



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

Report Nos.: 50-348/91-18 and 50-364/91-18

Licensee: Alabama Power Company  
600 North 18th Street  
Birmingham, AL 36291

Docket Nos.: 50-348 and 50-364

License Nos.: NPF-2 and NPF-8

Facility name: Farley 1 and 2

Inspection Conducted: August 29 through September 17, 1991

Inspection at Farley site near Dothan, Alabama

Inspectors:	<u>Fob/ R. W. Wright</u>	<u>9/26/91</u>
	G. F. Maxwell, Senior Resident Inspector	Date Signed
	<u>Fob/ R. W. Wright</u>	<u>9/26/91</u>
	M. J. Morgan, Resident Inspector	Date Signed
Approved by:	<u>Marshall S.</u>	<u>9/26/91</u>
	F. S. Cantrell, Section Chief, Division of Reactor Projects	Date Signed

#### SUMMARY

#### Scope:

This routine onsite inspection involved a review of operational safety verification, monthly surveillance observation, monthly maintenance observation, fire protection, and followup on open items. Certain inspections were conducted on weekends, holidays, or deep backshift. These inspections were conducted August 29 and September 4, 1991.

#### Results:

Unit 1 operated at approximately 100 percent power for most of the reporting period, however, on August 19, the unit experienced an automatic reactor trip due to a lightning strike which caused an instantaneous overcurrent condition on phase 2 of the "1B" start-up transformer, paragraph 2.b.(1). On August 27, maintenance was performed on the "1-2A" diesel generator (D/G) "A" train air start system air compressor without proper authorization and without a proper clearance being written in accordance with plant administrative procedures. This item is identified as a violation, paragraph 2.b.(2).

Unit 2 operated at approximately 100 percent power for most of the reporting period. No violations or deviations were identified for this unit.

## REPORT DETAILS

### 1. Licensee Employees Contacted

R. M. Coleman, Modification Manager  
L. W. Enfinger, Administrative Manager  
W. R. Bayne, Supervisor Safety Audit and Engineering Review  
L. M. Stinson, Assistant General Manager - Plant Operations  
D. N. Morey, General Manager - Farley Nuclear Plant  
C. D. Nesbitt, Technical Manager  
J. K. Osterholtz, Operations Manager  
R. D. Hill, Assistant General Manager - Plant Support  
J. J. Thomas, Maintenance Manager  
L. S. Williams, Training Manager

Other licensee employees contacted included, technicians, operations personnel, maintenance and I&C personnel, security force members, and office personnel.

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

#### Meetings:

On August 22, an enforcement meeting was conducted in Region II between NRC and APCo management. During the meeting the event documented in LER-91-005 was discussed. This LER identified a instance where Unit 1 T.S. was violated when Unit 1 mode changes were made with the turbine driven auxiliary feedwater pump not fully operable.

On August 30, the resident inspectors attended an on-site QA meeting. The meeting involved a review of audit findings concerning the site QA organization, SAER, by third party evaluators from the Southern Nuclear Company. The team was made up of individuals from the Vogtle and Hatch nuclear facilities.

On September 5, the resident inspectors attended an NRR/FNP site management meeting involving a detailed description of diesel generator configuration and operation. This meeting was held in preparation for an upcoming diesel generator technical specification meeting in October.

On September 12, a meeting was conducted in Region II between NRC and APCo management. The meeting was conducted to allow discussions between NRC and the utility about events which have occurred related to the last two refueling outages.

On September 16-18, F. S. Cantrell, Section Chief from Region II Division of Reactor Projects assigned to Farley, visited the site to evaluate the status of the resident inspection program. He also attended the exit interview held with plant management on September 17.

## 2. Operational Safety Verification (71707)

### a. Plant Tours

The inspectors conducted routine plant tours during this inspection period, in accordance with guidance provided by NRC inspection procedures MC71707, to verify licensee requirements, commitments and followup actions were being implemented.

Inspection tours included review of site documentation, interviews with plant personnel and an on-going evaluation and observation of site security.

Selected activities of the licensee's radiological protection program were reviewed by the inspectors to verify conformance with facility procedures and NRC regulatory requirements.

Some points of special interest noted by the inspectors included:

Increased emphasis on housekeeping; i.e.; clean-up and painting.

Heightened awareness by security personnel in security areas.

Significant cleanup and painting was observed in the emergency diesel generator rooms. This effort has resulted in an improvement in lighting and in general an improvement in the appearance of the diesel generators.

