UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report Nos.: 50-335/84-27 and 50-389/84-29

Licensee: Florida Power and Light Company
9250 West Flagler Street
Miami, FL 33101

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

Facility Name: St. Lucie

Inspection Conducted: September 10 - 14, 1984

Inspector: for W. J. Ross — 9/27/84 Date Signed

Approved by: J. J. Blake, Section Chief, Engineering Branch, Division of Reactor Safety — 9/27/84 Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 42 inspector-hours on site in the areas of plant chemistry, inservice inspection of pumps and valves, and previous inspection findings.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Licensee Employees Contacted

*C. M. Wethy, Plant Manager
R. R. Jennings, Supervisor, Technical Department
*R. J. Frechette, Supervisor, Chemistry Department
D. Borgman, Operations Training Department
R. Cox, Chemistry Department
D. Faulkner, Chemistry Department
D. Harte, Chemistry Department
P. Heycock, Inservice Inspection Group
I. Johnson, Assistant Nuclear Plant Superintendent
B. Parks, Technical Department
L. Rogers, Technical Department
S. Walters, Chemistry Department
J. West, Assistant Nuclear Plant Superintendent

NRC Resident Inspectors

*C. D. Feierabend
H. E. Bibb

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 14, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the findings with no dissenting comments.

Unresolved Item 335/84-27-01, "Clarification of Requests for Relief for the St. Lucie IST Program".

3. Licensee Action on Previous Enforcement Matters

(Closed) Unresolved Item 335/83-22-01, "Vibration Measurement Instrument Accuracy," (paragraph 6b)

(Closed) Unresolved Item 335/83-22-02, "Valve Position Indicator Checks," (paragraph 6b).

4. Unresolved Items

An unresolved item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation. A new unresolved item is identified in paragraph 6 of this report.

B. Plant Water Chemistry (92706)

This inspection consisted of the following interrelated efforts:

- Assessment of the capability of the major components of the secondary water system to protect the primary coolant pressure boundary by ensuring the absence of corrosive environments in the steam generator

- Assessment of the adequacy of the licensee's water chemistry program for monitoring the quality of water in the primary and secondary systems, and

- Assessment of the licensee's ability to control the quality of water in the plant through implementation of the St. Lucie water chemistry program

a. Assessment of the design of components in the secondary water system

At the time of this inspection, St. Lucie Units 1 and 2 were operating in their sixth and first fuel cycle, respectively. The inspector reviewed the "as built" secondary water systems against the descriptions in the 1983 revision of the Final Safety Analysis Reports (FSARs), especially Section 10, "Steam and Power Conversion System." The inspector also interviewed cognizant plant personnel to review the operational history of the components of the secondary water system that are discussed in the following paragraphs, and to determine what measures have been taken to optimize the effectiveness of the secondary water system.

(1) Main Condenser

The two St. Lucie Units dissipate waste heat energy by means of a once-through cooling system that circulates ocean water through the main condensers. Industry experience has shown that the main condenser has been the principal path of air and low-quality cooling water inleakage into a plant's secondary water system. By contaminating the condensate/feedwater, such inleakage provides the inorganic and organic impurities that cause corrosive environments in the steam generator and in the low-pressure turbines. During the initial two fuel cycles of St. Lucie Unit 1 29 condenser tube leaks occurred, and the Unit was forced into shutdowns, from full power, approximately 20 times. At the end of the first fuel cycle, 747 condenser tubes were plugged, based on a 100% eddy-current examination of the condenser tubes. One year later, at the end of second fuel cycle, the copper alloy condenser tubes were replaced with titanium tubes and integral tube sheets. Subsequently, there has been only one condenser tube leak other than two faulty condenser tube plugs, and air inleakage during the current fuel cycle has been maintained at 3 to 7 cfm.

The licensee protects the tubes of the main condenser and the heat exchangers, which also use ocean water for cooling (i.e., Component and Turbine Cooling Water systems), by chlorinating the condenser cooling water periodically and the service water and turbine cooling water continually to eliminate aquatic organisms [During and immediately before this inspection, large schools of jellyfish severely clogged the intake systems of both Units and forced the Units into shutdown or reduced levels of power].

