

50-250,251/91-24-02, Non-cited Violation - Failure to adequately control maintenance on safety-related systems resulting in a Reactor Protection System actuation (paragraph 8.f).

Strength - The licensee's extensive corrective actions for the plant events noted in paragraph 8, including the stopping of all work on sensitive equipment, were considered exceptional.



REPORT DETAILS

1. Persons Contacted

Licensee Employees

- T. V. Abbatiello, Quality Assurance Supervisor
- J. Arias, Jr., Technical Assistant to Vice President
- * L. W. Bladow, Quality Manager
- T. A. Finn, Assistant Operations Superintendent
- R. J. Gianfrennesco, Assistant Maintenance Superintendent
- * S. T. Hale, Engineering Project Manager
- K. N. Harris, Senior Vice President - Nuclear Operations
- E. F. Hayes, Instrumentation and Controls Supervisor
- R. G. Heisterman, Assistant Superintendent of Electrical Maintenance
- * V. A. Kaminskas, Operations Superintendent
- * J. E. Knorr, Regulatory Compliance Supervisor
- J. A. Labarraque, Senior Technical Advisor
- J. D. Lindsay, Health Physics Supervisor
- G. L. Marsh, Reactor Supervisor
- * H. Johnson, Operations Supervisor
- * L. W. Pearce, Plant Manager - Nuclear
- T. F. Plunkett, Site Vice President
- D. R. Powell, Superintendent - Plant Licensing
- K. L. Remington, System Performance Supervisor
- C. V. Rossi, Quality Assurance Supervisor
- R. N. Steinke, Chemistry Supervisor
- J. C. Strong, Mechanical Department Supervisor
- F. R. Timmons, Site Security Superintendent
- * M. B. Wayland, Maintenance Superintendent
- J. D. Webb, Assistant Superintendent Planning and Scheduling
- * A. T. Zielonka, Technical Department Supervisor

Other licensee employees contacted included construction craftsman, engineers, technicians, operators, mechanics, and electricians.

NRC Resident Inspectors

- * R. C. Butcher, Senior Resident Inspector
- * G. A. Schnebli, Resident Inspector
- * L. Trocine, Resident Inspector

* Attended exit interview on July 26, 1991

Note: An alphabetical tabulation of acronyms used in this report is listed in the last paragraph in this report.

2. Plant Status

- The 3A, 3B, 4A, and 4B EDGs and associated equipment have completed preoperational testing and have been turned over to operations.
- All four sequencers have completed preoperational testing and have been turned over to operations.
- 4KV/480V switchgear room HVAC modifications have completed preoperational testing and have been turned over to operations.
- The new security entrance building and portions of the new security fence were placed in service on July 1, 1991.
- Installation of vital area barriers steel/grating and visual/tamper barriers is continuing in both units.
- Reassembly of the Unit 3 high pressure turbine is in progress.
- New area radiation monitors are still undergoing testing. Turnover to operations is expected by August 1, 1991.
- The RTD bypass elimination modification and Eagle 21 installation is proceeding with Westinghouse on site to install RTDs.
- Safeguards preoperational testing started on July 26, 1991.
- ATWS System has completed preoperational testing and has been turned over to operations.

3. Followup on Inspector Followup Items (92701)

Actions taken by the licensee on the item listed below was verified by the inspector.

(Closed) IFI 50-250, 251/89-52-01; Out of Service PIV - Post Indicator Valve.

The inspectors concern was that procedure O-OSP-016.30, Annual Fire Main Post Indicator Valve (PIV) Leak Test and System Flush, permitted excessive acceptable design leakage rates through PIVs that could require the total fire suppression system to be placed OOS to facilitate repairs in the event of a fire main pipe break. The licensee issued a change to O-OSP-016.30 that requires a plant work order be prepared to repair or replace the affected PIV and retest if the acceptance criteria of 10 gpm cannot be met. This item is closed.