### b. Plant Events and Observations

#### (1) Lightning Induced Reactor Trip - Unit 1

At about 5:20 p.m., on August 19, with the unit operating at about 100 percent reactor power, the reactor tripped when lightning apparently caused an instantaneous overcurrent trip on phase two of the Unit 1B start-up transformer. The first out annunciator on the main control board was "One Loop Lo Flow or RCP BKR Open Reactor Trip." This annunciator alarm resulted due to the loss of the 1B and 1C reactor coolant pump power supplies. At the time of the lightning strike two RCPs (RCP 1B and 1C) were being powered by the 1B start-up transformer. This loss of RCP 1B and 1C caused a reactor trip to occur.

Following the reactor trip, D/Gs "1B" and "2C" automatically started (due to sensing low voltage on the "B" emergency electrical train). These diesels aligned to the Unit 1 "B" train emergency busses and picked up all "B" train emergency loads. All emergency safe shutdown systems functioned as designed.

During the lightning strike a high voltage insulator was damaged on the affected transformer. This rendered the start-up transformer not available, requiring the emergency "B" train busses to be powered by the D/Gs. The plant staff decided to place the plant into the limiting conditions of operations specified in TS Section 3.0.5. At about 7:50 p.m. on August 29, the operators initiated action for cooldown to reduce the mode of operation to mode 4 (hot shutdown). The plant entered Mode 4 at about 12:36 a.m. on August 20.

At about 10:37 a.m. on August 20, the repair work was completed on 1B start-up transformer and the transformer was returned to service. Unit 1 was returned to power operation at about 3:00 a.m. on August 21, 1991.

The inspectors noted that the "A" train large D/G (1-2A) was tagged out of service to repair a thermostatically controlled valve for the engine intercooler. The diesel was tagged out of service on August 13, 1991 and remained out of service until about 10:40 p.m. on August 21, 1991. The repairs on the diesel were not completed until after Unit 1 was returned to power operation.

(2) Maintenance Performed Without Proper Authorization And Clearance - Unit 1

On August 27, 1991, at approximately 10:00 p.m., maintenance was performed on the "1-2A" D/G "A" air start system air compressor. This maintenance involved the repair of a loose "A" train air compressor pulley key.

After discussions between the MMF, the D/G SO and the SS and prior to actual maintenance being conducted, the "A" train air start system air receiver was pressurized to the maximum allowable pressure. The air compressor hand switch was then placed in the "off" position. It was noted by the SS, SF, SO and MMF, that the "1-2A" D/G "A" train air start system air compressor was the only operable D/G air compressor since the "B" train air compressor had been previously tagged out due to a ruptured "B" train air dryer.

During the repair, the air start air compressor hand switch was maintained in the "off" position with the SO "standing by" to ensure that the start switch was not operated.

Plant administrative procedure FNP-0-A-52, Equipment Status Control And Maintenance Authorization, Revision 17, Section 5.1, states that corrective maintenance will be requested and documented on a MWR. Section 7.6, also states that in order for maintenance to begin, proper unit and/or system conditions

must be established and formal permission must be granted. This section requires that MWR item "34", determination of inoperability and assurance that hold tags are in place, and MWR item "35", determination of any LCO, must be filled out prior to releasing the system, subsystem, train, component or device. The releasing individual for MWR's concerning power plant equipment is the shift foreman inspecting with shift supervisor's approval.

Plant procedure FNP-0-AP-14, Safety Clearance and Tagging, Revision 11, Section 3.2, requires that all operational and maintenance practices used in conjunction with safety clearance and tagging to comply with the applicable sections of the Alabama Power Company Safety and Health Manual and Electric System Operating Procedure.

The APCo Safety and Health Manual, Section 102.04, Clearance Procedures - Electrical and Mechanical, part "a", requires employees to comply with established and written clearance procedures for the work to be performed. Part "b" of the same section requires that employees shall consider all installed electrical lines and equipment to be energized and all installed mechanical equipment to be in service until the lines and/or equipment have been properly tagged and/or grounded in accordance with prescribed clearance procedures.

"Live clearances" according to plant procedure FNP-0-AP-14, section 3.14, are not to be used in lieu of (clearance) hold tags. This procedure specifies that such live clearances are not adequate protection and, therefore, they are explicitly forbidden.

Contrary to the aforementioned procedures and safety manual, maintenance was initiated on the "1-2A" D/G "A" air start system air compressor, without appropriate written authorization and without proper issuance of an MWR. Also the compressor hand switch was maintained in the "off" position with a plant systems operator "standing by" the switch as a "live clearance" in lieu of using hold tags, which is a violation of AP-14, Section 3.14.

The inspectors discussed the above conditions with plant management. As a result the incident was documented on an incident report 1-91-264.