Ingress of air and circulating cooling water is monitored in all four quadrants of the hotwell and at the discharge of the condensate pumps by measuring conductivity, pH and dissolved oxygen with inline instrumentation and displaying these parameters on the Control Board. The licensee also can obtain 'grab' samples from these sample points to monitor other chemical variables and has the capability to search for air leaks in condenser tubes with a helium leak detector.

The inspector considered the condenser to be providing a very effective barrier against potentially corrosive contaminants.

(2) Condensate Makeup Water

A second potential source of corrosive contaminants in the condensate/feedwater is water used for condensate makeup. For this purpose, the licensee takes water from the Ft. Pierce city water supply and further purifies the water to remove all organic and mineral constituents. The St. Lucie makeup water treatment plant consists of the following components; carbon (anthracite) beds; organic scavenger (weak anion resin); cation resin; weak anion resin; strong anion resin; and a mixed resin bed. Limiting specifications for such key chemical variable as pH, conductivity, chloride, and silica have been set for the quality of the final product and for the water during various steps of purification.

Purified water is stored either in the plant's Condensate Storage Tank (CST) under a nitrogen atmosphere or, the water is degassified and stored under an impermeable bladder in the Primary Water Storage Tank (PWST). As will be discussed later, condensate makeup is minimized by recovering steam generator blowdown. However, when condensate makeup is required, water is taken from the CST and passed through a degassifier and into the hotwell, where the water is further deaerated. If desired, the effluent from the water treatment plant can be degassified before it is stored in the CST; thereby, removing air from water that is withdrawn from the CST as suction for the auxiliary feedwater pumps. Permissible maximum limits for the key variables (pH, conductivity, chloride, and silica) have also been placed on the water in these two storage tanks. On the basis of this review, the inspector considered that the licensee is taking appropriate measures to prevent contamination of the condensate/feedwater from makeup water.

(3) Condensate Polisher Demineralizer

The original designs of Units 1 and 2 did not incorporate provisions for cleaning the condensate by means of a filter/ion-exchange demineralizer. However, during the fifth refueling outage, in the Spring of 1984, an Ecodyne (Powdex) demineralizer system was installed in Unit 1 and has been used to polish the condensate whenever this Unit was returning from zero power. Currently, the demineralizers are bypassed when the plant exceeds 50% power in order to eliminate possible contamination of the feedwater from leakage of resin or 'throw' of ions from the demineralizer. The inspector was informed that a similar condensate cleanup system will be installed in Unit 2.

Because of the increased pressure drop that results when the condensate polishers are used, a third condensate pump was also installed in Unit 1 to maintain designed flow of feedwater.

It is the licensee's present policy to use the Unit 1 demineralizers to remove solids and soluble ions from the condensate during startup; i.e., use as a condensate polisher. After the desired quality of feedwater is attained, the filter/demineralizer system is placed in standby condition with all resin removed from the Powdex elements. Consequently, the system would not be immediately available to remove contaminants caused by inleakage of saline cooling water through the condenser. The licensee's policy is based primarily on two contentions: the possibility of large inflows of sea water has been minimized by installation of titanium condenser tubes (also severe inleakage could not be handled by the Powdex demineralizer system), and small leaks of sea water can be contained and controlled by immediately isolating the quadrant of the hotwell affected and by increasing steam generator blowdown until the desired quality of condensate/feedwater/steam generator water is restored. The inspector was informed that approximately 30 to 60 minutes is required to precoat the elements in one of the five demineralizer vessels.

The inspector reviewed the operational history of Unit 1 since the installation of the condensate cleanup system (including two incidents of sea water inleakage). This subject is discussed further in later sections of this report.

(4) Chemical Feed System

In Section 10.3.5.1 ("Chemical Control Basis") and Section 10.3.5.4 ("Secondary Side Wet Layup") of the St. Lucie FSARs, the licensee described the use of all-volatile chemicals (AVT) to maintain environments that minimize corrosion within the secondary water system. The inspector observed that such an AVT program was in place and systems for injecting hydrazine (Amerzine) and ammonia into the condensate line (for normal operation) and into the steam generator (for wet layup conditions) met the intent of the FSAR.

