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

Report Nos.: 50-335/95-14 and 50-389/95-14

Licensee: Florida Power & Light Co
9250 West Flagler Street
Miami, FL 33102

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

Facility Name: St. Lucie 1 and 2

Inspection Conducted: July 2 through July 29, 1995

Lead Inspector: _____ 8/8/95
R. Prevatte, Senior Resident Inspector — Date Signed

M. Miller, Resident Inspector

Approved by: _____ 8/22/95
K. Landis, Chief — Date Signed
Reactor Projects Section 2B
Division of Reactor Projects

SUMMARY

Scope: This routine resident inspection was conducted onsite in the areas of plant operations review, maintenance observations, surveillance observations, engineering support, plant support, review of nonroutine events, followup of previous inspection findings, and other areas.

Inspections were performed during normal and backshift hours and on weekends and holidays.

Results:

Plant operations area:

Operations continued to perform well. Operator response to a reactor trip on July 8 was excellent. Operations response to deficiencies identified during plant systems walkdowns was satisfactory.

Maintenance and Surveillance area:

Maintenance performance was found to be good. Critical maintenance on the 1B Auxiliary Feedwater Pump was performed very well; in contrast, a lack of proper planning and preparation resulted in increased out of service time for preventive maintenance on the 2C Auxiliary Feedwater Pump. A personnel error during main turbine trip surveillance testing resulted in a trip on Unit 1. An I&C. procedural weakness was identified during testing of the 2B Diesel Fuel Oil Day Tanks.

Engineering area:

Performance in this area continued to be satisfactory.

Plant Support area:

Performance in this area continued to be satisfactory.

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

REPORT DETAILS

1. Persons Contacted

Licensee Employees

R. Ball, Mechanical Maintenance Supervisor
*E. Benkin, Plant Licensing Engineer
*W. Bladow, Site Quality Manager
L. Bossinger, Electrical Maintenance Supervisor
H. Buchanan, Health Physics Supervisor
*C. Burton, St. Lucie Plant General Manager
R. Dawson, Licensing Manager
D. Denver, Site Engineering Manager
J. Dyer, Maintenance Quality Control Supervisor
H. Fagley, Construction Services Manager
P. Fincher, Training Manager
*R. Frechette, Chemistry Supervisor
K. Heffelfinger, Protection Services Supervisor
*J. Marchese, Maintenance Manager
W. Parks, Reactor Engineering Supervisor
*C. Pell, Outage Manager
*L. Rogers, Instrument and Control Maintenance Supervisor
D. Sager, St. Lucie Plant Vice President
*J. Scarola, Operations Manager
J. West, Site Services Manager
C. Wood, Operations Supervisor
W. White, Security Supervisor

Other licensee employees contacted included engineers, technicians, operators, mechanics, security force members, and office personnel.

NRC Personnel

* M. Miller, Resident Inspector
* R. Prevatte, Senior Resident Inspector
* S. Sandin, Senior Operations Officer, AEOD

* Attended exit interview

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

2. Plant Status and Activities

a. Unit 1

Unit 1 entered the inspection period at full power. A reactor trip was experienced on July 8 due to personnel error during a surveillance test. The unit achieved criticality on July 11 and was placed back on-line on July 12. The unit remained at full power for the balance of the period.

b. Unit 2

Unit 2 operated at essentially full power throughout the period until a planned power reduction on July 23 for condenser waterbox cleaning. The unit was maintained at approximately 60 to 70 per cent power during the cleaning, and was returned to full power operation on July 28.

c. NRC Activity

K. D. Landis, Acting Chief, Reactor Projects Branch 2, NRC Region II, visited the site on July I4. His activities included meetings with licensee management and a review of resident inspection activities.

R. P. Carrion of the Division of Radiological Safety and Safeguards, NRC Region II, conducted an inspection of the licensee's chemistry program with the NRC Region II Mobile Laboratory on July 17 and 18. His activities are documented in Inspection Report 95-13.

3. Plant Operations

a. Plant Tours (71707)

The inspectors periodically conducted plant tours to verify that monitoring equipment was recording as required, equipment was properly tagged, operations personnel were aware of plant conditions, and plant housekeeping efforts were adequate. The inspectors also determined that appropriate radiation controls were properly established, critical clean areas were being controlled in accordance with procedures, excess equipment or material was stored properly, and combustible materials and debris were disposed of expeditiously. During tours, the inspectors looked for the existence of unusual fluid leaks, piping vibrations, pipe hanger and seismic restraint settings, various valve and breaker positions, equipment caution and danger tags, component positions, adequacy of fire fighting equipment, and instrument calibration dates. Some tours were conducted on backshifts. The frequency of plant tours and control room visits by site management was noted.

The inspectors routinely conducted main flow path walkdowns of ESF, ECCS, and support systems. Valve, breaker, and switch lineups as well as equipment conditions were randomly verified both locally and in the control room. The following accessible-area ESF system and area walkdowns were made to verify that system lineups were in accordance with licensee requirements for operability and equipment material conditions were satisfactory:

1) Unit 1 Boric Acid Makeup

The inspector found major flowpath valves properly aligned.