This item is identified as violation 50-348/91-18-01, Repair of plant equipment without proper written authorization and without the prescribed clearance of system components.

(3) Loss of Annunciator Event - Unit 2

In response to an NRC Region II "Loss of Annunciator Events" letter dated August 10, 1991, the resident inspectors conducted an inquiry at the J. M. Farley plant site.

The inspectors noted that in the past two years one event involving loss of annunciator power occurred at the FNP. The event occurred on Unit 2 on October 17, 1990, while the unit was in mode 6 (shutdown with no fuel in the reactor vessel). The details of the event are documented in incident report 2-90-317. The loss of annunciator power lasted about two minutes.

The annunciator power was lost when the SO while working with the SFO was implementing a procedure which assumed that the Unit 2 annunciator power was being supplied from the normal supply source. At the time that the procedure was being implemented, the unit annunciators were already being powered from the alternate source. The incorrect application of the procedure being used, SOP-36.4, resulted in shifting the annunciators from the alternate power supply to a de-energized normal source. At the time of the incident the normal source had been de-energized to allow work to be conducted on the normal supply power circuitry.

Within two minutes of the loss of power, the power was restored by reclosing the alternative power source breaker. The records show that the emergency plan procedures were reviewed and discussed between the shift supervisor, the operations manager and the emergency director. A determination was made that no emergency classification was required based on plant conditions at the time of the event.

The permanent corrective action required by the incident report included evaluation of the labeling of the power supply cabinet and counseling the SO and SFO who misapplied SOP 36.4.

This appears to be an isolated incident involving loss of annunciator power, and the corrective action was appropriate. The inspectors noted that the site has an abnormal operating procedure which would be implemented should a loss of annunciator power be sustained for a prolonged period, AOP-35.0 Loss of Main Control Board Annunciators.

(4) Carbon Dioxide Line Break - Below The Primary Access Entrance Point

At about 5:41 p.m on August 27, the main control room received notification that the atmosphere in the PAP's employee break room was difficult to breathe. Also it was reported that the walls in the break room were cracking and settling. The PAP was secured and immediately evacuated. An air sample was taken and it was determined that the employee break room apparently contained excessive amounts of carbon dioxide. Further evaluation revealed that carbon dioxide was leaking from the ground below the PAP break room and it had caused a lifting

effect on the floor. At about 6:17 p.m the carbon dioxide line which connects to the carbon dioxide storage tank in the turbine building was isolated. The line was located in the ground below the PAP employee break room. After isolating the leaking line a reduction in the carbon dioxide escaping into the PAP building was noted.

Subsequently a determination was made that the PAP was suitable for occupancy, the PAP was then placed back into use as the primary access point. As required, additional fire watches were posted until the necessary corrections were completed on the carbon dioxide line which leaked. This incident was documented by the licensee in incident report 1-91-262.

Except as noted no violations or deviations were identified. The results of the inspections in the operations area indicate that documentation by operators of equipment status and plant operations is improving. The plant continues to improve in the housekeeping area. This improvement includes extensive painting of the D/Gs and inside area of the D/G building. Performance in this area continues to be adequate.

### 3. Monthly Surveillance Observation (61726)

The inspectors witnessed surveillance test activities performed on safety related systems and components, in accordance with guidance contained in NRC inspection procedure MC61726, in order to verify that such activities were performed in accordance with facility procedures and technical specification, requirements.

Portions of the following surveillance activities were observed:

- 0-STP-80.1 Diesel Generator 1-2A Operability Test
- 1-STP-33.0 "B" Train Solid State Protection System Operability Test
- 2-STP-1.0 Operations Daily/Shift Surveillance Requirements Modes 1, 3, 4
- 2-STP-5.0 Control Rod Operability Test
- 2-STP-62.0 Main Turbine Governor Valve Operability Test
- 2-STP-80.1 Diesel Generator 2B Operability Test

No violations or deviations were identified. The results of the inspections in this area indicate that the program was effective with respect to meeting the safety objectives.

#### 4. Monthly Maintenance Observation (62703)

The inspectors reviewed various licensee preventative and corrective maintenance activities, in accordance with guidance provided by NRC inspection procedure MC62703, to determine conformance with facility procedure, plant work requests and NRC regulatory requirements.

