UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

April 15, 2004

Florida Power and Light Company
ATTN: Mr. J. A. Stall, Senior Vice President
Nuclear and Chief Nuclear Officer
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT 05000335/20004003 AND 05000389/2004003

Dear Mr. Stall:

On March 27, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your St. Lucie Units 1 and 2. The enclosed integrated inspection report documents the inspection findings which were discussed on March 30, 2004, with Mr. Jefferson and other members of your staff.

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

Based on the results of this inspection, two self-revealing findings of very low safety significance (Green) were identified. One of these findings was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV), in accordance with Section VI.A of the NRC's Enforcement Policy. If you contest this NCV, you should provide a response, within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the St. Lucie facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public

Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Joel T. Munday, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Docket Nos.: 50-335, 50-389
License Nos.: DPR-67, NPF-16

Enclosure: Inspection Report 05000335/2004003
and 05000389/2004003
w/Attachment - Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-335, 50-389
License Nos.:	DPR-67, NPF-16
Report Nos.:	05000335/2004003, 05000389/2004003
Licensee:	Florida Power & Light Company (FPL)
Facility:	St. Lucie Nuclear Plant, Units 1 & 2
Location:	6351 South Ocean Drive Jensen Beach, FL 34957
Dates:	December 28, 2003 - March 27, 2004
Inspectors:	T. Ross, Senior Resident Inspector S. Sanchez, Resident Inspector L. Mellen, Senior Emergency Preparedness Inspector J. Kreh, Emergency Preparedness Inspector R. Baldwin, Senior Operations Engineer
Approved by:	Joel T. Munday, Chief Reactor Projects Branch 3 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000335/2004003, 05000389/2004003; 12/28/2003 - 03/27/2004; St. Lucie Nuclear Plant, Units 1 & 2; Event Followup.

The report covered a three month period of inspection by resident inspectors, and regional inspectors in the area of emergency preparedness. One Green non-cited violation (NCV) and a Green finding were identified. The significance of most findings is identified by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Self-Revealing Findings

Cornerstone: Initiating Events

Green. A self-revealing finding was identified due to human error that resulted in the misidentification of the 2A condensate pump lower motor bearing as a sealed bearing which did not require lubrication.

The finding is greater than minor because if left uncorrected could result in unnecessary and increased challenges (e.g., reactor trips) to safety significant systems. The finding affected the initiating event cornerstone, and was considered to be of very low safety significance according to the SDP Phase 1 worksheet since there was no increase in the likelihood that mitigation equipment or functions would not be available.

Cornerstone: Mitigating Systems

Green. A self-revealing, non-cited violation of Criterion XVI of 10 CFR 50, Appendix B, Corrective Action was identified for the licensee's failure to determine the cause, and implement appropriate corrective action to preclude repetitive overspeed trips of the 2C auxiliary feedwater (AFW) pump.

The finding is greater than minor finding because if left uncorrected could result in the 2C AFW being unable to perform its safety function to mitigate certain design basis accidents (e.g., station blackout, loss of all feedwater). The finding was determined to be associated with the mitigating systems cornerstone. A Significance Determination Process (SDP) Phase 3 evaluation was performed for this event. The likelihood of successful recovery of the Unit 2 turbine-driven AFW pump after an overspeed trip was found to be better than the generic value for operator recovery used in the Phase 2 SDP sheets. This reduced the calculated risk impact of the event to a value below that determined in the Phase 2 analysis. As a result of this change, the Phase 3 analysis determined the finding's change in risk to be less than 1E-6.

B. Licensee-Identified Violation

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation is listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

Unit 1 operated at essentially full power until March 21, 2004, when it was shutdown for its 19th refueling outage (SL 1-19). However, Unit 1 did experience two unplanned down power events. The first event occurred on March 2, when operators rapidly reduced reactor power to 92% due to loss of the 1A1 Circulating Water pump. The second event occurred on March 6, when operators rapidly reduced power to 91% due to loss of the 1B Heater Drain Tank pump.