2) Unit 1 Auxiliary Feedwater

The inspector found major flowpath valves properly aligned. Corrosion was found breaking through exterior paint on welded joints on either side of V09303 and on the downstream side of V9104. These conditions were brought to the attention of the system engineer for resolution.

Additionally, the inspector examined the governor valve stems of turbine-driven auxiliary feedwater pumps 1C and 2C for evidence of corrosion that could inhibit free movement as identified in NRC Information Notice 94-66, Supplement 1. No significant evidence of corrosion was identified on either stem. The inspector discussed the issue of stem corrosion with the AFW system engineer and found that the issue was being considered and tracked under STAR 950496 and that the system engineer was extremely knowledgeable of the issue.

3) Unit 2 Auxiliary Feedwater

The inspector performed a walkdown of the Unit 2 AFW System in the CST area, AFW Pump Rooms, Steam Trestle area, and the Unit 2 Control Room. All valves in the above areas were in the proper position for current plant conditions. General and specific comments are itemized below.

a) General Comments:

(1) Nameplate identification inconsistent with description in operating procedure.

b) Operating Procedure No. 2-0700022, Rev 35, "Auxiliary Feedwater - Normal Operation:"

(1) SE-08-1 and V08660 were listed as located in the 2C AFW Pump Room on the alignment of Steam Supply System when, in fact, they were in the 2A/2B AFW Pump Room.

(2) V09149, V09150, V09542, V09543, V09313, V09314, V09540, V09541, V09133, V09134, V09544, V09545, V09155, V09156, V09546, V09547 were LOCKED CLOSED valves. Initial lineup per the OP was CLOSED only.

(3) V09540 and V09541 were LOCKED CLOSED with no valve label or position tag attached. They appeared to be replacement valves.

These conditions were referred to the licensee for correction.

4) Unit 2 Component Cooling Water

The inspector verified the major CCW flow paths, reviewed applicable procedures and walked down the system in the CCW Surge Tank area, Unit 2 Control Room HVAC area and the CCW structure. All valves in the above areas were in the proper position for current plant conditions. General and specific comments are itemized below.

a) General Comments:

(1) Nameplate identification inconsistent with descriptions in the system operating procedure.

(2) Description of valves differ between Administrative Procedure No. 2-0010123, Rev 67, "Administrative Control of Valves, Locks and Switches," Appendix I and Operating Procedure No. 2-0310020, Rev 32, "Component Cooling Water - Normal Operation."

(3) Tag missing on SH21339 (8" Drain SS-21-1B) ICW System

b) Operating Procedure No. 2-0310020, Rev 32, "Component Cooling Water - Normal Operation:"

(1) V14101 & V15536 were initially aligned to the CLOSED position; however, both had a handwheel locking device installed with no associated tag indicating LOCKED CLOSED.

(2) Line 4"-FP-126 upstream of V15536 (Fire Protection System to CCW surge tank) painted blue instead of red as on Unit 1.

(3) V14559 (LS-14-6B lower isol) omitted from initial lineup.

(4) V14438 (2A CCW HX outlet piping high point vent) omitted from initial lineup.

(5) SB14439 was initially aligned to the closed position; however, a handwheel locking device was installed with an associated tag indicating LOCKED CLOSED. This valve was also shown in Administrative Procedure No. 2-0010123, Rev 67, "Administrative Control of Valves, Locks and Switches," Appendix I as LOCKED CLOSED.

(6) V14187 (Chemical Feed Tank outlet) tag not attached.

(7) V14188 did not have a LOCKED CLOSED tag as shown in the initial alignment.

c) Off-Normal Operating Procedure No. 2-0030131, Rev 49, "Plant Annunciator Summary:"

(1) Identified sensing element for alarm S-12 as PT-14-8B, vice PIS-14-8B as indicated on CWD.

(2) Identified sensing element for alarm S-42 as TIS-14-29-2B1/2B2, vice TIS-14-29-1B1/1B2 as indicated on CWD.

(3) Identified control room indication as "Check FIS-14-10A on RTGB-206" vice FIS-14-10B for alarm S-25.

d) FSAR Table 9.2-7, "Component Cooling Water System Instrumentation Application:"

(1) Identified CCW Hx Shell Side Outlet Radiation Recorders as RR-2G-1,-2, vice RR-26-1,-2 as shown on CWD.

(2) Identified Fuel Pool HX Outlet Temperature Tag Number as TE-14-2, vice TE-14-20 as shown on CWD.

(3) Identified RCP & Motor Cooling Water Outlet total Combined Flow tag number as FIS-14-15F, vice FIS-14-15B and the instrument range as 0-1500 gpm vice 0-2000 gpm.

(4) Identified RCP & Motor Cooling Water Outlet Seal Cooler HX Tag Number as TDIS-, vice TIS.

These conditions were referred to the licensee for correction.

b. Plant Operations Review (71707)

The inspectors periodically reviewed shift logs and operations records, including data sheets, instrument traces, and records of equipment malfunctions. This review included control room logs and auxiliary logs, operating orders, standing orders, jumper logs, and equipment tagout records. The inspectors routinely observed operator alertness and demeanor during plant tours. They observed and evaluated control room staffing, control room access, and operator performance during routine operations. The inspectors conducted random off-hours inspections to ensure that operations and security performance remained at acceptable levels. Shift turnovers were observed to verify that they were conducted in accordance with approved licensee procedures. Control room annunciator status was verified. Except as noted below, no deficiencies were observed.

