineer
B. Beasley, Manager of Outages and Planning
*S. Chesnut, Manager Technical Support
*C. Christiansen, SAER Supervisor
*S. Driver, Plant Training Supervisor
*T. Green, Assistant General Manager Plant Support
H. Handfinger, Manager of Maintenance
*K. Holmes, Manager of Training and Emergency Preparedness
D. Huyck, Acting Security Manager
*E. Kozinsky, Operations Superintendent - Support
*G. McCarley, ISEG Supervisor
*R. Odom, NSAC Supervisor
*J. Roberts, Emergency Preparedness Coordinator
*D. Scukanec, Operations Training Support
*J. Swartzwelder, Manager Operations

Other licensee employees contacted included engineers, technicians, operators, trainers, and office personnel.

NRC Resident Inspectors

*B. Bonser, Senior Resident Inspector
*P. Balmain, Resident Inspector

*Attended exit interview on December 7, 1990.

Appendix A contains a list of abbreviations used in this report.

2. Training Items Identified in NUREG-1410 (41500, 3c-4)

The inspectors reviewed the licensee's corrective actions for training related deficiencies identified in NUREG-1410, Loss of Vital AC Power and the RHR System During Mid-Loop Operations, at Vogtle Unit 1 on March 20, 1990. The specific items with the licensee's corrective actions or plans as follows:

a. The NUREG stated the controls over fuel and lubricants trucks conducting routine operations in the switch yard were deficient. In the letter to the NRC dated May 14, 1990, the licensee committed to require the use of flagmen for backing large trucks.

The inspectors verified that GET was revised to include the use of flagmen. Additionally, the licensee committed to revise security officer training to assure safe vehicle operations. The inspectors reviewed revisions to the security training program which defined vehicle escort duties. The scope of this training revision adequately covered the events described in NUREG 1410.

b. The NUREG stated that industry provided guidance for control and precautions for work on electrical equipment had not been incorporated into Vogtle procedures.

The inspectors reviewed the training department's evaluation process for inclusion of industry guidance on electrical issues in the training program. The training department reviewed and documented their evaluation and disposition of industry electrical guidance. The licensee's review adequately included industry guidance in the training program.

c. The NUREG stated that the scheduling of safety bus maintenance during mid-loop operations was not properly analyzed.

The licensee revised procedure 18019-C to include various RCS and containment conditions present during either an outage or a LOSP event. The procedure contained two parts. The first part was applicable in Mode 5 and the second part was applicable in Mode 6. The inspectors' review indicated that LOSP conditions were specified only when the plant was in Mode 4 or Mode 5. LOSP conditions were not clearly addressed in Mode 6 with water level above the RV flange. Part "B" (Mode 6) would transition to part "A" (Mode 5) only if water level was at or below the RV flanges. Procedure 18019-C was deficient in that guidance was not specified in part "A" for transition to part "B" when conditions for "B" were satisfied. Furthermore, part "B", paragraph B.15 instructed the operator to establish an RCS feed path from the RWST without the benefit of using attachment "A" (RWST Gravity Drain to RCS). Part "A" step A.21 did not address that the RV head could have been removed due to transition from part "B". Step A.11 lacked explicit detail in defining when the RCS was intact or considered open. When the procedure has been evaluated the licensee indicated that any corrections that result from this evaluation will be reviewed for inclusion in the licensee's requalification program. Additionally, any required change would be disseminated through the operations required reading program.

The inspectors also reviewed SCS letter dated June 15, 1990. This letter addressed REA VG-9011, Loss of Decay Heat Removal Phase III. The time-to-boil curves were adjusted to address a less than or equal to 100 degrees F starting point for accidents.

The proposed corrective actions for this item are adequate.

d. The NUREG stated that the failure of Calcon jacket water temperature trip sensors were not properly evaluated.

The licensee wrote a DCP to bypass the Calcon jacket water temperature trip sensors except during surveillance testing. The inspectors reviewed TLP RQ-H0-61994-001, which discussed the failure mechanisms for the Calcon sensors and the operational effects of the DCP and the resulting TS change. The training for this item was addressed adequately.

e. The NUREG stated that there was a need to consider further analysis regarding the possibility that reflux cooling may start and stop as a result of thermohydraulic effects. Additionally, the NUREG stated that the potential for misleading instrument indications should be addressed.

TLP RQ-LP-61994-00, Vogtle Loss Of Power - NUREG 1410, Revision 0, discussed the factors that could affect the accuracy of RCS level indicators when operating at mid-loop. The TLP also discussed how and when reflux cooling was available to cool the RCS, and how feed and bleed of the RCS could be used to cool the RCS. The TLP also addressed the possibility that cooling flow could bypass the core during once through cooling if the wrong drain point was used, and other factors that determine the amount of water that could be gravity drained from the RWST to the RCS for cooling flow.

f. The NUREG stated that the procedures did not address operation without the RHR system in mid-loop conditions with LOSP. This item is addressed in paragraph 3, item s.

g. The NUREG stated that the procedures did not address the rapid reestablishment of primary containment with equipment or personnel air locks open. This item is addressed in paragraph 3, item s.

h. The NUREG stated that the closure of the reactor coolant system was not formally addressed in procedures.