Unit 2 operated at essentially full power the entire inspection report period, except for one planned down power to 45% power to remove the 2C Condensate Pump from service to lubricate the lower motor bearing.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

Partial Equipment Walkdowns

The inspectors conducted four partial alignment verifications of the safety-related systems listed below to review the operability of required redundant trains or backup systems while the other trains were inoperable or out of service (OOS). These inspections included reviews of applicable Technical Specifications (TS), plant lineup procedures, operating procedures, and/or piping and instrumentation drawings which were compared with observed equipment configurations to identify any discrepancies that could affect operability of the redundant train or backup system.

- 2A Component Cooling Water (CCW) System
- 1B High Pressure Safety Injection (HPSI) System
- 1B CCW System
- 1B/2B Startup Transformers

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Routine Inspections

a. Inspection Scope

The inspectors conducted tours of the following nine fire areas to verify that they conformed with Administrative Procedure AP-1800022, Fire Protection Plan. The inspectors specifically examined any transient combustibles in the areas and any housekeeping issues that could result in potential ignition sources. The inspectors also assessed whether the material condition, operational status, and operational lineup of fire protection (i.e., detection, suppression, and barriers) systems, equipment and features were in accordance with the Fire Protection Plan. Furthermore, the inspectors evaluated the use of any compensatory measures being performed in accordance with the licensee's procedures and Fire Protection Plan.

- Unit 1 Charging Pumps Area
- Unit 1 and 2 Shutdown Cooling Heat Exchangers Area
- Unit 2 Pipe Tunnel Area
- Unit 2B Emergency Diesel Generator (EDG) Room
- Unit 1 Battery Rooms
- Unit 2 Battery Rooms
- Unit 1 EDG Building
- Unit 2 EDG Building
- Unit 2 Intake Cooling Water (ICW) Area

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

On January 26 through 29, 2004, the inspectors observed hydrolazing tube cleaning activities of the 2A and 2B CCW heat exchangers in accordance with MMP-14.01, CCW Heat Exchanger Cleaning And Repair. The inspectors also witnessed eddy current testing (ECT) of the 2A CCW heat exchanger and reviewed applicable ECT procedures, equipment calibration records, ECT analyst qualification certifications, and CCW Heat Exchanger Component Specific Technique Sheets. Furthermore, the inspectors also interviewed the responsible system engineer; reviewed FPL Specification M-081, Tube Plugging Criteria; and, examined applicable work order packages to verify the total number of plugged tubes were within analyzed limits for both the 2A and 2B CCW heat exchangers. In addition, the inspectors review of the records and documentation indicated that the frequency of inspection was sufficient to detect degradation to ensure TS operability prior to loss of heat removal capabilities below design basis values.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Routine Licensed Operator Requalification Program Inspection

a. Inspection Scope

On February 4, 2004, the inspectors observed and assessed licensed operator performance of two separate crews during their simulator evaluations. The operating crews responded to critical equipment failures and accident conditions (i.e., main steam line break outside containment, and medium break loss of coolant accident) in accordance with applicable emergency operating procedures (EOP). The inspectors specifically evaluated the following attributes related to the operating crew's performance:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Correct use and implementation of EOP-01, Standard Post Trip Actions; EOP-3, LOCA; and EOP-5, Excess Steam Demand
- Timely and appropriate Emergency Action Level declarations per Emergency Plan Implementing Procedure (EPIP) - 01, Classification of Emergencies
- Control board operation and manipulation, including high-risk operator actions
- Oversight and direction provided by Operations supervision, including ability to identify and implement appropriate TS actions, regulatory reporting requirements, and emergency plan actions and notifications
- Effectiveness of the post-evaluation critique

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the risk assessments for the following SSCs that were OOS for planned and/or emergent work. The inspectors also walked down and/or reviewed the scope of work to evaluate the effectiveness of licensee scheduling, configuration control, and management of online risk in accordance with 10 CFR 50.65(a)(4) and applicable program procedures such as ADM-17.16, Implementation of the Configuration Risk Management Program. Furthermore, the inspectors interviewed responsible Senior Reactor Operators on-shift, verified actual system configurations,

and specifically evaluated results from the online risk monitor (OLRM) for the combinations of OOS risk significant SSCs listed below.