1) Vehicle Accident in Plant Discharge Canal

On July 9, an automobile was inadvertently driven into the plant discharge canal. The automobile was occupied by three teenagers, who later reported that they were looking for a place to surf. The occupants escaped by crawling out of the windows just prior to the vehicle being sucked into the 12' discharge pipe which routes water from the discharge canal, under the beach, into the Atlantic Ocean.

The automobile subsequently became lodged in the discharge pipe at a "Y" which split the 12' pipe into two discharge paths. The obstruction created by the vehicle did not adversely affect safety at the facility, as a 16' pipe also existed parallel to the 12' pipe. The combined discharge capacity was more than sufficient to pass the effluent from both units' ICW pumps without raising discharge canal levels to a level which would have resulted in a spillover of water into the adjoining mangroves.

The vehicle was removed by a combination of divers, who repositioned the vehicle, and a tug boat, which pulled the vehicle from the pipe. The vehicle was subsequently raised and removed from the area.

2) Unit 1 Restart

The inspector observed activities associated with the approach to criticality of Unit 1 on July 11. The evolution was supported by a reactivity manager, Reactor Engineering, and plant management. The inspector verified that ECCs were prepared correctly and were within periods of applicability, that a 1/M plot was being prepared and maintained, and that control room staffing was adequate and controlled. Overall, the evolution was performed in a professional manner. The unit was placed on-line at 12:35 a.m. on July 12.

3) CEDM Cooling Fan Failure

On July 22, Unit 1 control room operators noted that HVE-21B, the B CEDM cooling fan, had tripped off and that HVE-21A, the standby fan, had started. Subsequent testing indicated that the motor for HVE-21B would start and run; however, amperage readings indicated the fan to be running at no-load conditions. A containment entry and inspection revealed that the fan had failed catastrophically, resulting in a low air flow trip.

The fan in question was one of two designed to draw air from the reactor cavity around the CEDMs, pass the air through coolers, and discharge it to the containment environment. One fan was required at all times for power operation, and a loss of both fans required the unit to be subcritical within 45

minutes per ONOP 2-2000030, Rev 9; "Loss of Reactor Cavity, Reactor Support, CEDM, or Containment Cooling Fans."

The failure resulted in the cocking of the fan at an angle from horizontal, cocking of the motor shaft/fan shaft at the coupling, damage to the variable vane linkage and supports, damage of pitot tubes in the discharge plenum, and damage to pillow block bearings supporting the motor/pump union. At the point of failure, parts were dislodged and thrown from the unit, creating holes in the fan shroud and in the screen which covered the fan discharge. The licensee found debris scattered about the area surrounding the fan. The debris which was ejected did not damage adjacent equipment.

At the close of the inspection period, the licensee was attempting to determine root causes and corrective actions. Corrective action options included repair at reduced power, repair during a shutdown, and repair during the upcoming Unit 2 refueling outage.

c. Plant Housekeeping (71707)

Storage of material and components, and cleanliness conditions of various areas throughout the facility were observed to determine whether safety and/or fire hazards existed. No violations or deviations were identified.

d. Clearances (71707)

The inspector reviewed clearances 2-95-04-052, 2-95-06-106, and 2-95-06-095. All tags were in place and components were found to be correctly positioned.

e. Technical Specification Compliance (71707)

Licensee compliance with selected TS LCOs was verified. This included the review of selected surveillance test results. These verifications were accomplished by direct observation of monitoring instrumentation, valve positions, and switch positions, and by review of completed logs and records. Instrumentation and recorder traces were observed for abnormalities. The licensee's compliance with LCO action statements was reviewed on selected occurrences as they happened. The inspectors verified that related plant procedures in use were adequate, complete, and included the most recent revisions.

1) Elevated Sea Water Temperature

On July 7, the licensee noted that increased sea water temperatures were approaching the operating limits for the Unit 2 ICW/CCW heat exchangers. Sea water temperature had reached

approximately 87°F. Control room operating curves for the heat exchangers, which plotted maximum allowable intake temperature against existing heat exchanger differential pressure, were clamped such that intake temperatures in excess of 88°F would result in heat exchanger inoperability. Dual heat exchanger inoperability would have necessitated entry into TS 3.0.3, requiring a unit shutdown.

The licensee's immediate actions were to check the calibration of the installed temperature indicators on the B heat exchanger (the higher reading of the two) and to install a more accurate, digital, temperature indicator in its place. The inspector observed portions of the calibration and data gathering effort and noted good involvement by the NPS, who sought to ensure that limits were not being violated. The M&TE employed for the measurements was verified to be within its calibration interval. The inspector spoke to control room operators about the issue and found that they had been issued clear instructions to commence a unit shutdown should temperature exceed 88°F.