Portions of the following maintenance activities were observed:

MWR-230865	Repair oil leak exhaust manifold #1 cylinder -- "1C" D/G
MWR-233682	Replace Unit 1 floor drain tank filter
MWR-235455	Balance/adjust frame tension - Unit 1 radwaste supply fan
MWR-238177	Repair placing follower - #2 radwaste pump
MWR-241890	Investigate and repair emergency light #2086
MWR-244755	Repair FTS79 sensing line - 2nd stage MGR "1A" drain tank
MWR-240125	Erratic operation of Unit 2 pressurizer pressure controller (PK-444C)
PCN-58916205	Installation of sprinkle system "1A-136"
WA-W00354485	18 Month Inspection - "1C" D/G
WR-24145	Test cable for "B" and "C" bus to 1A unit auxiliary transformer

##### a. Diesel Generator "1C" Maintenance Activities

During this inspection period, the inspectors monitored maintenance activities associated with the "1C" D/G.

On August 26 at approximately 8:00 a.m., the "1C" D/G was taken out of service for a major equipment outage. A voluntary entry was made into the technical specification LCO at that time. D/G subsystem heat exchangers were hydrostatically tested, lube oil was replaced with new lube oil, chromated jacket water was replaced with a different type of fluid containing "Drewguard", instruments were calibrated and preventative maintenance was performed on various air start components, during the outage. Yearly scheduled maintenance item repairs were also conducted during the outage period. On August 31, at approximately 11:00 p.m., the "1C" D/G was returned to service.

##### b. Diesel Generator "1-2A" Maintenance Activities

During this inspection period, the inspectors continued to evaluate and monitor activities associated with the "1-2A" D/G.

On August 13 the D/G was removed from service in order to replace the intercooler heat exchanger thermostatically controlled bypass valve. The D/G was placed in an out of service condition for replacement of the valve and remained in an out service condition until August 20 partially due to a lack of replacement parts. On August 20, licensee operators attempted to start the D/G for post-maintenance testing, however, it was noted that jacket water pressure was lower-than-normal. The wear rings of the D/G jacket water pump were replaced and the D/G was returned to service at approximately 10:40 p.m., August 21. The inspectors noted that the repairs on this D/G were not completed until after Unit 1 was returned to power operation following the reactor trip of August 19 (paragraph 2.b).

c. Diesel Generator "2B" Maintenance Activities

During this inspection period, the inspectors monitored maintenance activities associated with the "2B" D/G.

On September 9 at approximately 9:36 a.m., the "2B" D/G was taken out of service for it's yearly scheduled maintenance. A voluntary entry was made into the technical specification LCO at that time. Lube oil was replaced with new lube oil, chromated jacket water was replaced with a different type of fluid containing "Drewguard", instruments were calibrated, and yearly scheduled preventative maintenance was performed on various, lube oil, fuel oil and air start system components. On September 13, the "2B" D/G was returned to service.

d. Erratic Operation Of Pressurizer Pressure Controller PK-444 - Unit 2

On September 9 at approximately 7:40 p.m., the Unit 2 PZR pressure controller PK-444 failed high. This failure caused open signals to be generated to PZR spray valves ("444A" and "444B") circuitry and to PORV channel "444" circuitry.

Plant operators took appropriate actions to mitigate the pressure transient. PZR pressure immediately dropped from approximately 2240 psig to the technical specification LCO low pressure valve of 2205 psig. The pressure further fell to about 1990 psig, and stabilized at 1990 psig as the spray valves and PORV were manually isolated and the associated PORV isolation block valve was shut. The operators, using PZR backup heaters, restored PZR pressure to above the 2205 psig LCO value at approximately 8:00 p.m. This incident was documented by operations personnel in a plant incident report 2-91-279.

During the above transient, reactor vessel head vent valve 2213B presented a dual indication, (indicated both an open and shut indication), due to the backpressure conditions which existed in the PRT during the PORV release. The vent valve

appeared not to be open and a series vent valve was shut, providing further assurance that RCS leakage does not occur. MWR-240126 was written to repair this indication.

MWR-240125 was issued to authorize the necessary repairs to the pressurizer pressure control circuit. As a result, a power circuit card was replaced in the controller. As part of the evaluation for incident report 2-91-279 the history for various incidents which have occurred that could be perceived as "similar" were evaluated. This evaluation included review of all plant incident reports, MWRs, Work Requests, WAs, etc. . . which affected pressurizer pressure control. The review did not identify any events which could be perceived as being caused by a power circuit card failure, which apparently was the cause of the erratic operation of the pressurizer pressure control circuit (PK-4). Additionally the site chemistry results were reviewed on Unit 2 for time periods preceding September 9, and several days following the pressure transient. The review did not identify any spikes or changes in RCS chemistry which would be indicative of fuel damage.

No violations or deviations were identified. The results of the inspections in this area indicate that the maintenance program was effective with respect to meeting the safety objectives.