- 2C AFW Pump, 1B EDG, and 2B Charging Pump
- 1B CCW Heat Exchanger and B-Side N-Header Valves
- 1A CCW Critical Maintenance Management (CMM) and 2A EDG
- 2A CCW CMM
- 2B CCW CMM and 2B CCW pump
- 1B EDG and 1B AFW Pump
- 1A HPSI, HCV14-8B, and 1B Containment Instrument Air Compressor

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions and Events

a. Inspection Scope

For the following abnormal events, the inspectors evaluated operator performance by interviews, direct observations and reviewing available information (e.g.,operator logs, plant computer data, and strip charts) to determine what occurred and how the operators responded, and to verify that the response was in accordance with applicable plant procedures, described below:

- On February 18, 2004, Unit 2 experienced a partial loss of main control board annunciators. Operators promptly entered 2-ONP-100.03, Partial or Complete Loss of Annunciators. Although, approximately 40% of the total number of annunciators were lost, only 22.4% of the total were safety-related. The inspector verified operator actions were in accordance with 2-ONP-100.03, and applicable EPIP-01 guidance. The inspector also confirmed that all annunciators were subsequently returned to service after operators transferred power to the alternate source.

- On March 11, 2004, during routine control element assembly (CEA) manipulations of regulating group #4 by control room operators, CEA #52 inexplicably dropped to the full in position. Inspectors witnessed operator response in accordance with off-normal operating procedure (ONP) 1-0110030, CEA Off-Normal Operation and Realignment. Pursuant to Appendix F, One Dropped CEA, of ONP 1-0110030, and TS 3.1.3.1.f., Unit 1 reactor power was reduced to less than 70% power according 1-GOP-123, Turbine Shutdown - Full Load to Zero Load. Inspectors monitored operators actions and equipment performance during the down power. While CEA #52 was full in, operators, with the aid of a reactor engineer, also promptly recognized that azimuthal power tilt exceeded TS 3.2.4.b limits, which would have required a further reduction of reactor power to less than 20% power. However, CEA #52 power switch was

repaired in an expeditious manner, and CEA #52 was restored to proper alignment with regulating group 4 all within three hours of the initial rod drop.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors witnessed and reviewed five post maintenance test (PMT) activities of the risk significant SSCs listed below. The following aspects were specifically inspected: (1) Effect of testing on the plant recognized and addressed by control room and/or engineering personnel; (2) Testing consistent with maintenance performed; (3) Acceptance criteria demonstrated operational readiness consistent with design and licensing basis documents such as TS, UFSAR, and others; (4) Range, accuracy and calibration of test equipment; (5) Step by step compliance with test procedures, and applicable prerequisites satisfied; (6) Control of installed jumpers or lifted leads; (7) Removal of test equipment; and, (8) Restoration of SSCs to operable status. The inspectors also reviewed problems associated with the PMTs to ensure that they were correctly identified and appropriately entered into the corrective action program.

- 2C AFW Pump per OP 2–0700050, AFW Periodic Test; OP 2-0010125A, Surveillance Data Sheets; and WO# 33016595
- 2A/2B CCW Heat exchangers per PMT sheets in WO# 330113250 and 33016716; and MMP-14.01
- 2B Charging Pump per OP 2-0010125A, Quarterly Pump Code Run
- Unit 2 Main Feedwater Isolation Valve (HCV 09-2B) per OP 2-0810050, Main Steam/Feedwater Isolation Valves Periodic Test; and 2-M-0018, MFIV Accumulator Test Procedure
- B-Side Startup Transformer per 2-GOP-502, Heatup; and 2-GOP-123, Turbine Shutdown - Full Load to Zero Load

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed all or portions of the following six surveillance tests and monitored test personnel conduct and equipment performance, to verify that testing was being accomplished in accordance with applicable operating procedures (OP), and operations surveillance procedures (OSP). The actual test data was reviewed to verify TS, UFSAR, and/or licensee procedure requirements were met. The inspectors also

verified that the testing effectively demonstrated the systems were operationally ready, capable of performing their intended safety functions, and that identified problems were entered into the corrective action program for resolution.