The more accurate temperature instruments indicated that intake temperature plateaued at approximately 87°F. Concurrently, Engineering began to develop new operating curves which incorporated actual heat exchanger performance data (e.g. number of tubes plugged, actual pump degradation values) to arrive at new temperature/flow relationships. As a result, Engineering determined that the maximum allowable temperatures for each heat exchanger exceeded 89°F at conditions of greatest flow. The inspector discussed the methodologies employed in deriving the curves with Engineering personnel and found them to be acceptable.

f. Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems

1) QA Audit Review (40500)

a) The inspector reviewed Q.A. Audit QSL-OPS-95-14 "Corrective Action" dated June 29, 1995. This audit evaluated the implementation and effectiveness of the plant's corrective action program. The report found that the program was effectively implemented but identified three areas that needed improvement. These included:

- The database did not provide accurate information regarding the responsibility for and current status of pending corrective actions. Changes that occur in status were not always communicated to the STAR Coordinator.

- Several instances were identified where STARs requiring work or repair on ASME Section XI components were not routed to the ANII or ISI Coordinator.

- The authentication process for STARs that become quality records was not clearly delineated. This resulted in some STARs in the quality records system not meeting procedural and quality records requirements.

The audit appeared to be detailed and provided management with a clear understanding of the current STAR system status.

b) The inspector reviewed QA Audit QSL-OPS-95-13, which summarized performance monitoring activities in the areas of ILRT/LLRT programs, CMM, corrections of discrepant field conditions, Maintenance Department corrective actions, M&TE programs, and protected area controls. In general, the audit found the subject activities to be performed satisfactorily. The inspector noted that a number of minor changes in M&TE control and storage methods resulted from one of the PMONs and that the nature of the changes appeared to offer opportunities for greater control of M&TE. The inspector concluded that the audit was both detailed and multidisciplinary.

2) Post-Trip Review (92901)

The inspector attended a meeting, conducted on July 21 by Operations management, which discussed the Unit 1 High Pressure trip discussed in paragraph 4.b, below. This was the second such meeting following an automatic trip, and was designed to elicit comments from plant operations and support personnel on ways to avoid similar trips in the future. Presentations covered the circumstances surrounding the event, the effect on the unit, preliminary lessons learned and an open discussion of options to prevent recurrence. The meeting was heavily attended and input and exchanges were frank. The inspector concluded that this practice continues to provide plant management with practical options for reducing the number of automatic trips in the future.

g. Followup of Operations LERs (90712)

(Closed) LER 50-389/94-006, Rev 1, "Trip Circuit Breaker Failure due to a Broken Piece of Phenolic Block Lodged in the Trip Latch Mechanism"

The licensee provided the subject LER as informational following the failure of a TCB to open during RPS logic matrix testing in July, 1994. The incident which prompted the LER is described in IR 94-15. The licensee's corrective actions involved a replacement of the subject TCB, an inspection of the remaining Unit 2 TCBs and CEA MG output breakers, an inspection of Unit 1 TCBs (discussed in IR 94-24), and an evaluation of the use of a locking compound on cutoff switch phenolic block screws to prevent the backing out of the screws (believed to be responsible for the subject failure).

The licensee's corrective actions have been completed. No similar conditions were noted in TCB inspections and no loose screws were found. The licensee and the vendor concluded that the application of locking compounds was not necessary. The licensee determined that routine, periodic, inspections would suffice to detect loosening of the subject screw. The inspector concluded that the licensee's actions were appropriate to the circumstances.

Revision 1 to this LER also documented a failure to perform a TS required shutdown as a result of an inoperable TCB channel. This aspect of the event was documented as VIO 94-15-01. The licensee's corrective actions were found to be satisfactory and the violation was closed in IR 94-24. This item is closed.

h. Self Contained Breathing Apparatus (SCBA) Needs and Availability Survey (71707, 64704)

The following information was provided by the licensee in response to a questionnaire prepared by NRC Region II:

1) Facility Name.

   St. Lucie Nuclear Power Plant

2) Event(s) which require operators in the control room to wear SCBA to safely operate/shutdown the plant.

   FSAR states chlorine but chlorine is no longer stored or used onsite.

3) For the limiting event, does the licensee have SCBAs available for each staff member filling a required position for operation or safe shutdown?

   5 SCBAs stored in each Control Room.

4) Are all staff members filling required positions for operations or safe shutdown SCBA qualified?

   No, but licensee has plans that will qualify required Operations personnel by July 31, 1995.

5) Are SCBAs readily available at required use location.

Yes

6) Have provisions been provided for special needs associated with SCBA use, i.e., eye glasses with face mask inserts.

No, on eye wear. Licensee will correct by July 31, 1995.

7) What is the minimum number of spare air bottles for each user.

None provided in Control Room. Stored in fire house and RCA.

8) Has the licensee established plans to protect personnel not assigned a SCBA?

Yes. If emergency responder will be SCBA qualified.

9) Does the licensee have SCBAs available for NRC use?

None specifically assigned to NRC, but available for issue at HP.

10) Initials of each resident and indicate if he/she is SCBA qualified.

RLP - Yes, MSM - Yes

11) If not qualified, discuss steps necessary to have residents SCBA qualified with your Branch Chief.

N/A

12) Comment field.

Chlorine not onsite - FSAR will be corrected next update.

