UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-335/80-17

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

Facility Name: St. Lucie Unit No. 1

Docket No. 50-335

License No. DPR-67

Inspection at St. Lucie site near Fort Pierce, Florida

Inspector: R D Martin for
S. A. Elrod — Date Signed 8/14/80

Approved by: R D Martin
R. D. Martin, Section Chief, RONS Branch — Date Signed 8/14/80

SUMMARY

Inspection on June 9-19, 1980

Areas Inspected

This routine, announced inspection involved 91 inspector-hours on site in the areas of Bulletin and Circular review; follow up of reactor trip and natural circulation cooldown occurring June 11, 1980; Three Mile Island Lessons Learned short-term corrective actions; plant change to the Auxiliary Feedwater System.

Results

Of the four areas inspected, no items of noncompliance or deviations were identified in three areas; one item of noncompliance was found in one area - (Infraction-Failure to promptly notify NRC via the Emergency Notification Telephone Network when the unit responded in an unexpected manner - para. 9).

- para. 9)

DETAILS

1. Persons Contacted

C. M. Wethy, Plant Manager
*J. H. Barron, Operations Superintendent
*J. E. Bowers, Maintenance Superintendent
*M. B. Vincent, Assistant Plant Superintendent-Electrical
*N. G. Roos, Quality Control Supervisor
*R. R. Jennings, Technical Supervisor
H. S. Ruff, Quality Control Engineer
*C. A. Wells, Operations Supervisor
*A. W. Bailey, Quality, Assurance Supervisor

Other licensee employees contacted included technicians and operators.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 19, 1980 with those persons indicated in Paragraph 1 above. The licensee's position concerning the time lines of notification of the NRC, via the Emergency Notification Telephone Network, that the plant was not in an expected condition, was that the report was timely.

3. Licensee Action on Previous Inspection Findings

Not inspected

4. Unresolved items

Unresolved items were not identified during this inspection.

5. IE Circulars

The following IE Circulars were reviewed to determine whether they had been received by station management, reviewed for applicability and appropriate action had been taken or planned:

a. The following IE Circulars are closed

IEC 79-25 79-25 A	(Closed) SHOCK ARRESTOR STRUT ASSEMBLY INTERFERANCE. The license has verified that Bergen Patterson part 2540 strut assemblies were not used when St. Lucie hydraulic snubbers were replaced with mechanical snubbers. The interferance and overload conditions addressed in the circular do not apply.

IEC 80-06 (Closed) Not applicable to power reactors

IEC 80-07 (Closed) Not applicable to pressurized water reactors.

IEC 80-08 (Closed) Not applicable to pressurized water reactors.

IEC 80-11 (Closed) EMERGENCY DIESEL GENERATOR LUBE OIL COOLER FAILURES. This circular addressed failure of certain lubricating oil coolers caused by use of aborate-nitrite type corrosion inhibiter in coolers constructed with lead-tin soft solder tube -to-tubesheet joints.

St. Lucie uses Nalco-38 corrosion inhibiter per EMD product information manual, Bulletin M. I. 1748, and has verified on a monthly basis that the proper concentrations are maintained.

IEC 80-12 (Closed) VALVE SHAFT-TO-ACTUATOR KEY MAY FALL OUT OF PLACE WHEN MOUNTED BELOW HORIZONTAL AXIS. St. Lucie's valves were inspected by maintenance personnel in May 1980 while installing 50-degree-open limit stops per plant modification 24-80. One valve, FCV 25-3, was positioned such that the key could fall out if the cover were removed. The keyway was staked as prescribed in the circular and accompanying Henry Pratt Co. letter.

IEC 80-13 (Closed) GRID STRAP DAMAGE IN WESTINGHOUSE FUEL ASSEMBLIES. Since St. Lucie uses combustion Engineering Company fuel assemblies, the circular is not applicable.

b. The following IE Circulars remain open pending completion of review by the licensee:

IEC 80-01 (Open) SERVICE ADVICE FOR GENERAL ELECTRIC INDUCTION DISC RELAYS

IEC 80-03 (Open) PROTECTION FROM TOXIC GAS HAZARDS

IEC 80-04 (Open) SECURING OF THREADED FASTENERS ON SAFETY RELATED EQUIPMENT

IEC 80-05 (Open) EMERGENCY DIESEL-GENERATOR LUBRICATING OIL ADDITION AND ON-SITE SUPPLY. Paragraph 6 discusses certain aspects of this IE Circular further.