- 1-OSP-22.05, Unit 1 Quarterly Turbine Trip and Overspeed Protection Test
- OP 1-0700050, AFW Periodic Test, of the 1A AFW pump
- OP 1-0410050, HPSI/LPSI Periodic Test , for the 1A HPSI pump quarterly inservice test
- OP 1-0420050, Containment Spray Periodic Test, of the 1A Containment Spray Pump
- OP 1-0700050, AFW Periodic Test, of the 1C AFW pump
- OP 2-2200050B, 2B EDG Periodic Test and General Operating Instructions

b. Findings

No findings of significance were identified.

1REP Equipment Availability, Reliability and Functional Capability - Pilot

a. Inspection Scope

The inspectors examined reliability problems (i.e., repetitive functional failures) and excessive unavailability due to a degraded mechanical overspeed trip mechanism and overspeed trip events of the 2C turbine-driven AFW pump. The inspector's also reviewed the Significance Level 1 CR 03-4548, including associated root cause analysis and 10 CFR 50.65(a)(1) goal setting and monitoring (i.e., ADM-17.08, Figure 4); and the Unit 2 AFW System Checklist/Health Report. The inspectors verified the licensee's maintenance efforts met the requirements of 10 CFR 50.65 and Administrative Procedure ADM-17.08, Implementation of 10 CFR 50.65, The Maintenance Rule. The inspectors' efforts focused on the licensee's work practices and ability to identify and address common causes, maintenance rule scoping, characterization of reliability issues and assigning unavailability time, determination of a(1), corrective actions, and the appropriateness of established performance goals and monitoring criteria. The inspectors also attended applicable expert panel meetings, interviewed responsible system engineer, and observed some of the corrective maintenance and troubleshooting activities. Furthermore, the inspectors verified that equipment problems were being identified at the appropriate level and entered into the corrective action program.

The inspectors reviewed the operability evaluations for the following four interim and/or final CR dispositions to ensure that TS operability was properly supported and the affected SSC remained available to perform its safety function with no unrecognized increase in risk. As applicable, the inspectors reviewed the UFSAR, and associated supporting documents and procedures, and interviewed plant personnel to assess the adequacy of the interim CR disposition.

- CR 04-0105 Manual Initiation Light Burned Out on Safety Injection Actuation Signal Channel A
- CR 04-0071 Unit 2 Charging Pump Surveillance Test Flow Rate Exceeded Maximum Design Flow Rate
- CR 04-0119 10 CFR Part 21 For Charging Pump Coatings
- CR 04-0263 Boric Acid Corrosion on Unit 1 Refueling Water Tank

The inspectors routinely reviewed the Operator Work Around (OWA) log for both units and discussed new items with Operations supervision. The inspectors also routinely walked down unit main control boards (MCB), reviewed operator chronological logs and equipment OOS logs, and examined MCB plant work order (PWO) tags for potential OWAs. Furthermore, the inspectors verified OWAs were being identified and properly entered into the corrective action program.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness (EP)

1EP1 Exercise Evaluation

a. Inspection Scope

The inspectors reviewed the emergency exercise and scenario for the biennial, full participation 2004 emergency response exercise. The review covered whether the licensee created a scenario suitable to test the major elements of their emergency plan in accordance with 10 CFR 50, Appendix E.

Licensee activities inspected during the exercise included independent observations in the Control Room Simulator (CRS), Emergency Operations Facility (EOF), Technical Support Center (TSC), and Operational Support Center (OSC). The exercise was conducted on February 18, 2004. The inspectors reviewed a sample of corrective actions identified in the past, determined if any trends in performance represented a failure to correct weaknesses, a failure to meet a planning standard or other regulatory requirement. The inspector developed a list of performance areas to be observed in this exercise. The inspectors' evaluation focused on the risk-significant activities of event classification, notification of governmental authorities, onsite protective actions, offsite protective action recommendations, and accident mitigation. The inspectors also evaluated command and control, the transfer of emergency responsibilities between facilities, communications, adherence to procedures, and the overall implementation of the emergency plan. The inspectors attended the post-exercise critique to evaluate the licensee's self-assessment process, as well as the presentation of critique results to plant management.