4. Maintenance and Surveillance

a. Maintenance Observations (62703)

Station maintenance activities involving selected safety-related systems and components were observed/reviewed to ascertain that they were conducted in accordance with requirements. The following items were considered during this review: LCOs were met; activities were accomplished using approved procedures; functional tests and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; and radiological controls were implemented as required. Work requests were reviewed to determine the status of outstanding jobs and to ensure that priority was assigned to safety-

related equipment. Portions of the following maintenance activities were observed:

1) 2C Auxiliary Feedwater Pump Preventive Maintenance

The inspector observed an oil change on the 2C AFP, conducted per PWO 62/4389. Work was performed in accordance with 2-M-0018, Rev 42, "Mechanical Maintenance Safety-Related Preventive Maintenance Program." The inspector verified that proper replacement oil was used, that the old oil was free of visible contaminants, that the final oil level was adequate, and that the new oil filter was a direct replacement for the old one. The inspector also observed the lubrication of the turbine's trip throttle linkage, performed under PWO 62/4421, and verified that the proper grease and graphite spray was used.

The inspector found that the quality of the work performed was satisfactory; however, the timeliness of the work was found to suffer from inadequate prior planning. The work had been scheduled to begin at midnight on July 18. In support of the evolution, Operations declared the subject AFP OOS at 9:20 p.m. on July 17. At 1:00 a.m., an electrician arrived at the work site to disconnect a lube oil immersion heater which required removal for the oil change to take place. This task was completed in approximately five minutes. At approximately 3:10 a.m., mechanics arrived to perform the oil change. As a result, the subject pump was out of service for approximately six hours before the subject task was begun in earnest.

The inspector discussed the timeliness of the maintenance with Maintenance Supervision, who stated that the personnel involved in the oil change had questioned a procedure revision which changed the specification of the lubricating oil from that used the last time they had performed the task. Additional complications were experienced in employing the licensee's new PASSPORT system to obtain spare bottles and jugs to support the work. It was acknowledged in these discussions that the job was not properly pre-planned/pre-staged, and that the confusion could have been dealt with prior to the initiation of work.

Given the licensee's development of a critical (on-line) maintenance process, the inspector reviewed AP 0010460, Rev 3, "Critical Maintenance Management." In general, the procedure required that work on TS equipment, involving a voluntary entrance into a TS AS, be preplanned and expedited. However, the inspector noted that section 3.1.3 of the subject procedure stated that the procedure need not apply to "Routine preventive maintenance on equipment required more frequently than 18 months that is not risk significant..." The subject maintenance activity constituted a quarterly PM and therefore was outside the requirements of the procedure. The inspector discussed the issue with licensee management, who acknowledged

the apparent dichotomy between the CMM process's mandate that time in a TS AS be minimized for some maintenance evolutions but not for others. The licensee stated that they would consider the issue.

The inspector concluded that no regulation was violated, as the licensee was well within the AOT for the 2C AFP and the maintenance in question was performed satisfactorily and within the bound of the licensee's programs and procedures. However, the inspector found that preplanning for the evolution was poor and unnecessarily increased the out of service time for the 2C AFP.

2) Auxiliary Feedwater Pump 1B Critical Maintenance

The inspector observed maintenance activities performed on the 1B AFP on July 20. The work was conducted under the guidance of AP 0010460, Rev 3, "Critical Maintenance Management." Specific observed activities included:

- PWO 61/4933 - Replacement of pump bearing Trico oilers with indicating sight glasses and installation of oil sample test fittings. The replacement was conducted per 1 MMP-09.01, "Auxiliary Feedwater Pumps 1A and 1B Disassembly, Inspection, and Reassembly Mechanical Maintenance," and Procurement Engineering evaluation 036912. The inspector verified that the installation was conducted satisfactorily and in accordance the governing documents.

- PWO 61/4974 - 1B AFP coupling and thrust bearing checks. The subject activity was conducted under 1-MMP-09.01, "Auxiliary Feedwater Pumps 1A and 1B Disassembly, Inspection, and Reassembly Mechanical Maintenance." The inspector observed coupling disassembly and cleanup, pump thrust bearing endplay measurement, coupling reassembly and final torquing. The inspector noted that pump endplay was acceptable (.006") and that the mechanics performing the work properly reassembled and torqued the pump coupling. The torque wrench was verified to be in calibration.

Overall, the inspector found that the maintenance evolution was performed very well. Jobs were worked concurrently, QC coverage was detailed and thorough, parts and tools were adequately prestaged, and the evolution was completed expeditiously. The inspector noted that the time the component was OOS, including the post-maintenance surveillance run, was only approximately eight hours.

3) PWO 64/4966 - Unit 2 Plant Vent WRGM Loss of Counts

The inspector observed portions of the troubleshooting effort in response to a failure of the Unit 2 WRGM. I&C personnel performing the evolution were found to be very knowledgeable of the equipment's construction and operation. Troubleshooting was methodical and thorough. M&TE used in the effort was verified to be within its calibration interval. The source of the failure was determined to be a high voltage power supply to the unit's detector.

b. Surveillance Observations (61726)

Various plant operations were verified to comply with selected TS requirements. Typical of these were confirmation of TS compliance for reactor coolant chemistry, RWT conditions, containment pressure, control room ventilation, and AC and DC electrical sources. The inspectors verified that testing was performed in accordance with adequate procedures, test instrumentation was calibrated, LCOs were met, removal and restoration of the affected components were accomplished properly, test results met requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel. The following surveillance tests were observed:

1) OP 1-0030150, Rev 74, "Secondary Plant Operating Checks and Tests, Section 8.2 through 8.8 Turbine Trip Test."