(5) Feedwater and Extraction Steam and Condensate Lines

A third potential source of corrosive contaminants in the steam generator is the transport of solid or soluble corrosion products from other parts of the secondary water system. Of special concern is the transfer of iron oxides (because of the potential mass of sludge deposited on the tube sheets and around the steam generator tubes) and copper metal/oxides (because of the enhanced potential for forming localized corrosive environments under a matrix of a mixture of the two metal oxides or initiating galvanic action between copper and the inconel steam generator tubes).

In both St. Lucie Units, the condensate/feedwater, downstream of the AVT chemical addition point, is pumped through three sets of low-pressure feedwater heaters (Nos. 1, 2, and 3), a Drain Cooler, an intermediate-pressure feedwater heater (No. 4) to the suction of the feedwater pumps. The feedwater is subsequently pumped through the No. 5 high-pressure feedwater heaters to the steam generator.

During plant wet layup, these runs of large-diameter, carbon-steel pipe and stainless steel feedwater-heater tubes are protected from oxidation and corrosion by circulating water that contains 75-200 ppm hydrazine. When a Unit is shutdown for a brief outage, this part of the secondary water system is maintained under normal AVT chemical conditions.

During startup of Unit 1, the quality of the condensate/feedwater is restored to the specifications for plant operation by cycling the water through the condensate polisher and all five feedwater heaters and, then, back to the hotwell before the water is allowed to enter the steam generator. In Unit 2, this cleanup is effected by steam generator blowdown; as the result, more contaminants are transferred to the steam generators of this Unit. Also, during startup of Unit 1, after steaming has been achieved, the condensate from extraction steam lines is cycled from the Drain Cooler back to the hotwell and condensate polishers until this water is needed (>50% power) to achieve full power. Again, during startup of Unit 2, solids or soluble contaminants can be removed only through blowdown. The inspector was informed that feedwater filters were included in the original design of Unit 1 but had been found to be impractical for removing solids from the feedwater.

The inspector considered the cleanup procedure for Unit 1 to be superior to the dependence of Unit 2 on steam generator blowdown alone. Through the use of the condensate cleanup system and the licensee's monitoring system, the feedwater in Unit 1 can be purified to the specifications set for power operation (Mode 1) before the water is allowed to enter the steam generators. Likewise, any iron oxide that is flushed from the extraction steam lines during startup of Unit 1 is also prevented from entering the steam generator. The licensee does not have the capability of monitoring the quality of water pumped forward from the Drain Cooler. However, the plant startup procedure has provisions for a 'hold' in power escalation at ~30% power to ensure that the quality of water in the steam generator meets the specifications set for Mode 1. The inspector was informed that, because of the cleanliness of the secondary sides of both units, such 'holds' are usually either brief or not required after short outages.

The licensee's water chemistry program requires that "grab" samples of both condensate and feedwater be taken at specified intervals to monitor the degree to which the secondary system is flushed during startups and to determine the concentrations of iron and copper. This surveillance program is especially important during startup of Unit 2 as a guide to the degree blowdown must be increased to maintain acceptable steam generator water quality. The inspector considers the license's plans to install a condensate cleanup system in Unit 2 to be a positive step in reducing the transport of corrosive contaminants to the steam generator.