At the conclusion of these evaluations and independent observations, the inspectors determines whether the exercise was a satisfactory test of the Emergency Plan.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The inspectors reviewed all non-administrative EAL changes against the requirements of 10 CFR 50.54(q) to determine that they have not decreased the effectiveness of the Radiological Emergency Plan (REP). The licensee had implemented REP Revisions 41, 42, and 43, including modifications to the emergency action levels (EALs) in Revisions 41 and 42. The inspectors conducted a detailed review of all EAL changes. Licensee documentation was available to confirm that EAL changes had been discussed with, and concurrence received from, State and county emergency planning officials prior to implementation. The inspectors reviewed documentation of the licensee's 10 CFR 50.54(q) screening evaluations for the referenced revisions. Licensee plans, records, and other documents reviewed within this inspection area are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

On January 14, the inspectors observed a quarterly Emergency Preparedness (EP) drill of the licensee's emergency response organization (ERO) personnel in the simulator and Technical Support Center (TSC). During this drill the inspectors assessed operator actions in the control room simulator and personnel in the TSC to verify whether emergency classification, notification, and protective action recommendations were made in accordance with EPIPs. Additionally, the inspectors evaluated the adequacy of the post drill critiques conducted in the simulator and the TSC.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Mitigating Systems Cornerstone

a. Inspection Scope

The inspectors assessed the accuracy of the following Performance Indicators (PIs) reported to the NRC in accordance with the criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, and ADM-25.02, NRC Performance Indicators. The inspectors reviewed the PI data of both Units 1 and 2 for the previous four quarters (i.e., First Quarter 2003 through Fourth Quarter 2003). Applicable operating logs, condition reports, Monthly Operating Reports, Maintenance Rule history, and Licensee Events Reports were reviewed to verify the reported PI data was complete and accurate. Furthermore, the inspectors interviewed the responsible system engineers.

- Unit 1 Safety System Functional Failures
- Unit 2 Safety System Functional Failures
- Unit 1 AFW Safety System Unavailability
- Unit 2 AFW Safety System Unavailability
- Unit 1 Emergency AC Power System Unavailability
- Unit 2 Emergency AC Power System Unavailability

b. Findings

No findings of significance were identified.

.2 Emergency Preparedness Cornerstone

a. Inspection Scope

The inspectors sampled licensee submittals relative to the PIs listed below for the period January through December 2003. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, “Regulatory Assessment Performance Indicator Guideline”, Revision 2, were used to confirm the reporting basis for each data element.

- Emergency Response Organization (ERO) Drill/Exercise Performance
- ERO Drill Participation
- Alert and Notification System Reliability

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records.

The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review Of Condition Reports

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems", and to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of all condition reports as they were entered into the licensee's corrective action program.

b. Findings

There were no specific findings identified from this overall review of the CRs issued each day, except as discussed below.

4OA3 Event Follow-up

.1 Licensee Event Report (LER) 0500050389/2003-004-00, Condensate Pump Motor Bearing Failure Resulted in Manual Reactor Trip

a. Inspection Scope

On December 4, 2003, Unit 2 operators initiated a rapid down power from 100% power in an attempt to remove the 2A condensate pump from service after it was reported the lower motor bearing was overheating and smoking. At about 60% power, operators manually tripped the reactor when it became apparent that the 2A condensate pump motor was deteriorating rapidly. This LER was reviewed and determined to be accurate and consistent with NRC observations following the reactor trip (see Section 4OA3 of IR 50-335, 389/2003-07). The reactor trip event was addressed in the licensee's corrective action program as CR 03-4327, which was reviewed in detail by the inspector as part of supplemental inspection procedure (SP) 95001. During this supplemental inspection the licensee's root cause analysis, extent of condition, and corrective actions were specifically reviewed and the inspection results were documented in IR 50-389/2004-008. Although no violation of NRC requirements was identified, the failure of the 2A

condensate pump motor bearing was due to a human performance deficiency, as discussed below.

b. Findings

Introduction. A Green self-revealing finding was identified due to human error that resulted in the misidentification of the 2A condensate pump lower motor bearing as a sealed bearing which did not require lubrication.