The inspector attended the prejob briefing and found that the procedural steps, requirements and precautions were discussed in detail with all personnel involved in the test.

The inspector then observed the overspeed, thrust bearing and low vacuum trip tests. The low bearing oil pressure trip could not be done since valve V22174, low bearing oil pressure trip drain valve could not be operated. PWO #74457 was attached to the valve indicating that work was needed. The other above tests were completed satisfactorily.

The operator then proceeded to test the 20/ET, EH Fluid Trip Header Solenoid valve and the 20-1/OPC and 20-2/OPC Overspeed Protection Solenoid valves. This test consisted of opening the EH test header valves to the solenoid under test; unlocking and closing the EH inlet isolation valve under test; inserting and turning the trip test key.

This test was completed satisfactorily on 20/ET. When the second solenoid valve was tested, the operator opened the EH test header valve, V22493, and unlocked, but did not close, the solenoid inlet isolation valve V22482 as required by the procedure. After unlocking and removing the lock he laid down

the lock, read the procedure, and then inserted the test key into the 20-1/OPC test switch and turned it to the test position. A loud noise was noted as the governor valves went shut, the turbine tripped, and the main steam safety valves opened.

The inspector and the NWE then went to Unit 1 control room. In the control room, the operators responded to the event as required by EOP-01, "Standard Post Trip Actions." All rods inserted and equipment responded to the event as designed. The reactor tripped on High Pressurizer Pressure as a result of the Governor and Reheat valves going shut. Steam Generator "A" experienced a high level, but operator action isolated feed and the level was restored to normal. Overall, operator response to the event was considered excellent.

The NLO performing the surveillance test openly acknowledged that he inadvertently failed to close the EH inlet isolation valve V22482 per procedural step 8.6.5.(B) while performing the solenoid valve tests and that this resulted in tripping the unit. The NWE supervising the test stated that he became too involved in radio communications with the control room and did not verify that each step was completed in sequence.

The inspector also noted that procedural step 8.6.5.B and several other steps contained two required actions in one procedural step and that this may have led to the error. He also noted that the use of hand held radios vice sound powered head sets for communications may have been a contributing factor.

The unit was placed in a stable plant condition using 1-EOP-02, "Reactor Trip Recovery." A decision was then made to accomplish several outstanding maintenance activities prior to plant restart. This work included:

- Relocate Channel "D" NIS jumper from the control room to the Reactor Building Keyway area
- Rework 3 CEA reed switches
- Repair 1A FW Regulating valve
- Inspect/repair RCP vibration probe
- Repair RPS Channel "C" Wide Range NIS (failed low after reactor trip)
- Repair Main Generator excitation power supply
- Repair loose connection on 1B Motor Generator set
- Stroke test MV-08-8
- Repair MV-09-6
- Cleaning Main Condenser Water boxes A1 and B2
- Other minor maintenance activities

The above work activities, except the NIS Channel "C" Wide Range, were completed by the morning of July 9. Completion of

the repair to NIS Channel "C" Wide Range, and concerns relating to high discharge canal levels resulting from unusually high tides and an automobile lodged in a discharge canal pipe (discussed in paragraph 3.b.1), delayed reactor restart until July 11.

The inspector reviewed the above work activities and found them satisfactory. The reactor trip package was also reviewed and it was determined that all issues had been satisfactorily resolved to permit plant restart.

2) OP 1-0700050, Rev 50, "Auxiliary Feedwater Periodic Test"

The inspector observed the surveillance test, conducted per the above procedure, on the 1B AFP following CMM work discussed in paragraph 4.A.2, above. The test involved an ASME Section XI code run of the subject pump. The inspector noted that the operator conducting the test locally had procedure in-hand and that M&TE employed for obtaining vibration and temperature data was within its calibration interval. The required time interval was observed prior to data collection (5 minutes), discharge pressure was greater than the minimum specified for compliance with TS (1342 psig), and results were satisfactory (3241.7 ft developed head).

3) OP 2-2200050B, Rev 20, "2B Emergency Diesel Generator Periodic Test and General Operating Instructions"

The inspector witnessed portions of this test, conducted July 26. The test involved a fast start of the 2B EDG to satisfy TS surveillance requirement 4.8.1.1.2.a.4, which required that the EDG achieve rated speed and voltage within 10 seconds at least once per 184 days.

The inspector witnessed pre-start checks performed by the SNPO and found them to be performed satisfactorily with procedure in-hand. The inspector observed the EDG start and examined the operating machines for signs of previously unidentified leaks. None were noted. The machines started and loaded satisfactorily, with a start time of 9.65 seconds.

4) EDG Day Tank Level Switch Surveillance

The inspector observed portions of surveillance tests, performed in accordance with I&C Procedure 2-1400064L, Rev 32, "Installed Plant Equipment Calibration (Level)," Appendix B, Tab 10, "Diesel Oil Day Tank Lo/Lo level Verification," to verify day tank level switch setpoints on the 2B EDG day tanks. The tests were performed by attaching tygon tubes to drain valves located, hydraulically, at the bottoms of the day tanks and routing the tubes vertically to the tops of the tanks.