4. Onsite Followup and In-Office Review of Written Reports of Nonroutine Events and 10 CFR Part 21 Reviews (90712/90713/92700)

The Licensee Event Reports and/or 10 CFR Part 21 Reports discussed below were reviewed. The inspectors verified that reporting requirements had been met, root cause analysis was performed, corrective actions appeared

appropriate, and generic applicability had been considered. Additionally, the inspectors verified the licensee had reviewed each event, corrective actions were implemented, responsibility for corrective actions not fully completed was clearly assigned, safety questions had been evaluated and resolved, and violations of regulations or TS conditions had been identified. When applicable, the criteria of 10 CFR Part 2, Appendix C, were applied.

(Closed) P21 50-250,251/91-03; Rockbestos KS-500 Silicone Rubber Activation Energy Values for Firewall SR Silicone Rubber Insulated Cable and Firezone R Special Purpose Cable.

On June 25, 1990, the Rockbestos Company issued a 10 CFR Part 21 report concerning the activation energy and ampacity values applicable to Rockbestos silicone rubber insulated cables. Two reels of the KS-500 cable were purchased by FPL in 1983 via PO 00868-27389W; and although 1,058 feet of the subject cable had been installed in Unit 3 in 1985, this cable was removed during the 1990 dual unit outage via PC/M 88-432. The remaining cable purchased was still in the warehouse. This cable has since been tagged for non-safety related use only. Because none of the subject cable is installed in either unit, no operability concerns related to the use of this cable remain. Therefore, this P21 is closed.

5. Monthly Surveillance Observations (61726)

The inspectors observed TS required surveillance testing and verified that the test procedure conformed to the requirements of the TSs; testing was performed in accordance with adequate procedures; test instrumentation was calibrated; limiting conditions for operation were met; test results met acceptance criteria requirements and were reviewed by personnel other than the individual directing the test; deficiencies were identified, as appropriate, and were properly reviewed and resolved by management personnel; and system restoration was adequate. For completed tests, the inspectors verified testing frequencies were met and tests were performed by qualified individuals.

The inspectors witnessed/reviewed portions of the following test activities:

- a. POP-0804.069, Emergency Diesel Generator 3A Idle Start and Support System Modification Preop. Test, Section 9.8 (Five Start Test);
- b. POP-0804.069, Emergency Diesel Generator 3A Idle Start and Support System Modification Preop. Test, Section 9.9 (Redundant Start Circuit Demonstration);
- c. POP-0804.069, Emergency Diesel Generator 3A Idle Start and Support System Modification Preop. Test, Section 9.10 (23 Start Reliability Test); and

d. 3-OP-023, Emergency Diesel Generator (for 3A EDG).

The inspectors determined that the above testing activities were performed in a satisfactory manner and met the requirements of the TSs. Violations or deviations were not identified.

6. Monthly Maintenance Observations (62703)

Station maintenance activities of safety-related systems and components were observed and reviewed to ascertain they were conducted in accordance with approved procedures, regulatory guides, industry codes and standards, and in conformance with the TSs.

The following items were considered during this review, as appropriate: LCOs were met while components or systems were removed from service; approvals were obtained prior to initiating work; activities were accomplished using approved procedures and were inspected as applicable; procedures used were adequate to control the activity; troubleshooting activities were controlled and repair records accurately reflected the maintenance performed; functional testing and/or calibrations were performed prior to returning components or systems to service; QC records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were properly implemented; QC hold points were established and observed where required; fire prevention controls were implemented; outside contractor force activities were controlled in accordance with the approved QA program; and housekeeping was actively pursued.

The inspectors witnessed/reviewed portions of the following maintenance activities in progress:

- a. removal and replacement of ICW crossconnect valve 3-50-309 and re-installation of the "T" between ICW valves 3-50-309, 310, and 312 and of the elbows associated with valve 3-50-312 (For additional information, refer to paragraph 8.a of this report.);
- b. inspection, repair, and replacement of Unit 4A and 4B EDG SWAGELOK fittings;
- c. repair of Unit 3 SFP transfer canal liner leaks; and
- d. repair of the 3A RHR pump mechanical seal.

For those maintenance activities observed, the inspectors determined that these activities were conducted in a satisfactory manner and that the work was properly performed in accordance with approved maintenance work orders. Violations or deviations were not identified.

7. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs,



conducted discussions with control room operators, observed shift turnovers, and monitored instrumentation. The inspectors verified proper valve/switch alignment of selected systems, verified maintenance work orders had been submitted as required, and verified followup and prioritization of work was accomplished. The inspectors reviewed tagout records, verified compliance with TS LCOs, and verified the return to service of affected components.

By observation and direct interviews, verification was made that the physical security plan was being implemented. The implementation of radiological controls and plant housekeeping/cleanliness conditions were also observed.

Tours of the intake structure and diesel, auxiliary, control, and turbine buildings were conducted to observe plant equipment conditions including potential fire hazards, fluid leaks, and excessive vibrations. In addition, the inspectors walked down accessible portions of systems which are currently required to be operable/functional in order to verify proper valve/switch alignment.

The licensee conducted a safety evaluation to define control of the plant configuration during the dual unit emergency power system enhancement project. Procedure TP-645, Defueled Operations Without Emergency Diesel Generators, was issued to proceduralize the requirements determined in the safety evaluation to be in effect from the time both units enter the defueled condition and both EDGs are removed from service. Also, portions of the revised TSs became effective when both units entered the defueled condition.

The licensee routinely performs QA/QC audits/surveillances of activities required under its QA program and as requested by management. To access the effectiveness of these licensee audits, the inspectors examined the status, scope, and findings of the following audit reports:

<u>Audit Number</u>	<u>Number of Findings</u>	<u>Type of Audit</u>
QAO-PTN-91-002	-	W Remote Visual Examination of Reactor Vessels
QAO-PTN-91-022	-	TSs 3/4.7.8 and 3/4.7.9, Fire Protection
QAO-PTN-91-038	9	May Performance Monitoring Audit
QAO-PTN-91-040	-	Security Upgrade Project
QAO-PTN-91-042	-	TS 3/4.5, Emergency Core Cooling System
QAO-PTN-91-044	-	June Performance Monitoring Audit
QAO-PTN-91-072	2	TS 6.8, Procedures

The QA audit reports reviewed were distributed to the appropriate departmental managers, the Plant Manager, the CNRB, and the President -



Nuclear Division. The applicable criteria, a description of the particular finding, a discussion of the issues, a statement of the impact on quality, a list of recommended corrective actions, a recommended responsible department, and the responsible QA contact were documented for each finding. In accordance with the licensee's QA program, the responsible department is required to respond to all QA findings in writing. No additional NRC followup actions will be taken on these findings because they were identified by the licensee's QA program audits, appropriate corrective actions have either been completed or are currently underway, and plant management has been made aware of these issues.

As a result of routine plant tours and various operational observations, the inspectors determined that the general plant and system material conditions were satisfactorily maintained, the plant security program was effective, and the overall performance of plant operations was good. In addition, the inspectors verified the critical electrical system lineup and verified the availability of the required number of blackstart diesel generators. Availability of the minimum number of ICW and CCW pumps was also verified. Violations or deviations were not identified.

8. Plant Events (93702)

The following plant events were reviewed to determine facility status and the need for further followup action. Plant parameters were evaluated during transient response. The significance of the event was evaluated along with the performance of the appropriate safety systems and the actions taken by the licensee. The inspectors verified that required notifications were made to the NRC. Evaluations were performed relative to the need for additional NRC response to the event. Additionally, the following issues were examined, as appropriate: details regarding the cause of the event; event chronology; safety system performance; licensee compliance with approved procedures; radiological consequences, if any; and proposed corrective actions.

- a. On June 24, 1991, the licensee removed and replaced crossconnect valve 3-50-309. Because both the ICW system, which provides cooling for the CCW heat exchanges, and the CCW system, which in turn provides cooling for the SFP heat exchanger, would not be available during this evolution; it was necessary to temporarily secure Unit 3 SFP cooling. The inspectors attended the pre-evolution briefing and observed the valve removal and replacement. SFP cooling was secured at 9:15 a.m. and was re-established at 7:35 p.m. at the completion of the ICW valve replacement. While cooling was secured, the temperature in the Unit 3 SFP increased from 94 degrees to 108 degrees F. (For additional information, refer to paragraph 6.a of this report.)
- b. At 3:08 a.m. on June 26, 1991, the 4D 4KV bus locked out while construction personnel were pulling cables through the 4D 4KV bus cubicles. The 4C ICW and the 4C CCW pumps which were being utilized for Unit 4 SFP cooling were de-energized at that time. Work was