Description. The most probable cause of the 2A condensate pump lower motor bearing failure was inadequate lubrication. The 2A condensate pump was last overhauled in March 1994, when a new lower motor bearing was installed. This bearing had not been lubricated since then. Ten years of service without lubrication is well beyond industry guidance for open, grease lubricated, bearings. The reason that the 2A condensate pump lower motor bearing had not been lubricated for 10 years, was because General Maintenance Procedure (GMP) 22, Plant Lubrication Manual, contained inaccurate information. According to GMP-22, the 2A condensate pump lower motor bearing was a sealed bearing which did not require lubrication. This erroneous information was unintentionally introduced in 1994 when the instructions from several lubrication manuals were combined into one plant-wide lubrication manual. Furthermore, the licensee determined during their investigation that this same error existed for the Unit 2 circulating water pumps and the other Unit 2 condensate pumps.

Analysis. Reactor trips are analyzed events. During the Unit 2 reactor trip, all safety-related equipment operated as designed and operators safely placed the unit in a stable Hot Standby (Mode 3) condition. However, catastrophic failure of a condensate pump would be considered a transient initiator. The licensee's failure to adequately maintain critical secondary equipment, whose failure can directly cause a reactor trip, is considered more than a minor finding because if left uncorrected could result in unnecessary and increased challenges to safety significant systems. The finding was determined to be associated with the initiating event cornerstone, and was considered to be of very low safety significance according to the SDP Phase 1 worksheet since there was no increase in the likelihood that mitigation equipment or functions would not be available.

Enforcement. Because the equipment affected by the performance deficiency was non-safety related, no violation of regulatory requirements occurred. The licensee replaced the lower motor bearing, did an extent of condition review, and initiated a root cause evaluation. The finding is identified as FIN 05000389/2004003-01, Condensate Pump Lower Motor Bearing Failure Due to Inadequate Lubrication Resulted in Manual Reactor Trip. This LER is closed.

.2 LER 50-389/2003-005, Automatic Reactor Trip Due To Loss of Turbine Generator Excitation

On December 20, 2003, Unit 2 experienced an automatic reactor trip from 100% power due to loss of main generator excitation. This LER was reviewed and determined to be accurate and consistent with NRC observations following the reactor trip (see Section

4OA3 of IR 50-335, 389/2003-07). The reactor trip event was addressed in the licensee's corrective action program as CR 03-4539, which was reviewed in detail by the inspector as part of SP 95001. During this supplemental inspection the licensee's root cause analysis, extent of condition, and corrective actions were specifically reviewed and the inspection results were documented in IR 50-389/2004-008. No significant findings were identified and the event did not constitute a violation of NRC requirements. This LER is closed.

.3 (Closed) LER 50-389/2003-006, Long-standing 2C TDAFW Pump Design Issue Resulted in Condition Prohibited by Tech Specs

(Closed) Unresolved Item (URI) 0500389/2003007-02, Repetitive Overspeed Failures of the 2C AFW Pump

a. Inspection Scope

On December 20, 2003, shortly after an automatic reactor trip of Unit 2 (see above), the 2C turbine-driven AFW pump automatically started but in less than a minute it experienced an unexpected mechanical overspeed trip. The inspectors reviewed the LER and determined it was accurate and consistent with NRC observations during the time of the event and subsequent troubleshooting and testing. The overspeed trip of the 2C AFW pump on December 20, was similar to an overspeed trip event that occurred following a reactor trip on April 1, 2003. The licensee initiated a Significance Level 1 CR 03-4548, and formed a root cause team (RCT) to investigate the repeat failure of the 2C AFW pump. The inspectors monitored the progress of the licensee's investigation; interviewed responsible RCT members; and reviewed the root cause analysis and determination, safety significance evaluation and corrective actions of CR 03-4548.

b. Findings

Introduction. A Green self-revealing non-cited violation (NCV) was identified for the licensee's failure to determine the cause, and implement corrective action to preclude repetitive overspeed trips of the 2C AFW pump as required by Criterion XVI of 10 CFR 50, Appendix B, Corrective Action.