Rulers were then located next to the tubes to provide local level indication in the tanks to assess alarm setpoints.

The test methodology for testing hi/hi level alarms was to align the temporary standpipes with their respective day tanks and manually operate the tanks' fill solenoid valves to admit fuel until the hi/hi level alarms were received. The inspector noted that the I&C personnel performing the tests were sensitive to the fact that indicated level increase rates would accelerate as the levels approached the tops of the tanks, as the tanks were horizontally oriented cylinders. Nonetheless, while filling the 2B1 day tank, the level in the tygon tube rose rapidly and resulted in a small spill (approximately two cups) of FO. The spill was quickly terminated, contained to a small area around the day tank, and cleaned up by the I&C personnel performing the test. Additionally, the hi/hi level alarm did not energize. Upon inspection, it was noted that a PWO tag was hung on the level alarm, indicating inoperability of either the circuit or the sensor. The I&C personnel performing the test acknowledged not checking the PWO tag prior to beginning the test. Testing of the lo/lo level alarms resulted in satisfactory results.

The inspector discussed the performance of the test with I&C personnel, who stated that the hi/hi level alarm did not energize due to the fact that the 2B2 day tank hi/hi alarm was energized as a result of performing the same test on it previously. As the hi/hi level alarms had no reflash capability, the second day tank's alarm could not annunciate. I&C personnel conceded that the governing procedure was inadequate to test the hi/hi alarms as written, and stated that the procedure would be revised. Possible new test methodologies included:

- Testing the second tank's alarm after the first tank's alarm had cleared due to engine fuel consumption, or
- Performing the test by monitoring level switch output state, as opposed to the alarm annunciator

I&C personnel stated that the PWO which was written to document hi/hi level switch inoperability was most probably the result of a similar failure in a similar test. The inspector concluded that the FO spill could have been avoided if either the tygon tubing had been run further in elevation above the day tank or if the workers performing the test had recognized that the level switch they were testing would not result in annunciation due to the alarm condition in the 2B2 day tank. In reviewing the governing procedure, the inspector noted the following weaknesses:

- The title for Tab #10 of the procedure ("Diesel Day Tank Lo/Lo Level Verification") was misleading in that hi/hi level alarm verification was also included. This point was reinforced in the body of the procedure in step B.2 when personnel were directed to place a measurement scale from 20" to 25" up the sight glass, when hi/hi level alarm verification would also require a measurement scale at approximately 34". Personnel performing the observed test showed foresight in extending the measurement scales along the full length of the sight glasses.

- The procedure directed that tygon tubes be taped to the top of the day tanks. The physical arrangement of the day tanks' overflow lines was such that the FO level could increase approximately 1' above the tops of the tanks prior to the overflow being directed away, increasing the potential for spills.

The inspector concluded that the performance of the subject surveillance test suffered from procedural weakness and an inadequate pre-test observation of the component to be tested.

5) Containment Anomalies Inspection - Unit 2

The inspector accompanied Unit 2 NLOs on an inspection of accessible containment areas on July 25. Damage to HVE-21B, described in paragraph 3.b.3, above, was noted. The status of a packing leak from V8453, a root valve for B channel SG level and pressure instruments, was inspected and found to be unchanged. Several instances of boric acid buildup on instrument tubing was also noted. Otherwise, no adverse conditions were identified. The inspector found that the NLOs conducting the inspection proceeded swiftly but were thorough in their inspections, allowing for a comprehensive tour while maintaining dose rates ALARA.

5. Engineering Support (37551)

A. Safety Evaluation JPN-PSL-SENS-95-013

The inspector reviewed the subject SE, prepared to allow operation with a manual isolation valve closed in the 2B EDG FO line from the DOST to the day tanks. The configuration was proposed when the a leak was determined to exist in the underground line between the two tanks. The action was designed to minimize the amount of FO released to the environment until the leak could be identified and corrected.

As a compensatory measure, the licensee proposed dedicating an NLO to the task of opening the closed valve in the event of an EDG start. The licensee calculated that the EDG day tanks contained enough FO to allow 126 minutes of EDG operation at full load before

a transfer of FO was required. The licensee then specified that the NLO would be required to open the valve within 20 minutes of an EDG start. Procedures were revised to include direction to open the valve on an EDG start, and administrative controls were put in place to ensure that the NLO would not be required to perform any other immediate response duties. Additionally, the licensee performed a response time test, placing the operator at the G-2 warehouse (as far away from the EDG as he could credibly be in the PA) and requiring the NLO to proceed to the valve and open it. The NLO performed this task in approximately seven minutes.

In considering the issue, the licensee employed PRA techniques to estimate the increase in the risk of the loss of the 2B3 bus due to a failure of either the operator to open the valve or a failure of the valve to be able to be opened. The licensee concluded that the increase in probability was approximately 6 percent. However, in considering 10 CFR 50.59 criteria, the licensee concluded that no increase in the probability of failure of a component important to safety was created by the proposed action. The inspector questioned the licensee on this issue. The licensee explained that a deterministic conclusion of no increased probability was reached when the existence of procedural guidance and heightened awareness was balanced against the approximate 6 percent increase in failure probability presented by the two new failure modes.