(6) Steam Generators

Each St. Lucie Unit has two steam generators and each steam generator contains 8519 tubes that are fully rolled into the tube sheets. During each of the first four refueling outages for Unit 1, ~9% of the tubes were eddy current tested, with the result that 89 tubes in steam generator A, and 60 tubes in steam generator B were plugged because of indications of tube thinning. All of the tubes in both steam generators were eddy current tested during the Spring 1984 outage, and 262 additional tubes were plugged in steam generator A and 243 in steam generator B. All had indications of >20% thinning at the U-bend apex in the "batwing" region. During the 1984 outage, ~3900 pounds of sludge were removed from the two Unit 1 generators by lancing. Analyses of the solid phase of the sludge indicated that iron (40%) and copper (33%) were the major constituents with minor amounts of nickel (3%) zinc (2.3%) and manganese (1.0%). Essentially all of the copper was in the metallic form and had probably been eroded from the original copper alloy tubing in the condenser and feedwater heaters. There was no evidence of copper plating on the inconel steam-generator tubes and there was no corrosion of either these tubes, the tube sheets, or the tube support plates. Other chemical species (calcium, sodium, chloride, and sulfate) were leached from the sludge, but their role in the composition of the sludge is not known.

Even though the amount of sludge that had been deposited in the steam generators of Unit 1 was significant, the licensee has been successful in maintaining the conductivity (i.e., concentration of ionic species) to half the level recommended by the Steam Generator Owners Group (SGOG) and the Electric Power Research Institute (EPRI). As will be discussed later, the licensee implements wet layup procedures to minimize oxidation and corrosion of the entire secondary water system, including the steam generators. During plant operation, contaminant buildup is controlled by maintaining a continual blowdown of 25-125 gpm from each steam generator. Blowdown from both Units is cooled and processed through a filter/demineralizer system and stored in three 180,000 gallon tanks until the water is cycled back to the hotwell as condensate makeup. This recovery system significantly reduces the amount of water that has to be processed through the plant's makeup water system. When the concentration of solids or hydrazine is high (i.e., after plant startup from a lengthy outage) the blowdown can be discharged to the cooling water canal as waste.

(7) Steam Lines

The inspector reviewed the steam lines as potential pathways for transport of silica and corrosive ions to the turbines and for transport of copper from the moisture separator reheater tubes in Unit 1 to the Drain Cooler during plant operation. It was also recognized that it is usually impractical to maintain the carbon steel steam lines in protective layup conditions during a plant outage and, consequently, significant amounts of iron oxide (hematite) may be transferred to the hotwell during each plant restart.

The licensee monitors the quality of the steam in Unit 2 but not in Unit 1. The significance of trace amounts of silica and corrosive anions, such as chloride and sulfate, in the steam is not fully understood; however, turbine vendors believe there may be a relationship between the presence of soluble cation and anion species and the initiation and propagation of bore and keyway cracks in disks on low-pressure turbine rotors. The inspector was informed that such cracks had been observed, during the last refueling outage, on the low-pressure turbines of Unit 1.

Summary - The inspector considers that the licensee has modified Unit 1 and has designed Unit 2 so that the probability of developing localized corrosive environments in the steam generators has been reduced to an acceptable level. The absence of corrosion in the steam generators of Unit 1 after five fuel cycles (~8 years), even with the presence of significant amounts of copper-iron oxide sludge, evidently indicates that corrosive species (such as chloride or sulfate) have not been present or have not been deposited in such a manner as to initiate corrosion of the tubes, tube sheet, or tube support plates. Nevertheless, the inspector considers the use of a condensate polisher in Unit 1, and possibly in Unit 2 in the future, to be a positive measure to further reduce the concentrations of all chemical species in the steam generator water.

b. Scope and Adequacy of the Licensee's Water Chemistry Program

Table 3.4.1 of the St. Lucie Technical Specification (TS) identifies the chemical parameters in the primary coolant system that must be monitored and controlled to prevent corrosion (i.e., chloride, fluoride, and dissolved oxygen). In addition, other Technical Specifications require that boron be monitored in systems that control reactivity (TS 4.1.2.7 - Boric Acid Makeup Tank and Refueling Water Storage Tank and TS 4.5.1 - Safety Injection Tanks). Technical Specification 6.8.4.c for Unit 2 defines the elements that must be included in a Secondary Water Chemistry Program to inhibit steam generator tube degradation. These elements are as follows:

(i) Identification of a sampling schedule for the critical variables and control points for these variables,

(ii) Identification of the procedures used to measure the values of the critical variables,

(iii) Identification of process sampling points, which shall include monitoring the discharge of the condensate pumps for evidence of condenser in-leakage,

(iv) Procedures for the recording and management of data,

(v) Procedures defining corrective actions for all off-control point chemistry conditions, and

(vi) A procedure identifying (a) the authority responsible for the interpretation of the data, and (b) the sequence and timing of administrative events required to initiate corrective action.