The inspectors reviewed Procedure 18019-C, Loss of RHR, Mid-Loop LOCA, and Procedure 12008-C, Mid-Loop Operations. There was no specific guidance for reestablishing RCS integrity in the event a loss of RHR had occurred. However, the procedure directed the operator to establish a stable cooling configuration and to consult the TSC for subsequent recovery actions. The licensee stated the procedure would be revised to reinforce the importance of maintaining an adequate RCS vent path. This procedure revision will be reviewed for inclusion into the licensee's requalification program. This change will also be disseminated through the operations required reading program. Training for this item was adequately addressed.

i. The NUREG stated that the licensee's procedures did not adequately address communications with LOSP. This item is addressed in paragraph 4.

j. The NUREG stated that the licensee's procedures did not adequately address maintaining RCS gravity fill capabilities, including the vent path.

The inspectors reviewed Procedure 18019-C, Loss of RHR, Mid-Loop LOCA, and Procedure 12008-C, Mid-Loop Operations. Procedure 18019-C provided guidance for the establishment of an RCS feed and bleed path in the event RCS temperature should rise above 185 degrees F. This procedure also provided guidance for containment closure in Mode 5 when RHR could not be restored in a timely manner and for Mode 6 when directed to transition to part "A". Procedure 12008-C listed specific guidance for maintaining an RCS vent path. Training on this procedure was included in normal requalification training. Training for this item was adequately addressed.

k. The NUREG stated that procedures did not adequately direct the operators to use existing bus connections and other available sources to restore power to safety buses.

The inspectors reviewed procedure 13417, Main and Unit Auxiliary Transformer Backfeed to the 13.8 kV and 4160 V Busses. This procedure was included in requalification training and adequately accomplished this task.

l. The NUREG stated that precursor information was available to make the incident preventable.

In the summer of 1990, the licensee provided root cause investigation training to approximately 36 managers/supervisors. The HPES course was a root cause investigation system developed to improve overall plant operations by improving human reliability through the correction of the conditions that cause human performance problems. The HPES system attempted to identify the causes that led to the human error or inappropriate action. Training for this item was adequately addressed.

m. The NUREG stated that there was inadequate control of personnel and work activities to assure that workers were not removed from safety-related restoration work due to communications errors.

The inspectors conducted a review of Procedure 91002-C, Emergency Notifications. Check list 1 (plant page announcement check list) had been revised from a cumbersome set of responsibilities and immediate and supplementary actions to a streamlined four part check list. This check list had been explicitly outlined to guide the ED through the necessary plant page announcements. The check list also included optional announcements that could be made after plant conditions have been fully accessed. This check list was used and satisfactorily tested during the August 1, 1990 NRC emergency training exercise. Training for this item was adequately addressed.

n. The NUREG stated that the notification of authorities during events was inadequate. This item is addressed in paragraph 4.

o. The NUREG stated that there was an incomplete understanding of primary and backup emergency notification systems. This item is addressed in paragraph 4.

p. The NUREG stated that ambiguous guidance was provided for the classification of events that occur during cold shutdown. This item is addressed in paragraph 3, item f.

q. The NUREG stated that there was an inadequate technical understanding of the load sequencer and EDG control system.

The inspectors reviewed TLP RQ-H0-61994-001, which addressed the sequencer operation during the Loss of Vital AC Power and the RHR System during Mid-Loop Operations event. The training material addressed the problems encountered with the load sequencer and EDG control system. The appropriate methods for operation were contained in the training material.

r. The NUREG stated that the annunciator panel reset practices were inadequate.

The inspectors reviewed TLP RQ-H0-61994-001, which addressed the alarms following an EDG trip. Additionally, the inspectors reviewed the training material and determined that it adequately addressed the annunciator panel.

s. The NUREG stated that TS for cold shutdown and refueling operations were not developed based on a comprehensive safety analysis. Also, the lack of a comprehensive basis provides an opportunity for plant staffs to overlook conditions, such as events that could lead to uncovering the core.

The licensee was evaluating Mode 5 and Mode 6 TS and their basis. This evaluation will include a review by the Westinghouse Owners' Group for potential generic significance. All TS changes were reviewed by the training department for incorporation into operator initial and requalification training and for inclusion in required reading material. Training for this item was adequately addressed.

t. The NUREG stated progress had been made in implementing improvements in response to Generic Letter 88-17, however, the equipment hatch closure process had not been proceduralized. This item is addressed in paragraph 3, item s.

3. Independent Technical Review of Licensee Identified Deficiencies (41500, 3c-4)

The inspectors reviewed the licensee's internal commitments for the Loss of Vital AC Power and the RHR System during Mid-Loop Operations event and the documentation associated with each commitment. Listed below are the licensee's control numbers for the commitments, a description of the commitments and the associated actions or plans.

a. Commitment 18752: This commitment stated that procedures addressing LOSP should have directions for restarting a tripped EDG and training on the revised procedures should be provided.

There were no EOP or AOP procedures which specifically discuss LOSP. There were, however, ARPs for both units which contain caution statements concerning restarting a tripped EDG. Procedure 17035-1, ARP for ALB 35 On EAB Panel, contained several examples of these caution statements. These procedures were included in requalification training.

The inspectors also reviewed procedure 19100-C, ECA-0.0 Loss of All AC Power. Although this procedure did not address the case when an EDG tripped and must be restarted, it provided guidance when an EDG did not start on a normal manual start. Procedure 19100-C at that point referred the operator to procedure 13145-1, Diesel Generators, which directed the operator to emergency start the EDG using the Emergency Start Button. Specific training on restarting a tripped EDG was covered in TLP RQ-LP-61994-00, Vogtle Loss of Power-NUREG 1410.

b. Commitment 18759: This commitment stated that backup communications should be designated in the appropriate plan/procedures to include check-in intervals when no other means are available.