In the context of regulatory compliance, the inspector noted that 10 CFR 50.59 was written in terms of absolute increases in the probabilities of failure represented by a proposed change. The inspector continued to question whether 10 CFR 50.59 criteria could ever be satisfied when new failure modes are imposed on a previously reviewed system (i.e whether added risk, once qualitatively established, could be completely mitigated). The inspector concluded that insufficient guidance existed from a regulatory perspective to take immediate issue with the licensee's rationale. Further, the inspector concluded that the licensee had taken prudent measures to ensure the continued operability of the 2B EDG while minimizing the FO leak's effect on the environment. The inspector referred the question to NRR for resolution.

6. Plant Support (71750)

a. Fire Protection

During the course of their normal tours, the inspectors routinely examined facets of the Fire Protection Program. The inspectors reviewed transient fire loads, flammable materials storage, housekeeping, control hazardous chemicals, ignition source/fire risk reduction efforts, fire protection training, fire protection system surveillance program, fire barriers, fire brigade qualifications, and QA reviews of the program. No deficiencies were identified.

b. Physical Protection

During this inspection, the inspector toured the protected area and noted that the perimeter fence was intact and not compromised by erosion or disrepair. The fence fabric was secured and barbed wire was angled as required by the licensee's Physical Security Plan (PSP). Isolation zones were maintained on both sides of the barrier and were free of objects which could shield or conceal an individual.

The inspector observed personnel and packages entering the protected area were searched either by special purpose detectors or by a physical patdown for firearms, explosives and contraband. The processing and escorting of visitors was observed. Vehicles were searched, escorted, and secured as described in the PSP. Lighting of the perimeter and of the protected area met the 0.2 foot-candle criteria.

In conclusion, selected functions and equipment of the security program were inspected and found to comply with the PSP requirements.

c. Radiological Protection Program

Radiation protection control activities were observed to verify that these activities were in conformance with the facility policies and procedures, and in compliance with regulatory requirements. These observations included:

- Entry to and exit from contaminated areas, including step-off pad conditions and disposal of contaminated clothing;
- Area postings and controls;
- Work activity within radiation, high radiation, and contaminated areas;
- Radiation Control Area (RCA) exiting practices; and,
- Proper wearing of personnel monitoring equipment, protective clothing, and respiratory equipment.

No violations or deviations were identified.

7. Exit Interview

The inspection scope and findings were summarized on July 27, 1995, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection results listed below. Proprietary material is not contained in this report. Dissenting comments were not received from the licensee.

Type	Item Number	Status	Description
LER	50-389/94-006, Rev 1	Closed	"Trip Circuit Breaker Failure due to a Broken Piece of Phenolic Block Lodged in the Trip Latch Mechanism", paragraph 3.g.2).

8. Abbreviations, Acronyms, and Initialisms

AEOD	Analysis and Evaluation of Operational Data, Office for (NRC)
AFP	Auxiliary Feedwater Pump
AFW	Auxiliary Feedwater (system)
ALARA	As Low as Reasonably Achievable (radiation exposure)
ANII	Authorized Nuclear Inservice Inspector
ASME Code	American Society of Mechanical Engineers Boiler and Pressure Vessel Code
CCW	Component Cooling Water
CEA	Control Element Assembly
CEDM	Control Element Drive Mechanism
CIS	Containment Isolation System
CMM	Critical Maintenance Management
CWD	Control Wiring Diagram
DG	Diesel Generator
ECC	Estimated Critical Concentration
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
ESF	Engineered Safety Feature
ESFAS	Engineered Safety Feature Actuation System
FO	Fuel Oil
FSAR	Final Safety Analysis Report
FW	Feedwater
gpm	Gallon(s) Per Minute (flow rate)
HVAC	Heating Ventilation and Air Conditioning
HVE	Heating and Ventilating Exhaust (fan, system, etc.)
HX	Heat Exchanger
ICW	Intake Cooling Water
ILRT	Integrated Leak Rate Test(ing)
IR	[NRC] Inspection Report
ISI	InService Inspection (program)
JPN	(Juno Beach) Nuclear Engineering
LCO	TS Limiting Condition for Operation
LER	Licensee Event Report
LLRT	Local Leak Rate Test
MMP	Mechanical Maintenance Procedure
MV	Motorized Valve
NIS	Nuclear Instrumentation System
NLO	Non-Licensed Operator
NPS	Nuclear Plant Supervisor
NRR	NRC Office of Nuclear Reactor Regulation

NWE	Nuclear Watch Engineer
ONOP	Off Normal Operating Procedure
OOS	Out Of Service
OP	Operating Procedure
OPS	Operations
PMON	Performance Monitoring
PORV	Power Operated Relief Valve
PRA	Probabilistic Risk Assessment
psig	Pounds per square inch (gage)
PSL	Plant St. Lucie
PWO	Plant Work Order
QA	Quality Assurance
QC	Quality Control
QSL	Quality Surveillance Letter
RCP	Reactor Coolant Pump
RPS	Reactor Protection System
RTGB	Reactor Turbine Generator Board
RWT	Refueling Water Tank
SCBA	Self Contained Breathing Apparatus
SG	Steam Generator
SNPO	Senior Nuclear Plant [unlicensed] Operator
TCB	Trip Circuit Breaker
TS	Technical Specification(s)
WRGM	Wide Range Gas Monitor