In Section 10.3.5 of the St. Lucie FSAR, the licensee has summarized the use of all-volatile chemicals to control secondary-side water chemistry and to control corrosion during operation of the Units and during wet layup. Also, in 1982, the guidelines developed by the SGOG/EPRI for PWR Secondary Water Chemistry were adopted by the licensee and incorporated into plant procedures.

The inspector reviewed the following selected chemistry operating procedures and established that the elements required by Technical

6.8.4.c have been implemented. Additionally, guidance has been established for implementing the requirements for controlling the chemistry of the primary coolant.

- Operating Procedure C-01 - "Schedule for Periodic Tests"
- Operating Procedure C-50 - "Maintaining Steam Generator Chemistry"
- Operating Procedure C-51 - "Maintaining Condensate and Feed System Chemistry"
- Operating Procedure C-51 - "Maintaining Turbine Cooling Water and Steam Generator Blowdown Cooling Water"
- Operating Procedure C-54 - "Maintaining Water Treatment Plant Chemistry"
- Operating Procedure C-83 - "Condenser Tube Leak"
- Operating Procedure C-55 - "Maintaining Reactor Coolant System Chemistry
- Operating Procedure C-56 - "Maintaining Component Cooling Water Chemistry"
- Operating Procedure C-58 - "Maintaining Primary Water Storage Tank Limits."
- Operating Procedure C-09a - "Primary and Secondary Grab Samples"
- Operating Procedure C-02 - "Schedule for Test Calibrations"
- Operating Procedure C-04 - "Filing and Storage"
- Operating Procedure C-91 - "Training of Chemistry Personnel"

A number of other operating procedures provided instructions for determining specific chemical parameters by various analytical chemical methods.

Through interviews of licensee personnel, the inspector was informed that management in plant and corporate positions are cognizant of the need to meet the objectives listed in the St. Lucie FSAR and in the SGOG/EPRI guidelines and are supportive of the water chemistry program. The inspector also verified that the licensee's table of organization provides for the chain of responsibility and authority needed to implement the day-to-day chemistry control and surveillance programs.

On the basis of this review, the inspector concluded that the licensee has developed the framework for an effective water chemistry program.

c. Implementation of the St. Lucie Water Chemistry Program

The inspector assessed the extent to which the licensee is fulfilling the requirements of the St. Lucie Technical Specifications and is implementing the water chemistry program that is being used to meet the FSAR objectives. This assessment was based on discussions with licensee personnel, review of procedures, observations of chemistry tests, and an audit of recent test results. This part of the inspection is summarized as follows:

(1) Activities related to plant chemistry are performed by personnel in both the Chemistry and Operations Departments. The Chemistry Department consists of 21 people, under the Chemistry Supervisor, who are divided into four groups of responsibilities: Primary Coolant/Process Monitoring; Secondary Coolant/Environmental; Counting Room/Effluents; and Water Treatment. The Chemistry Supervisor and each of the Group Leaders have been involved with the St. Lucie chemistry program for over nine years, and all of the chemical technicians have two to ten years experience in the plant. During five days each week, there is one technician on each back shift; however, on Saturday and Sunday there is a single technician on all three shifts.

The Operations Department has responsibility for operating the Water Treatment Plant and all demineralizers (Condensate Cleanup System, Steam Generator Blowdown System, and Reactor Coolant/Chemical Volume Control System); however, the inspector observed that considerable supervision and guidance was being provided by the two members of the Chemistry Water Treatment Group.

(2) Technical training has been provided to chemistry technicians principally through on-the-job experience with senior technicians or supervisors. This training is based on the instructions in Operating Procedure C-91. This procedure incorporates guidelines developed by the SGOG/EPRI and requires that approximately two months be devoted to each of eight areas of responsibilities and to nine topics. The inspector observed that some of the technicians also had academic backgrounds in scientific fields.