The inspectors reviewed procedure 91002-C, Emergency Notifications, Revision 17. Check list 2, Directions for Communicators, listed the order of priority for voice circuits and stated that notifications must be made within 15 minutes and follow-up notifications every 30 minutes or when there was a significant change in plant conditions. Communicators were trained on the use of procedure 91002-C.

c. Commitment 18760: This commitment required the site to verify all information for technical accuracy prior to the information being released to the media before the EOF was actuated.

Before the ENC was activated in Waynesboro, news releases would come from the GPC office in Atlanta, GA. GPC would get information from the GOOC. An ENN (per GPC letter dated July 25, 1990 regarding installation of an ENN in the GOOC) and a facsimile (FaxXchange) was added to the corporate office to preclude the site from having to verify the accuracy of technical information. Both the ENN and FaxXchange were used and

tested satisfactorily during the NRC emergency exercise conducted on August 1, 1990. Furthermore, annual retraining was conducted from May 21 - 25 for those personnel assigned to the Vogtle Project ERO. This training consisted of both a Corporate and a Vogtle emergency plan overview. Training for this item was adequately addressed.

d. Commitment 18761: This commitment required all emergency response personnel at the corporate office to receive training in communications system capabilities when the primary communication was changed/reduced. It also stated that procedures should address various means of communication when capabilities have been degraded.

The inspectors reviewed the interoffice correspondence letter dated May 29, 1990 regarding SAE commitment 18761. Emergency response personnel at the corporate office received retraining in the use of available communication systems. The training was conducted at five different intervals from May 21 - 25, 1990. TLP RE-LP-07001-03 discussed alternative communication methods. Included in this discussion were function, backups, locations, activation, and power supplies. Training for this item was adequately addressed.

e. Commitment 18762: This commitment required that plant personnel be assigned the responsibility of communicating with offsite agencies prior to their counterpart/representatives arriving at the EOF.

The inspectors reviewed procedure 91101-C, Emergency Response Organization. Table 2 of that procedure identified the NRC Liaison as the individual who would act as SRS, State, and Burke County Liaison representative until arrival of the designated representative. The licensee personnel designated for this position had received training on their responsibilities. Training for this item was adequately addressed.

f. Commitment 18763: This item required the licensee to review the implementation of emergency plans for action levels based on criteria specified in EPIPs with the emergency directors. This item also required the licensee to investigate applicability of NUMARC EALs to VEGP after the NRC review and comments on NUMARC EAL report.

The inspectors reviewed the licensee's proposed plan for this item. The completed retraining of emergency

directors was scheduled to be completed by September 1991. The completion date was based in part on receipt of NRC approval of both the EPIP revisions and the emergency plan. The proposed corrective actions for this item are adequate.

g. Commitment 18764: This commitment required emergency preparedness to establish a test program for all ERF computer equipment.

The inspectors reviewed procedure 91705-C, Inventory and Testing of Emergency Preparedness Material/Equipment Which Are Not Part Of The Emergency Kits. The procedure required that the testing of the ERF computer shall be performed monthly or more frequently, as deemed necessary by the EPC. Data Sheet Six provided the actual instructions for performing the TSC and EOF ERF computer testing. Personnel designated to perform the testing had received training. Training for this item was adequately addressed.

h. Commitment 18765: This commitment required the managers for operations, training, and EP to hold joint seminars for all ED's to discuss their roles and responsibilities as ED.

The inspectors reviewed TLP RQ-LP-40901, Loss Of Power-Site Area Emergency. The TLP discussed the major duties and responsibilities of the ED, especially those activities that would occur within the first hour of the event. The inspectors determined that the TLP adequately addressed the commitment.

i. Commitment 18779: This commitment was for the procurement of material for the dose assessment computer. It was assigned to the training department for followup; however, it was not training related.

j. Commitment 18780: This commitment required that all ERO personnel keep a detailed log or account of their individual response and major events that occur which will enhance timeline re-creation.

The inspectors reviewed TLP RE-LP-07001-03, Offsite Notifications. This lesson plan included instruction under paragraphs C.1.a and C.3 to maintain a log of events for re-creation of the communication process. Training for this item was adequately addressed.

k. Commitment 18782: This commitment addressed communication between NRC operations personnel and the licensee. The licensee noted that the NRC operations

center was continuously dropped off the bridge circuit during ENS communications. An effort should be made to coordinate with the NRC to contact AT&T for repair.

The inspectors reviewed the comments for commitment 18782. AT&T repaired the emergency notification system in July of 1990. The system was tested and declared operational on July 7, 1990. This item was assigned to the training department for disposition, however, this was not a training item.

l. Commitment 18785: This commitment provided hand held viewers for TSC engineering to use as needed when reviewing drawings in the TSC. This item was assigned to the training department for disposition, however, this was not a training item.

m. Commitment 18788: This commitment provided managers with a list of all fully qualified ERO personnel that may be used in emergency functions.

The General Manager was provided monthly a listing of both qualified and unqualified ERO personnel. An unqualified ERO person was not permitted to participate as a member of the ERO until requalification training was completed. Unqualified ERO personnel were not permitted entry into the PA during an actual emergency or drill. Training for this item was adequately addressed.

n. Commitment 18789: This commitment required maintenance engineering to develop a plan to increase the size of the OSC. This item was assigned to the training department for disposition; however, this was not a training item.

o. Commitment 18791: This commitment revised EPIP 91102-C such that the ED was required to consider the need to inform non ERO personnel on the status/update of the emergency using the plant page system.