stopped in the 4D 4KV bus cubicles and checked clear by operations personnel. The lockout was reset, and at 3:57 a.m., the 4D 4KV bus was re-energized from the 4B 4KV bus. SFP cooling was restored at 4:12 a.m. No rise in SFP temperature was noticed. As a result of this event, a voluntary LER was issued on July 1, 1991 (LER 50-251/91-003).

- c. On July 6, 1991, the licensee removed the inlet elbow to the 3B ICW/TPCW basket strainer and installed a blind flange in order to permit the performance of repair work on the concrete support slabs downstream of the blind flange. Because both the ICW system, which provides cooling for the CCW heat exchangers, and the CCW system, which in turn provides cooling for the SFP heat exchanger, would not be available during this evolution; it was necessary to temporarily secure Unit 3 SFP cooling. SFP cooling was secured at 5:00 a.m. and was re-established at 5:10 p.m. at the completion of the blind flange installation. While cooling was secured, the temperature in the Unit 3 SFP increased from 100 degrees F to 115 degrees F.
- d. On July 7, 1991, the licensee removed the 3C ICW pump from service in order to repack it. Both the 3A and 3B ICW pumps were out of service at the time. Because both the ICW system, which provides cooling for the CCW heat exchangers, and the CCW system, which in turn provides cooling for the SFP heat exchanger, would not be available during this evolution; it was necessary to temporarily secure Unit 3 SFP cooling. SFP cooling was secured at 7:55 p.m. and was re-established at 8:20 p.m. at the completion of the pump repacking. While cooling was secured, the temperature in the Unit 3 SFP remained at 95 degrees F.
- e. On July 20, 1991, with both units defueled, a partial Unit 4 Phase A containment isolation occurred during the performance of TP-688, Defeating Engineering Safety Features Equipment. The Train A containment isolation signal was generated when isolation rack QR-50 was being re-energized by installing its respective fuses. Due to the current system status, the following automatic actions occurred: 4A and 4C NCC tripped, MOV-4-1417 CCW to NCC closed, and CV-4-2821 containment sump pump discharge valve closed. When the isolation occurred the licensee terminated performance of TP-688 and commenced an investigation to determine the root cause of the event and implement corrective actions. The licensee notified the NRC of this event per 10 CFR 50.72(b) (2)(ii) at 3:00 p.m. on July 20, 1991. The investigation revealed that relay SIA1 was in the tripped position at the time the fuses for QR-50 were installed. SIA1 is the relay which actuates a Train A Phase A isolation upon receipt of a SI signal. Due to the fact the relay was already in the tripped position the isolation occurred even without an SI signal present

The root cause of this event was two fold. First, the re-energization of QR-50 was accomplished while depending on a recently replaced and untested relay to function properly. The new

relay SIA1 was installed by PC/M 89-586 which required the circuits to be re-energized in accordance with 4-ONOP-049, Re-energizing Safeguards Racks After Loss of Single Power Supply. If the circuit had been energized using the ONOP, the actuation would not have occurred, as the ONOP requires resetting the relays prior to energization. Secondly, TP-688 was deficient in that it did not require all input signals to be checked prior to energizing the circuit. Had they been checked, the tripped state of SIA1 would have been detected and corrected. For corrective actions, the licensee modified TP-688 to include sections requiring the visual verification of all actuating relay positions prior to the installation of power fuses.

Technical Specification 6.8.1 requires that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, and Sections 5.1 and 5.3 of ANSI N18.7 - 1972. The requirements stated above were not followed in that on July 20, 1991, procedures were not established or implemented for properly restoring power to ESF equipment resulting in a partial Phase A containment isolation. TP-688 was inadequate as it did not require verification that input relays were not tripped prior to energizing the equipment, and the requirements of PC/M 89-586 to re-energize this circuit in accordance with 4-ONOP-049 were not followed. This licensee-identified violation is not being cited because the criteria specified in Section V.G.1 of the NRC Enforcement Policy were satisfied. This item will be tracked as NCV 50-250,251/91-24-01, failure to follow the requirements of TS 6.8.1 when restoring power to ESF equipment resulting in the actuation of a partial Phase A containment isolation. This item is considered closed.