Personnel who operate the Water Treatment Plant are Auxiliary Nuclear Plant Operators (ANPOs) who receive both classroom and field experience in a formal training program conducted by Operations Department. Likewise, the Condensate Cleanup System is operated by Turbine Operators (TOs) who have completed the ANPO training and are continuing in a training program that leads to a licensed Nuclear Control Operator position. The inspector was informed, by both Training and Chemistry personnel, that few TOs are fully qualified to operate the Condensate Cleanup System without close supervision by one of the members of the Chemistry Water Treatment Group because of lack of 'hands-on' experience with the Condensate Cleanup System.

(3) The most critical chemistry parameters in the Secondary Water System (i.e., conductivity, dissolved oxygen, and pH) are monitored at key locations by means of inline analyzers that provide information (by means of meters, recorders, and alarms) to the Unit's Control Rooms. 'Grab' samples from process sample points identified in Procedures C-50, C-51, and C-54 are taken in the Secondary Water Laboratory of each unit on frequencies equal to or, in many cases, greater than those required by Procedure C-01. Similarly, the Reactor Coolant System is monitored by taking 'grab' samples that have been piped into the Primary Laboratories from the following sampling points; LPSI pump discharge, HPSI pump miniflow line, LPSI pump suction, letdown filter, letdown ion exchanger inlet and outlet, and pressurizer (gas space). Process samples from other systems that are associated with the Primary and Secondary Water Systems (such as water storage tanks and closed cycle cooling water) are also obtained using the guidance and precautions given in Procedure C-09a.

(4) The inspector established that the analyses of 'grab' samples were being documented on log sheets each shift. These results are normally not reviewed daily by a supervisor; however, key data are forwarded to the Chemistry Supervisor each weekday and then made available to the Plant Shift Supervisor in a daily Chemistry Summary Sheet. Any result that is not within the limits set in the appropriate procedure is immediately reported, by the analyst or a supervisor, to the Control Room. The inspector observed that the limits set for chemical variables in the Primary Water System are identical to those in the Technical Specifications while chemical variables associated with the Secondary Water System have limits that are consistent with the SGOG/EPRI guidelines.

When the Control Room is informed that a chemical parameter is out of specification, subsequent action by the Control Room Operators is based either on instructions provided in one of the Operating Procedures listed below or on the appropriate Technical Specification 'Action Statement'

- Emergency/Off-Normal Procedure No. 2-0120032 "Excessive Reactor Coolant System Activity"
- Off-Normal Operating Procedure No. 2-0610030 "Secondary Chemistry-Off Normal"
- Off-Normal Operating Procedure No. 2-0120038 "Out of Limit Steam Generator Chemistry Parameters"

The actions prescribed in these procedures are based on the perceived level of danger to safe operation of the plant and are consistent with the actions recommended by the SGOG/EPRI guidelines.

(5) The inspector observed that all important analytical data are placed in a computer data base on a daily frequency. These data may be converted to graphical presentations which are used by Technicians and supervision for short and long term trending purposes. The inspector used this computerized data base, as well as the most recent log sheets, to audit the results of analyses performed since June 1984. By means of this audit the inspector determined that (1) all Technical Specification surveillance requirements had been implemented and the results were within allowable limits. Likewise, data relating to chemical parameters from the secondary side had been obtained as required by the various procedures in the licensee's water chemistry program. A preponderance of these results were considerably lower than allowable limits and were indicative of minimal inleakage or buildup of potentially corrosive species in the secondary side.

Summary - The inspector did not identify any violations or deviations during this part of the inspection.

The inspector's audit of trends in the secondary water chemistry of Unit 1 during the current fuel cycle showed that there is very little variation in conductivity or other key chemical parameters when the plant is stable. Data obtained subsequent to failure of a condenser plug in July 1984, also verified that the excursion in conductivity caused by ingress of sea water was reversed within a few hours and Mode 1 (power operation) limits were restored in four days (while the plant was shutdown).