The inspectors reviewed procedure 91102-C, Duties Of The Emergency Director, Revision 7. This procedure required that the ED make plant page announcements to keep personnel informed of plant conditions. Training for this item was adequately addressed.

p. Commitment 18940: This commitment required contacting a communications consultant to recommend a reliable simple alerting system to notify offsite agencies.

The licensee purchased a FaxXchange system which permitted simultaneous transmission of the emergency notification to all appropriate offsite agencies. This system was successfully used during the August 1, 1990 emergency drill. Training for this item was adequately addressed.

q. Commitment 18941: This commitment incorporated the importance of the need to make sure that all directions/instructions are clearly understood and passed through the proper chain of command in the lessons learned program for operators.

The inspectors reviewed TLP RQ-LP-40901-00, Loss of Power-Site Area Emergency. One objective of the TLP described the integrated responsibilities that the Shift Superintendent has during an event requiring implementation of the emergency plan. The TLP also discussed the "dual role" responsibility of the ED with respect to plant/reactor safety, and the need to make offsite notifications and communicate with state and local authorities. Lessons learned from ED communications problems were discussed during licensed operator requalification training. Training for this item was adequately addressed.

r. Commitment 18945: This commitment generated a root cause analysis to determine why the EDG failed to start.

The cause of the first trip of the EDG was undetermined due to the large number of alarms at the local EDG panel and because the alarms were reset immediately following the trip. Initial indications, based on the annunciators, were that the most probable cause of the second trip, based on the sequence of alarms received, was low jacket water pressure, though pressure indicated normal following the second EDG start. Subsequent evaluations indicated that the second trip was more correctly based upon the high jacket water temperature, with the root cause attributed to calibration techniques. These probable causes were discussed in the event description portion of TLP RQ-LP-61994-00, Vogtle Loss of Power-NUREG 1410. Training for this item was adequately addressed.

s. Commitment 18959: This commitment provided training for licensed operators on revised procedure(s), i.e., RHR procedure to include the various RCS and containment conditions present during an outage, AOP and UOP. Additionally, training was also required for SROs on mid-loop boiling and cooling mechanism.

The inspectors reviewed TLP RQ-LP-63109-01, Requal Current Events. This TLP provided a periodic update of significant plant modifications and procedural changes. In addition, information from selected operating events was provided to reinforce lessons learned from those events. The applicable portions of the TLP described the method used for powering 1E buses from non-1E busses, described the guidance for mitigation of loss of RHR during modes 4, 5, and 6, and described reportability of Vogtle ESF.

The inspectors reviewed TLP RQ-LP-61994-00, Vogtle Loss of Power-NUREG 1410. The following topics were discussed:

1. A description of the sequence of events that occurred
2. EDG operations
3. Emergency load sequencer
4. RHR cooling mechanisms at reduced inventory
5. RHR operation concerns when operating at reduced inventory

The concerns of this commitment were addressed in this training material.

The inspectors reviewed applicable sections of 12008, Mid-Loop Operations. This procedure implemented administrative controls for operation with the RCS level less than 191 feet. The procedure addressed the requirements for the number of operable EDGs and offsite power sources. The lesson plan stated that the requirements for an offsite power source could be provided by backfeeding a 1E bus from a non-1E bus. This was accomplished using procedure 13417, Main and Unit Auxiliary Transformer Backfeed to the 13.8 kV and 4160 V Busses.

Procedure 12008, Step 4.1.1.a, stated that the containment equipment hatch need not remain closed if a method was provided for closure of the containment equipment hatch without the use of electrically operated equipment for blackout concerns. This was accomplished during the recent Unit 2 refueling outage using an uncontrolled "Desk Top" reference instruction. The "Desk Top" instruction will be replaced with a revision to procedure 27505-C, Opening and Closing Containment Equipment Hatch, which will include steps for manual closure. A specific procedural reference to the "Desk Top" instruction or to a formal procedure for performing this non-routine task was not provided in 12008. The licensee stated that the procedure for

emergency closure of the containment equipment hatch would be formalized and included in the training program. The proposed corrective actions for this item are adequate.

During the 1990 Unit 2 refueling outage the licensee incorporated a DCP for manual closure of the equipment hatch. The design change permitted closure by either an electric or air driven hoist or by manual crank. Four dedicated personnel were stationed near the equipment hatch during mid-loop operation. One of the individuals was on a headset with constant communication to the control room. All personnel dedicated to hatch closure were trained and will be trained for future refueling operations. Part of the training included a video presentation of an actual manual closure of the equipment hatch.

The inspectors reviewed AOP 18019-C, Loss of RHR (Mid Loop LOCA). The procedure referenced procedure 14210 to close the containment equipment hatch; however, this did not provide instructions for closure with loss of all AC. The maintenance instruction for this closure was not specifically addressed. The licensee will consider this along with other containment equipment hatch closure concerns.

The inspectors reviewed procedure number 13145-1, Diesel Generators. Section 4.1.4 had been added to the procedure that addressed the local emergency startup of train A (B) EDG. This change was made near the end of the 1990 requalification cycle, and subsequently was not covered in the 1990 requalification training cycle. This was scheduled to be included in the first session of the 1991 training cycle. The proposed corrective actions for this item are adequate.

t. Commitment 19085: This commitment required an evaluation of the notifications systems, and the recommendation of further improvements.