- f. At 11:26 a.m. on July 23, 1991, with both units defueled, the Unit 3 RPS actuated causing the reactor trip breakers to open. The trip breakers were previously closed to allow cycling of the main feedwater control valves in preparation for Integrated Safeguards Testing. The NRC was notified of the event at 12:17 p.m. on July 23, 1991, in accordance with 10 CFR 50.72(b)(2)(ii). The cause of event was an I&C technician working on the door of the Eagle 21 cabinet to install a new micro-switch which provided annunciator indication that the protection rack door was open. The area of the door the technician was working on was in close proximity to the EPT rocker switch. The technician inadvertently bumped this switch de-energizing the EPT circuitry which actuated Channel 3 of the over temperature delta temperature and over power delta temperature reactor trip circuitry. At the same time this occurred, N41 for the power range NI circuitry was OOS for maintenance which actuated Channel 1 of the over temperature delta temperature and over power delta temperature circuitry. The combination of these two channels being actuated at the same time resulted in the two-out-of-three logic required to initiate a reactor trip signal causing the reactor trip breakers to open. To prevent recurrence of this event and the

event noted previously licensee management took the following corrective actions.

- o All work was ordered to be stopped in the Control Room; Emergency Diesel Generator rooms; Load Centers; Motor Control Centers 3B and 4B; Cable Spreading Room; Inverter Room; 4160-Volt Bus Rooms A, B, and D; and the new Electrical Equipment Room.
- o A series of meetings was held to raise plant awareness and emphasize work controls prior to allowing work to resume. These controls will ensure that all work is performed safely and prevent inadvertent actuation of Plant Equipment Emergency Systems.
- o The APSN and PSN are required to review all safety-related and TS-related PWOs.
- o The PSN is required to review the sequence of events recorder at the beginning of each shift.
- o Work will only be allowed in one safety channel or train per unit. (Exception: Safeguards Testing)
- o Work during Safeguards Testing in vital areas shall be limited to that reviewed by an approved member of the CCT and authorized by the PSN.

TS 6.8.1 requires that written procedures be established, implemented, and maintained covering the activities recommended in Section 5.1 of ANSI N18.7-1972. Section 5.1.6.1 of this ANSI states that maintenance that can affect the performance of safety-related equipment shall be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances (for example, skills normally possessed by qualified maintenance personnel may not require detailed step-by-step delineation in a written procedure) which conform to applicable codes, standards, specifications, and criteria. The requirements stated above were not followed in that maintenance on the Eagle 21 system and the NI system were not properly preplanned by allowing concurrent work on both of these systems. This resulted in the RPS sensing the required two-out-of-three input signals for over temperature delta temperature and over power delta temperature to initiate opening of the reactor trip breakers. This licensee-identified violation is not being cited because the criteria specified in Section V.G.1 of the NRC Enforcement Policy were satisfied. This item will be tracked as NCV 50-250,251/91-24-02, failure to adequately control maintenance on safety-related systems resulting in an RPS actuation. This item is considered closed.



g. At 5:29 p.m. on July 24, 1991, power to the 3A and 3B 4KV busses was lost due to a main generator ground fault relay lockout. The 3A and 3B 4KV busses were being backfed through the main generator transformer at the time of this event. The plant had been in this configuration for several days. At 5:40 p.m., the 3A 4KV bus was re-energized from the start up transformer, and at 5:43 p.m., the 3B 4KV bus was re-energized from the startup transformer. SFP cooling was verified in service by 5:48 p.m. Since both units are defueled and the increase in SFP temperature is only approximately 1 degree F per hour at this time, there was minimal impact due to this event. The NRC was notified of the unusual event declaration (and declassification after power was restored) at 6:18 p.m. All work in sensitive electrical cabinets or equipment was stopped until a root cause could be determined. After extensive testing and troubleshooting of possible causes, it was determined that the most probable cause was the failure to properly install the doors on the C phase potential transformer cabinet. The door latches must be fully engaged to ensure the potential transformer contacts are fully engaged to ensure continuity. It could be demonstrated that with the lower door latch not engaged, continuity through the potential transformer to the generator ground fault relay could be lost creating a condition similar to this event. Corrective actions include the following:

- o The C phase regulator potential transformer fuse was replaced.
- o All regulator and metering potential transformer connectors and stabs will be cleaned, and the wipes will be checked.
- o Signs will be added to all potential transformer cabinets to remind personnel to ensure drawers are completely inserted and locked.
- o Access to the potential transformer cabinets will be through the PSN.

The licensee's extensive corrective actions in response to the above noted events are considered to be exceptional and have been noted as a strength.

9. Dual Unit Outage Restart Readiness Meeting (30702, 94702)

On July 10, 1991, an FPL/NRC meeting was held at the TPNP. NRC Regional and Headquarters managers toured various plant areas prior to the meeting to access the progress on the emergency power system upgrade project, the security upgrade project, and other ongoing modifications. During the meeting, the following subjects were discussed:

- Outage Status
- Restart Readiness Plans
 - o Engineering

- o Security
- o Licensing
- o Quality Assurance
- o Plant Organization

It was noted that Mr. J. Goldberg, FPL, had tasked the CNRB to evaluate the adequacy of the noted restart readiness review plans and provide oversight activities to the extent necessary to formally conclude that the plant is ready to resume safe and reliable operation.

Violations or deviations were not identified.

10. Exit Interview (30703)

The inspection scope and findings were summarized during management interviews held throughout the reporting period with the Plant Manager - Nuclear and selected members of his staff. An exit meeting was conducted on July 26, 1991. The areas requiring management attention were reviewed. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection. Dissenting comments were not received from the licensee. Violations or deviations were not identified. The inspectors had the following findings:

<u>Item Number</u>	<u>Description and Reference</u>
50-250,251/91-24-01	NCV, Failure to follow the requirements of TS 6.8.1 when restoring power to ESF equipment (paragraph 8.e).
50-250,251/91-24-02	NCV, Failure to adequately control maintenance on safety-related systems resulting in a RPS actuation (paragraph 8.f).
Strength	The licensee's extensive corrective actions for the plant events noted in paragraph 8, including the stopping of all work on sensitive equipment, were considered exceptional.

11. Acronyms and Abbreviations

ANSI	American National Standard Institute
APSN	Assistant Plant Supervisor Nuclear
ATWS	Anticipated Transient Without Scram
CCT	Configuration Control Team
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CNRB	Company Nuclear Review Board
CV	Control Valve
EDG	Emergency Diesel Generator



EPT	Eagle Partial Trip
ESF	Engineered Safety Feature
F	Fahrenheit
FPL	Florida Power & Light
gpm	gallons per minute
HVAC	Heating Ventilation and Air Conditioning
I&C	Instrumentation & Controls
ICW	Intake Cooling Water
IFI	Inspector Followup Item
KV	Kilovolt
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MOV	Motor-Operated Valve
NCC	Normal Containment Cooler
NCV	Non-Cited Violation
NI	Nuclear Instrumentation
NRC	Nuclear Regulatory Commission
ONOP	Off Normal Operating Procedure
OOS	Out of Service
OP	Operating Procedure
OSP	Operations Surveillance Procedure
P21	10 CFR Part 21
PC/M	Plant Change/Modification
PIV	Post Indicator Valve
PO	Purchase Order
POP	Preoperational Procedure
PSN	Plant Supervisor Nuclear
PTN	Plant Turkey Nuclear
PWO	Plant Work Order
QA	Quality Assurance
QAO	Quality Assurance Organization
QC	Quality Control
RHR	Residual Heat Removal
RPS	Reactor Protection System
RTD	Resistance Temperature Detector
SFP	Spent Fuel Pit
SI	Safety Injection
TP	Temporary Procedure
TPCW	Turbine Plant Cooling Water
TPNP	Turkey Point Nuclear Plant
TS	Technical Specification
V	Volt
<u>W</u>	Westinghouse