The use of a Condensate Cleanup System as a polisher and for protection against inleakage of saline water was discussed with several members of the Chemistry Department. It is the licensee's current position that, under stable plant operating conditions, very little polishing is needed and the quality of the feedwater might be adversely affected by leakage of resin particles or throw of sulfate or chloride from the resin columns if the demineralizers are used continually during plant operation. The Chemistry Department is training Technicians in the use of a recently acquired ion-chromatograph so that more accurate and sensitive measurements of chloride, sulfate, and other potentially corrosive anion species can be made and, thereby, establish whether continual use of the demineralizers should be a concern. As discussed earlier, the licensee does not place great dependence on the Powdex elements to prevent contamination of the feedwater if a severe inleakage of sea water should occur, because of the low loading capacity of this type of demineralizer. Greater reliance is placed on the capability of Chemistry and Operations personnel to locate and isolate the leak and, subsequently, restore the desired quality of steam generator water by means of blowdown.

6. Inservice Testing of Pumps and Valves (92706)

a. Review of the Proposed Program and Requests for Relief from the ASME Code for St. Lucie Unit 1

The licensee's proposed program for the inservice testing of pumps and valves in Unit 1 (IST Program) and related requests for relief from the requirements of the ASME Code are currently under review by NRC Region II personnel (See Inspection Report 50-335/83-22 Section 5.a). During this inspection, the inspector sought additional clarification of information provided to the NRC in a letter dated July 18, 1984, related to certain requests for relief from the ASME Code, specifically:

(1) Reactor Coolant System - Request Nos. 1 and 2

(2) Chemical Volume and Control System - Request No. 16

(3) Safety Injection System - Request No. 12

(4) Containment Spray System - Request No. 6

Relative to Relief Request Nos. 1 and 2 of the RCS System, the licensee explained in detail to the inspector the use of valves V-1402 and V-1404 (Pressurizer overpressure protection, relief valve) and V-1403 and V-1405 (Pressurizer overpressure protection, block valve) and committed to rewrite and resubmit the Basis for Relief Request No. 1.

Relative to Relief Request No. 16 (CVCS), the licensee adequately explained the flow paths for emergency boration during cold shutdown and plant operation and the function of valve V-2526.

Relative to Relief Request No. 12 (SIS), the inspector advised the licensee that valves V-3480, V-3481, V-3651, and V-3652 (10-inch gate valves in the Shutdown Cooling line) are considered to be pressure-isolation valves and, therefore, should be Code Category A rather than Code Category B and should be leak tested per the ASME Code, Section II requirements (IWV-3420). The licensee committed to review the status of these valves and to investigate possible procedures for making meaningful leak rate tests and will provide additional information to the inspector.

Relative to Relief Request No. 6 (CS), the licensee committed to provide the inspector with a copy of the procedure (OP-1-0420052) to be used in verifying that this valve actuates to its correct position on a CSAS test signal, per Technical Specification 4.6.2.2.

Pending receipt of the information in Items 1, 3, and 4, the inspector designates this action as Unresolved Item 335/84-27-01 "Clarification of Requests for Relief for the St. Lucie Unit 1 IST Program."

b. Closure of Unresolved Items 335/83-22-01 and 335/83-22-02

(1) UI 335/83-22-01. This item was opened to permit the licensee to provide additional information regarding the capability of vibration measurement meters to meet the ASME Code's requirement for a nominal maximum error of ±5% of full scale. During this inspection, the licensee informed the inspector that the meter used for this test (IE Mechanics Meter E-308 No. 328) does meet the Code's requirement when the lowest sensitivity scale is used. This item is thereby closed; however, the accuracy of this meter will be reviewed during future inspections of the licensee's ISI program.

(2) UI 335/83-22-02. This item was opened to allow the licensee time to identify the procedure that verifies that a remote position indicator accurately reflects a valve's operation, per ASME code requirement IWV-3300. During this inspection, the inspector verified that in Administrative Procedure No. 1-0010125 (Rev. 60), Data Sheet 3, methods are described for verifying valve position indication for specific valves and systems. This item is thereby closed.