The inspectors reviewed GPC interoffice correspondence dated May 30, 1990 regarding improvements to the ENS. An evaluation, chaired by the EPC, was performed. A final recommendation to use a simultaneous facsimile (3M FaxXchange) was made. The selection was based on the following criteria:

1) Deliver a one page hard copy of the notification form
2) Deliver to 8 locations within 5 minutes of starting the process

3) Simple to operate
4) Capable of being powered by an UPS

This system had been fully implemented and tested satisfactorily during the NRC emergency exercise conducted on August 1, 1990. Training for this item was adequately addressed.

u. Commitment 19086: This commitment added a corporate extension to the ENN (by July 15, 1990) to provide another means of ensuring the transmittal of accurate information to the corporate office during emergencies.

This item is addressed in paragraph 3, item c.

v. Commitment 19087: This commitment revised procedure 91602-C, Emergency Drills and Exercises, to include the requirement to conduct a full scale assembly and accountability drill as a periodic emergency drill.

The inspectors reviewed 91602-C which included steps that required the conduct of a full scale assembly and accountability drill that will involve participation of all protected area personnel. Additionally, the inspectors reviewed the records for the last three drills performed at Vogtle. These drills contained a full scale assembly and accountability drill that involved the participation of all protected area personnel. The August 1, 1990 drill successfully demonstrated that improvements had been made in personnel accountability. Training for this item was adequately addressed.

w. Commitment 19287: This commitment revised general employee training to address the use of flagmen. See paragraph 5.

4. Follow-up on Training Related Deficiencies from IR 90-16

The following commitments are corrective actions which resulted from the notice of violation delineated in NRC IR 50-424,425/90-16.

a. All Site Emergency Directors had received training on the revised notification procedures, power supplies for emergency telephone communication circuits and the importance of prompt notification of emergencies to offsite government agencies.

The inspectors reviewed TLP RQ-LP-40901-00 and TLP RQ-HO-40901-00. Applicable portions of the TLP included discussions which adequately address the issues

regarding training on the revised notification procedures, communication circuit power supplies and the importance of offsite notification. They are as follows:

1) The emergency director duties as described in the emergency plan
2) The actions taken by the state/local governments, and SONOPCO general office for each emergency action level
3) The letter from Burke County EMA to C.K. McCoy to gain an appreciation for the need to conduct timely, complete offsite communications
4) The integrated responsibilities that the shift superintendent has upon an event requiring implementation of the emergency plan
5) The communication systems, their power supplies, and basic method of operation for each emergency communication system

b. Procedures 91001-C, 91002-C and 91102-C had been revised to bestow priority to Burke County and GEMA for initial notification and to emphasize the responsibility of the ED for notification of offsite agencies.

The inspectors conducted a review of procedures 91001-C, 91002-C, and 91102-C. Procedure 91002-C had been revised to bestow priority to Burke County and GEMA for initial notification. Procedure 91002-C had also been revised to simplify the emergency director notification check list. This procedure had been streamlined to direct the ENN Communicator to establish communications and complete roll call in accordance with step B of check list 2 in procedure 91002-C. This procedure further emphasized that the ED was to be notified immediately should any agency fail to respond. The ED check list in Procedure 91102-C had been revised to emphasize notification of all state/local agencies and the NRC. Data sheet 1 in Procedure 91001-C was revised to ensure adequate logs are maintained to enhance re-creation.

c. A simultaneous facsimile transmission capability has been installed to increase reliability of emergency notification.

On July 16, 1990, a new simultaneous facsimile transmission system was installed. The machine was satisfactorily tested during the NRC annual emergency training exercise conducted on August 1, 1990. Prior to testing, all shift clerks, TSC communicators, and

the document control staff received training on the system's attributes and usage. This training was never documented. However, standing order C-90-10, Emergency Notifications, was in the MCR and stated that the ED shall direct the ENN communicator to telefax a copy of the Emergency Notification check list 2 of Procedure 91002-C to all emergency notification locations prior to beginning notifications.

Training for these items were adequately addressed.

5. General Employee Training (2b-5)

The inspectors reviewed TLP GE-LP-00116-15-C, Annual Badge Retraining/Self Study Training. The TLP included a section which stated that all vehicles so designed or loaded in such a way as to prevent the driver from clearly seeing conditions at the rear of the vehicle must be flagged while backing. In addition, any vehicle larger than a pick-up shall be flagged when operating in reverse. A similar requirement concerning the use of a flagman was included in the VEGP Site Safety Manual.

The Maintenance Continuing Training program included a presentation on mid-loop operations, with a video tape that primarily addressed Diablo Canyon; however, an updated training film will be added that addresses NUREG 1410.

Informal C&HP training was also provided on the implications of NUREG 1410. This training consisted of a brief overview of the events.

Training for these items were adequately addressed.

6. Additional Training Improvements

The inspectors reviewed additional training materials that had been revised as a result of the Loss of Vital AC Power and the RHR System during Mid-Loop Operations event. These materials were revised through a self initiated program which was outside the commitment tracking program. The specific changes are listed below:

a. TLP LO-LP-36101-04-C, MCD: Core Cooling Mechanisms, was revised to include a section on Reflux Cooling during mid-loop operations.

b. TLP LO-LP-34610-04-C, System Response to Selected Accident Conditions, was revised to include a section on Reflux Cooling during mid-loop operations.

c. TLP LO-LP-16701-04-C, Reactor Vessel Level Indication System, was revised to include a section on RCS level monitoring during mid-loop operations.

d. TLP LO-LP-12101-22-C, RHR System, (for licensed and non-licensed operators) was revised to include information on suction line vent valves and mid-loop system operating history.

e. TLP LO-HO-12101-002-C, Loss of RHR - Industry History, included information from GL 87-12 and the draft WOG report on mid-loop operations.

f. TLP LO-LP-60315-06-C, Loss of RHR, was revised to include lessons learned from NUREG 1410.