5. Fire Protection/Prevention Program (64704)

The inspectors have noted an increase in maintenance-related, material condition problems with the plant fire protection systems. Among these were the conditions of system pre-action sprinkler valves, fire pumps, carbon dioxide systems, loop isolation valves, hydrants, fire hoses, and reinstallation of "Kaowool" installation.

The inspectors also noted that many auxiliary building pre-action sprinkler valves are routinely placed into the tripped condition whenever spurious actuation of the fire protection system occurs. Many of these spurious actuations have occurred as a result of pyropanel troubleshooting activities. This condition has been previously documented in Inspection Report Nos. 50-348,364/90-33 and 50-348,364/91-08.

Each of the above items were discussed with assigned site fire protection personnel. No violations or deviations were identified.

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

(Closed) Unresolved item 364/90-36-02, Containment spray system degraded pending NRR review and evaluation. Region II requested assistance from NRR concerning this unresolved item. Region II received a response to this request in a memorandum dated June 28, 1991 from the Assistant Director for Region II Reactors, NRR.

The Region II request asked for interpretation of the \*\* footnote to TS 3.8.1.1 and also asked for an explanation/purpose for the footnote. The NRR Electrical Systems Branch provided the interpretation. NRR concluded that; "the purpose of the footnote is to postpone declaring an D/G inoperable for 10 days during the scheduled annual maintenance. Since the footnote allows the licensee to postpone the declaration of the D/G inoperability for up to 10 days, the D/G is considered OPERABLE during this time period and the required actions of the ACTION statements (restoration of D/G operability in the stated allowed outage time or plant shutdown with 36 hours) are not performed until the D/G is declared inoperable . . . the licensee's interpretation of the LCOs, ACTION statements and footnote is correct. Thus, there was no related violation of Farley's Technical Specification.

Based on the above response by NRR this item is closed.

#### 7. Exit Interview

The inspection scope and findings were summarized during management interviews throughout the report period, and on September 17 with the assistant plant manager and selected members of his staff. The inspection findings were discussed in detail. The licensee acknowledged the inspection findings and did not identify as proprietary any material reviewed by the inspectors during this inspection.

Licensee was informed that the item discussed in paragraph 6 was closed.

#### ITEM NUMBER

#### DESCRIPTION AND REFERENCE

50-348/91-18-01(NOV)

Repair of equipment without proper written authorization and without the prescribed clearance of system components.

#### 8. Acronyms and Abbreviations

AFW - Auxiliary Feedwater  
 ALARA- As Low As Reasonably Achievable  
 AOP - Abnormal Operating Procedure  
 AP - Administrative Procedure  
 APCO - Alabama Power Company  
 BTRS - Boron Thermal Regeneration System  
 CFR - Code of Federal Regulations  
 CVCS - Chemical and Volume Control System  
 CCW - Component Cooling Water  
 D/G - Emergency Diesel Generator  
 DPM - Disintegration Per Minute  
 ENN - Emergency Notification Network  
 ESF - Engineered Safety Features  
 F - Fahrenheit  
 FNP - Farley Nuclear Plant

FSP - Fire Surveillance Procedure  
GPM - Gallons Per Minute  
ISI - Inservice Inspection  
IST - Inservice Test  
LCO - Limiting Condition for Operation  
MMF - Mechanical Maintenance Foreman  
MOV - Motor-Operated Valve  
MOVATS - Motor-Operated Valve Actuation Testing  
MWR - Maintenance Work Request  
NRC - Nuclear Regulatory Commission  
NRR - NRC Office of Nuclear Reactor Regulation  
OATC - Operator at the Controls  
PAP - Primary Access Point  
PCCV - Positive Closing Check Valve  
PCN - Plant Change Notice  
PMD - Plant Modifications Department  
PORV - Power Operated Relief Valve  
PPB - Parts Per Billion  
PPM - Parts Per Million  
PRT - Pressurizer Relief Tank  
PZR - Pressurizer  
RCP - Reactor Coolant Pump  
RCS - Reactor Coolant System  
RHR - Residual Heat Removal  
RTD - Resistance Temperature Detector  
SI - Safety Injection  
S/G - Steam Generator  
SAER - Safety Audit and Engineering Review  
SFO - Shift Foreman - Operating  
SO - System Operator  
SFP - Spent Fuel Pool  
SOP - Standard Operation Procedure  
SPDS - Safety Parameter Display System  
SS - Shift Supervisor  
SSPS - Solid State Protection System  
STP - Surveillance Test Procedure  
SW - Service Water  
TS - Technical Specification  
TSC - Technical Support Center  
WA - Work Authorization