Description. On April 1, 2003, after a manual reactor trip of Unit 2, the 2C AFW pump started and tripped unexpectedly. Although, at the time, the licensee was unable to recreate the conditions that caused the mechanical overspeed trip of the 2C AFW pump, the licensee concluded that the root cause was due to degraded parts in the mechanical overspeed linkage. These parts were replaced and subsequent surveillance tests appeared to be successful. However, following the overspeed trip event of December 20, which occurred under similar conditions (i.e., reactor trip from full power) as April 1, the licensee recognized the two events could constitute repeat failures and promptly formed an RCT. This team developed a detailed, comprehensive troubleshooting plan that was able to determine the specific plant conditions that caused both events. Based on its investigation, the RCT concluded that the 2C AFW pump was very susceptible to over-speeding due to inability of the turbine governor to control perturbations caused by entrained condensate in the steam admission lines, but only

during a staggered actuation of the auxiliary feedwater actuation system (AFAS). Normal surveillance testing of the 2C AFW pump was ineffective in discovering this vulnerability because only one of the two 100% capacity steam admission lines was used to start and run the pump, which was alternated each test. However, during an actual full power reactor trip, AFAS would typically actuate at different times due to steam generator level shrinkage causing the steam admission valves to both open in a staggered manner. This staggered opening sequence would introduce significantly greater quantities of condensate into the 2C AFW turbine for which the governor was not set up and tuned to handle. The licensee concluded that this unknown vulnerability has existed since initial commercial operation of Unit 2, and that the two principal root causes were - 1) inadequate design of the steam supply piping, and 2) the staggered AFAS start logic. The licensee also concluded that the April 1 and December 20 overspeed events were repetitive functional failures.

Analysis. The 2C AFW pump is a risk-significant mitigation system that is credited by the licensee's safety analyses. Failure to adequately test and maintain the 2C AFW pump in an operable condition to mitigate all design basis accidents for which it was designed is considered to be more than a minor finding because if left uncorrected could result in a significant safety concern. The finding was determined to be associated with the mitigating systems cornerstone. A Significance Determination Process (SDP) Phase 3 evaluation was performed for this event. The likelihood of successful recovery of the Unit 2 turbine-driven AFW pump after an overspeed trip was found to be better than the generic value for operator recovery used in the Phase 2 SDP sheets. This reduced the calculated risk impact of the event to a value below that determined in the Phase 2 analysis. As a result of this change, the Phase 3 analysis determined the finding's change in risk to be less than 1E-6, and the issue is considered to be GREEN.

Enforcement. Criterion XVI of Appendix B to 10 CFR 50, Corrective Action, states in part that, "Measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition." Contrary to this, on December 20, the 2C AFW pump experienced a repetitive functional failure due to the licensee not having determined the root cause and implemented effective corrective actions for the overspeed trip that occurred on April 1. However, because this violation is of very low safety significance and was addressed by the licensee's corrective action program (i.e., CR 03-4548), this violation is being treated as a non-cited (NCV) consistent with Section VI.A of the NRC Enforcement Policy - NCV 05000389/2004003-02, Inadequate Cause Determination and Ineffective Corrective Actions to Preclude Repetitive Overspeed Failures of the 2C AFW Pump. This LER and associated URI are closed.

4OA4 Cross-Cutting Issue

Section 4OA3.1 describes a human performance error where the 2A condensate pump lower motor bearing had not been lubricated for 10 years because General Maintenance Procedure (GMP) 22, Plant Lubrication Manual contained inaccurate information. As a result, the lower motor bearing failure resulted in a manual reactor trip. Furthermore,

the licensee determined during their investigation that this same error existed for the Unit 2 circulating water pumps and the other Unit 2 condensate pumps.

4OA6 Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. Bill Jefferson and other members of licensee management on March 30, 2004. An interim exit had been held on February 20, 2004, with site management by regional inspectors regarding the EP exercise of February 18. The licensee acknowledged the findings presented. No proprietary information was identified.