g. TLP LO-IU-60315-001-C, Respond to Loss of RHR, was revised to include lessons learned from NUREG 1410.

h. TLP LO-LP-11104-06-C, EDG Auxiliaries Lube Oil and Crank Case Ventilation, was revised to include a section on bypassing the low lube oil pressure trip. This revision was included to facilitate post trip operations.

i. TLP LO-LP-11105-10-C, EDG Auxiliaries Jacket Water Cooling System, was revised to include information from NUREG 1410.

j. TLP LO-LP-11201-10-C, EDG Engine Control and Protection, was revised to include additional information on EDG trips. The TLP also included a detailed discussion of operation of the annunciators.

k. TLP NL-LP-11203-10-C, EDG Auxiliaries, (for Outside Area Operators) was revised to include specific information on EDG trips that related to NUREG 1410.

l. TLP NL-LP-11204-10-C, EDG Engine Control and Protection, (for Outside Area Operators) was revised to include specific information on EDG trips that related to NUREG 1410.

m. TLP RO-LP-63107-00, Requal Current Events, included information on the Unit 2 trip following faulty differential relay action.

n. TLP RO-LP-63106-00, Requal Current Events, included information on the manual reset switch for the sequencers.

o. On December 6, 1990, the inspectors observed a segment of PEO refresher training on loss of RHR. The instructor started out by showing a WOG video illustrating RHR vortexing sensitivity with respect to RCS level. This was followed by a discussion on the concept of decay heat and the different methods used for its removal. The instructor then entered a discussion of procedure 18019-C with emphasis placed on RNO local operations from a PEOs perspective. Segments of NUREG 1410 were discussed to enhance PEO awareness regarding the loss of RHR and its subsequent restoration.

7. Action on Previous Inspection Findings (92701, 92702)

(Closed) Unresolved Item 424/88-33-07, Review of Acceptability of the Use of a Single Battery Charger on Class 1E Batteries.

The issue of using a single cell battery charger on safety related batteries was identified at another facility prior to being identified at Plant Vogtle. The licensee has performed evaluations for the use of the chargers and reviewed the use of two safety related breakers to provide separation between the non-safety electrical distribution and the 1E components. The licensee agreed during the previous inspection that the charger would not be used until the evaluation by NRR was completed for the other facility. The evaluation was completed by NRR. The licensee stated that they will either comply with the SER requirements as written or contact NRR for specific exemptions.

8. Exit Interview

The inspection scope and findings were summarized on December 7, 1990, with those persons indicated in paragraph 1. The NRC described the areas inspected and discussed in detail the inspection findings listed below. No proprietary material is contained in this report. No dissenting comments were received from the licensee.

Appendix A

ABBREVIATIONS

AC	Alternating Current
AOP	Abnormal Operating Procedure
ARP	Alarm Response Procedure
DCP	Design Change Package
ED	Emergency Director
EDG	Emergency Diesel Generator
ENC	Emergency Notification Center
ENN	Emergency Notification Network
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EPC	Emergency Preparedness Coordinator
ERF	Emergency Response Facility
ERO	Emergency Response Organization
GET	General Employee Training
GOOC	General Office Operations Center
GPC	Georgia Power Company
HPES	Human Performance Enhancement system
ISEG	Independent Safety Review Group
kV	Kilovolts
LOCA	Loss of Coolant Accident
LOSP	Loss of Off Site Power
NRC	Nuclear Regulatory Commission
NSAC	Nuclear Safety And Compliance
OP	Operational Procedure
OSC	Operations Support Center
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RNO	Response Not Obtained
RWST	Refueling Water Storage Tank
SAE	Site Area Emergency
SAER	Safety Audit And Engineering Review
SCS	Southern Company Services
SRO	Senior Reactor Operator
TLP	Training Lesson Plan
TS	Technical Specifications
TSC	Technical Support Center
UPS	Uninteruptable Power Supply
VEGP	Vogtle Electric Generating Plant
WOG	Westinghouse Owners Group

OFFICIAL

December 24, 1990

Docket Nos. 50-424, 50-425
License Nos. NPF-68, NPF-81

Georgia Power Company
ATTN: Mr. W. G. Hairston, III
Senior Vice President
Nuclear Operations
P.O. Box 1295
Birmingham, AL 35201

Gentlemen:

SUBJECT: NRC INSPECTION REPORT NOS. 50-424/90-29 AND 50-425/90-29

This refers to the Nuclear Regulatory Commission (NRC) inspection conducted by L. Mellen on December 3 - 7, 1990. The inspection included a review of activities authorized for your Vogtle facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of training related corrective action for the March 20, 1990, Loss of Vital AC Power with the RHR System in Mid-Loop Operations event.

Within the scope of this inspection, no violations or deviations were identified.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

(Original signed by T. A. Peebles)

Thomas A. Peebles, Chief
Operations Branch
Division of Reactor Safety

Enclosure:
NRC Inspection Report

cc w/encl:
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cc w/encl cont'd - (See page 3)

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RII:DRS	DRS	RII:DRS	RII:DRP
LMellen	RAiello	LWatson	KBrockman
12/17/90	12/17/90	12/17/90	12/20/90

RII:DRS
TAPeebles
12/24/90

August 23, 1990

Enclosure 1

Georgia Power Company
ATTN: Mr. W. G. Hairston, III
Senior Vice President
Nuclear Operations
P. O. Box 1295
Birmingham, AL 35201

Gentlemen:

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT REQUALIFICATION EXAMINATION REPORT NO. 50-424/OL-90-03

The NRC administered examinations during the weeks of July 23, 1990, and July 30, 1990, to employees of your company who currently hold licenses to operate the Vogtle Electric Generating Plant. At the conclusion of the examination, the examination questions and preliminary findings were discussed with those members of your staff identified in the enclosed report.

Copies of the written examinations and answer keys are included in the report as Enclosure 2.

A requalification program evaluation report is included as Enclosure 3. The evaluation report finds that the Vogtle Electric Generating Plant requalification program is classified as satisfactory.

A Simulator Fidelity Report is provided in this report as Enclosure 4.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and its Enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this examination, please contact us.

Sincerely,

(Original signed by T. A. Peebles)

Thomas A. Peebles, Chief
Operations Branch
Division of Reactor Safety

Enclosures:
1. Examination Report No. 50-424/OL-90-03
2. RO/SRO Examination and Answer Key (RO)
3. Requalification Program Evaluation
4. Simulator Facility Report

cc w/encls: (See Page 2)

9009050052
2PP

cc w/encls. 1, 3, and 4:
G. Bockhold, Jr., General Manager

cc w/encls. 1, 2, 3, and 4:
K. Holmes, Nuclear Training Supervisor

cc w/encl. 1:
State of Georgia

bcc w/encls. 1, 3, and 4:
J Hopkins, NRR
E. Merschoff, DRS
K. Brockman, DRP
B. Bonser, Vogtle Senior Resident Inspector
M. Ernstes, DRS
Operator Licensing Branch, NRR

bcc w/encls. 1, 2, 3, and 4:
Document Control Desk

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

ENCLOSURE 1

EXAMINATION REPORT - 50-424/OL-90-03

Facility Licensee: Georgia Power Company
P. O. Box 1295
Birmingham, AL 35201

Facility Name: Vogtle Electric Generating Plant

Facility Docket Nos.: 50-424 and 50-425

Written and Operating Requalification Examinations were conducted at the Vogtle Electric Generating Plant site near Waynesboro, Georgia.

Chief Examiner: Michael E. Ernstes — Date Signed: 8/20/90

Approved By: John F. Munro, Chief
Operator Licensing Section 1
Division of Reactor Safety — Date Signed: 8/21/90

SUMMARY

Examinations were conducted during the weeks of July 23, 1990, and July 30, 1990.

Written and operating examinations were administered to six Reactor Operators and 11 Senior Reactor Operators. All six of the Reactor Operators passed the examination. Ten of the 11 Senior Reactor Operators passed the examination.

9108290088

REPORT DETAILS

1. Facility Employees Attending Exit Meeting:

   G. Bockhold, Jr., General Manager
   T. Greene, Assistant General Manager
   K. Holmes, Plant Training and Emergency Planning Manager
   R. Dorman, Operations Superintendent of Training
   J. Swartzwelder, Manager, Operations
   J. Hopkins, Operations Department
   J. Roberts, Emergency Preparedness Supervisor
   C. Stinespring, Manager, Plant Administration
   H. Handfinger, Manager, Maintenance
   E. Dannemiller, Manager, Nuclear Security
   F. Ealick, Engineering Supervisor
   J. Williams, Supervisor, Plant Engineering
   R. LeGrand, Manager, HP/Chemistry
   H. Beacher, Senior Plant Engineer
   E. Kozinsky, Operations Superintendent

2. Examiners:

   *M. Ernstes, NRC, Region II
   M. Morgan, NRC, Region II
   M. Stein, Sonalysts
   K. Parkinson, Sonaylsts

   *Chief Examiner

3. Exit Meeting:

   At the conclusion of the site visit, the examiners met with representatives of the plant staff to discuss the results of the examinations.

   The licensee did not identify as proprietary any material provided to or reviewed by the examiners.

ENCLOSURE 3

REQUALIFICATION PROGRAM EVALUATION REPORT

Facility Generated Reference Material

The reference material supplied by the licensee was reviewed and determined to be adequate to support the examination. The licensee supplied a sampling plan describing the requalification cycle and the selection process used for the topics to be included in the examinations. Proposed written, walk-through, and dynamic simulator examinations derived from this sample plan, were reviewed by the NRC exam team.

The validation times for questions on the static simulator exam and open reference exam were revised during the prep week to more accurately reflect the amount of time which a competent operator would require to correctly answer the question. This resulted in adding more test items to each exam.

Some of the JPMs were revised in order to better define the critical steps. It is important to do this prior to the exam administration. In one instance a step was changed from critical to non-critical after the exam had been administered. Although the change was a valid one, it resulted in a change to the pass/fail grade for one operator. There were also modifications made to steps which fit the definition of a critical step, but had not been designated as such.

Many of the initiating cues were changed to delete information that would not be available to the operators under actual conditions. This included information such as what procedure or step number should be used or cues that a key would be needed for a certain valve.

There were several JPMs which would be better evaluated on the dynamic simulator portion of the exam. These JPMs entailed responding to an imminent instrument failure. Most of these type JPMs were deleted from the exam during the prep week.

The NRC selected some JPMs from outside the sample plan and also wrote three JPMs to be included in the exam. The success ratio on these JPMs was relatively low. One of the NRC developed JPMs, 60316-001-01, directed the operator to step 7c of 18020-C and determine "equal to or greater than 9000 gpm" flow rate on FIT-1720A. This meter is calibrated from 0 - 100 percent with no means to determine where 9000 gpm would be on this meter. It was decided to cue the operator that CCW flow was greater than 9000 rather than penalize him for what is a problem with the procedure. The facility has initiated a change to the procedure to correct this problem.