.2 Annual Assessment Meeting Summary

On March 22, 2004, the NRC's Chief of Reactor Projects Branch 3, Nuclear Reactor Regulation (NRR) intern and Resident staff assigned to the St. Lucie Nuclear Plant met with Florida Power and Light (FP&L) to discuss the NRC's Reactor Oversight Process (ROP) and the St. Lucie annual assessment of safety performance for the period of January 1, 2003 - December 31, 2003. The major topics addressed were: the NRC's assessment program and the results of the St. Lucie assessment. Attendees included FP&L management, St. Lucie site management and one local TV reporter.

This meeting was open to the public. The NRC's presentation material used for the discussion is available from the NRC's document system (ADAMS) as accession number ML040980598. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

4OA7 Licensee Identified Violations

The following finding of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as an NCV.

Criterion V of Appendix B to 10 CFR 50, Instructions, Procedures, and Drawings, states in part that, "Activities affecting quality shall be prescribed by documented instructions, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions." Contrary to the above, on January 28, 2004, the licensee discovered that maintenance personnel had installed a stem clamp on the wrong Unit 1 CCW N-header isolation valve. This wrong component event was captured in the licensee's corrective action program as CR 04-0314. This finding is of very low safety significance because the licensee discovered the error, and corrected it, in less than eight hours which was well within the TS allowed outage time.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Alfonso, Corrective Action Program Supervisor
D. Calabrese, Emergency Planning Supervisor
E. Cartwright, Projects Manager
C. Costanzo, Operations Manager
R. De La Espriella, Site Quality Manager
L. Edwards, Training Manager
R. Hughes, Site Engineering Manager
E. Katzman, Performance Improvement Department Manager
G. Johnston, Plant General Manager
W. Jefferson, Site Vice President
J. Kirkpatrick, Maintenance Manager
J. Martin, Operations Support Supervisor
R. McDaniel, Fire Protection Supervisor
D. Mothena, Manager - Plant Support Services
W. Parks, Operations Supervisor
T. Patterson, Licensing Manager
J. Porter, Operations Support Engineering Manager
J. Tucker, Work Control Manager
G. Varnes, Security Manager
S. Wisla, Health Physics Manager
M. Wolaver, Acting Systems & Component Engineering Manager

Other licensee employees contacted include office, operations, engineering, maintenance, chemistry/radiation, and corporate personnel.

NRC Personnel

B. Moroney, NRR Project Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000389/2004003-01	FIN	Condensate Pump Lower Motor Bearing Failure Due to Inadequate Lubrication Resulted in Manual Reactor Trip (Section 4OA3.1)
05000389/2004003-02	NCV	Inadequate Cause Determination and Ineffective Corrective Actions to Preclude Repetitive Overspeed Failures of the 2C AFW Pump (Section 4OA3.3)

Closed

05000335/2003-004	LER	Condensate Pump Motor Bearing Failure Resulted in Manual Reactor Trip (Section 4OA3.1)
05000335/2003-005	LER	Automatic Reactor Trip Due To Loss of Turbine Generator Excitation (Section 4OA3.2)
05000389/2003007-002	URI	Repetitive Overspeed Failures of the 2C AFW Pump (Section 4OA3.3)
05000389/2003-006	LER	Long-standing 2C TDAFW Pump Design Issue Resulted in Condition Prohibited by Tech Specs (Section 4OA3.3)

LIST OF DOCUMENTS REVIEWED

Section 1EP4: EAL and Radiological Emergency Plan Changes

Plans and Procedures

Radiological Emergency Plan, Rev. 41 (effective 08/01/2002), Rev. 42 (effective 03/27/2003), and Rev. 43 (effective 09/02/2003)

Records and Data

Evaluation for Decrease in Effectiveness per 10 CFR 50.54(q) for Rev. 41, 07/18/2002
Evaluation for Decrease in Effectiveness per 10 CFR 50.54(q) for Rev. 42, 01/28/2003
Evaluation for Decrease in Effectiveness per 10 CFR 50.54(q) for Rev. 43, 07/22/2003

Condition Reports

CR 03-0226, Change to EAL 1.A may constitute a decrease in effectiveness, 01/28/2003

Section 4OA1: Performance Indicator Verification

Records and Data

Critique report for ERO drill on 10/27/2003

Documentation packages (event notification forms/evaluator critique) for Licensed Operator Requalification drills on various dates in 10/2003