There were two questions asked with each JPM. Weaknesses associated with the JPM questions included:

- Many of the JPM questions were of a yes/no type or required only two or three words to answer. These questions need to be revised to include the use of higher cognitive skills.

- The small number of questions associated with the JPMs resulted, on occasion, in verbatim repeat back of the previously released answers and tended not to discriminate. The number of questions associated with each JPM needs to be expanded to preclude memorization of answers vice understanding of the concepts.

Several tasks in the dynamic simulator scenarios were reclassified as critical. The majority of these were procedure transitions within the EOP network. It was also necessary to increase the number of Individual Simulator Critical Tasks (ISCTs) in order to ensure each operator would be evaluated on more than one.

JPM Performance

There was a discernible difference in the performance of JPMs on Unit 2. The facility had scheduled all JPMs to be performed on Unit 1, however, the NRC requested JPMs to be conducted on both units. The operators tended to be less at ease in Unit 2 as evidenced by a more labored search associated with locating equipment and components. This concern had been previously identified during observation of training and was one of the reasons for requiring a plant differences exam prior to amending operator licenses to include both units. The facility is advised to train and evaluate JPMs on both units.

Common JPMs were not used as one of the program evaluation criteria for this exam. However, the training department needs to note areas of poor performance as feedback for their program. The following JPMs were evaluated as unsatisfactory for two or more operators:

12101-002-01	Place RHR in service
37111-001-01	Establish condensate flow to SGs on loss of heat sink
60315-001-01	Establish RCS bleed path following a loss of RHR
60316-001-01	Verify CCW heat exchanger cooling capacity
60328-001-03	Locally energize switchgear following local diesel start
60328-001-10	Locally control seal inj. flow following CR evacuation

It was noted that the facility had scheduled several JPMs associated with diesel generators and the Loss of all AC event which had occurred earlier in the year. The results of these JPMs showed that the training department has incorporated identified problems into their requal program and trained on them effectively.

Evaluation of Facility Evaluators

No facility evaluators were found to be unsatisfactory.

Requalification Program Evaluation

Based on the examination results, the Vogtle Requalification Program meets the criteria established in ES-601.C.3.b and has been determined to be satisfactory. The unsatisfactory Individual Evaluation is subject to the requirements set forth in ES-601.E.1. The facility is permitted to administer the reexamination for returning the individual to licensed duties. However, an NRC administered examination will be required for license renewal.

ENCLOSURE 4

SIMULATOR FACILITY REPORT

Facility Licensee: Georgia Power Company

Facility Docket Nos.: 50-424 and 50-425

Operating Tests Administered On: July 26 and August 2, 1990

This form is used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

During the conduct of the simulator portion of the operating test, the following items were observed:

Item	Description
Accumulator pressure	The accumulator pressure increased at a rate slower than what the Operations representative expected in the plant.

5. Plant Startup From Refueling (71711)

The inspectors witnessed portions of the tests and evolutions listed below to verify that startup activities, heatup, the approach to criticality, and core physics testing conducted following 2R1 were accomplished in a controlled manner and in compliance with approved procedures.

'2002-C, Rev. 19, Unit Heatup To Normal Operations Temperature And Pressure

54015-2, Rev. 2, Reactor Coolant System RTD Cross-Calibration

88006-C, Rev. 1, Rod Drop Time Measurement With Rod Drop Test Cart

12003-C, Rev. 12, Reactor Startup (Mode 3 to Mode 2)

88002-C, Rev. 1, Reload Low Power Physics Testing

During the performance of rod drop time measurements on November 8, 1990, the licensee experienced indication problems with the rod control system. When shutdown bank withdrawal was initiated, rod step counters indicated motion on both SDA and CBA, however, DRPI indications indicated position only on CBA. Licensee I&C personnel determined that a failure of a "Rod Bank Overlap" card caused the indication problem and they replaced the card. On November 9, 1990, a similar problem occurred. When control bank withdrawal was initiated an "RPI URGENT ALARM' was received. The step counter indication showed motion on CBA, CBC, and CBD; DRPI indication showed motion on CBA and CBD. The licensee determined that this failure was also due to a fault on the "Rod Bank Overlap" card, but in a different portion than the earlier failure. The faulty card was replaced and no significant problems occurred for the remainder of control rod withdrawal.

7. Onsite Followup of Events at Operating Reactors (93702)

As a followup to the March 20, 1990, Site Area Emergency, during the Unit 2 refueling outage the resident inspectors monitored the licensee's implementation of vehicular controls in the low voltage switchyard and staging of portable equipment. The inspectors were satisfied that the licensee had effectively implemented the controls.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

August 8, 1990

Enclosure 8

MEMORANDUM FOR: Stewart D. Ebneter, Regional Administrator, RII

FROM: Edward L. Jordan, Director
Office for Analysis and Evaluation
of Operational Data

SUBJECT: CLOSEOUT OF STAFF ACTION 4.b (2) IN RESPONSE TO VOGTLE IIT FINDINGS (NUREG-1410)

An investigation was conducted to determine the cause of the communication problems experienced during the incident at the Vogtle plant on March 20, 1990. The problems identified and the subsequent corrective actions are detailed in the enclosure. A complete system test was conducted on July 26, 1990, and the system is operating normally. This completes the plant specific action Item 4.b (2).

Edward L. Jordan, Director
Office for Analysis and Evaluation
of Operational Data

Enclosure:
As stated

cc w/encl:
J. Taylor, EDO
T. Kellam, IRM
R. Freeman, AEOD
K. Brockman, RII

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