IEC 80-09 (Open) PROBLEMS WITH PLANT INTERNAL COMMUNICATIONS SYSTEMS. The license has the new dedicated line to the offsite operations center, the NRC Red Telephone and the NRC Health Physics do not have emergency power supplies. The engineering staff is currently evaluating methods of supplying emergency power.

IEC 80-10 (Open) Failure to maintain environmental Qualification of Equipment.

6. On-Site Storage Quantity Of Emergency Diesel Generator Lubricating Oil

The licensee's review of IE Circular 80-05 determined that the inventory quantity of lubricating oil stored on site (440-550 Gallo was inadequate to operate both of the Emergency Diesel generators for the time period commensurate with the on-site fuel oil supply required by technical specifications. The licensee believed the inventory quantity to be adequate since lubricating oil has been readily obtainable and the anticipated post accident loads would not require two simultaneous emergency generators for the period the on-site fuel oil would last (a week or more for each generator). When the inspector questioned this rationale and determined that only 330 gallons were avalable on site, the licensee modified the inventory limits to 550-660 gal., ordered sufficient lube oil to reach the inventory high limit and found 1000 gal. at the adjacent construction site.

The inspector reviewed technical specifications 3/4.8.1 and 3/4.8.2 in this area and doubts their adequacy. The licensee was informed that these technical specifications would be referred to NRC Headquarters for review and interpretation (50-335/80-17-01).

7. Three Mile Island Lessons Learned Category "A" Actions

The inspector followed-up one item listed for inspector followup in the NRC staff evaluation dated April 17, 1980.

2.2.2.b Technical Support Center. The inspector verified that a dedicated "Intercom" type telephone system has been installed serving the Control Room, Technical Support Center, and Emergency Operations Facility located at the Unit 2 construction site.

8. Modification of Auxiliary Feedwater System.

The inspector reviewed plant change/modification 567-79 which modified the auxiliary feed pump control circuitry to automatically start on low steam generator level and automatically feed the steam generators. A three minute delay prior to feeding the generators is incorporated per Combustion Engineering (CE) analysis of the effects of feeding a main steam line break inside containment. CE letter F-CE-7283 of June 9, 1980 refers.

At the completion of this inspection, the modification was completed and preliminary test results were satisfactory. An operational test remains to be performed upon plant heat up, Inspector Followup Item (50-335/80-17-03).

No items of noncompliance or deviations were identified in this area.

9. Plant Trip and Natural Circulation Cooldown.

At 2:26 a.m. on June 11, 1980, at 100% power, component cooling water was Lost to the Reactor Coolant Pumps (RCPs) when one of the air-operated containment isolation valves failed shut. The initial indication of failure made was that the electrical solenoid valve which controls air to the containment isolation valve was blowing fuses. Reactor power was reduced to 94% and the reactor tripped manually when component cooling water could not be restored promptly.

The plant operators commenced natural circulation cooldown about 3:00 a.m. The inspector was notified in his motel about 3:30 a.m. and proceeded to the site. The cooldown appeared uneventful upon the inspector's arrival on site about 4:30 a.m. Component cooling water had been restored at about 4:00 a.m. but plant operators were hesitant to restart reactor coolant pumps because the seals had been overheated. The inspecto periodically monitored progress until later in the morning when it became apparent that the plant was in an unexpected condition.

About 6:00 a.m., the cooldown was approaching conditions for shifting from natural circulation cooling to forced shut down cooling using the low pressures Safety Injection Pumps in the shutdown cooling mode. The valve line up and shut down cooling line warm up by recirculation were in progress and pressurizer pressure was being reduced by 6:30 a.m. It was thought that the shut down cooling system would be in service by about 9:00 a.m.

Analysis shows that between 6:30 a.m. and 7:00 a.m., a steam bubble was being formed in the reactor head area while the pressurizer was being cooled and its pressure reduced. The reason was that there is virtually no cooling in the reactor head area during natural circulation and the head area metal temperature lagged the cooldown of the remainder of the systems. The lack of direct indication of reactor head temperature contributed to the difficulty of determining what was happening. The plant staff had determined by around 8:00AM that the plant was behaving in an unexpected manner even though the core was subcooled and natural circulation was continuing.

By 11:00 a.m., shutdown cooling was established and shortly thereafter the NRC operations center was notified that, because of plant response, the licensee believed that a bubble had formed in a location other than the pressurizer.

Shortly before 2:00PM the Reactor Coolant System had been refilled and pressure control regained by the pressurizer. A bubble was drawn in the presurrizer at about 3:00 p.m. Later the plant was degraded, taken solid, and partially drained to replace reactor coolant pump seals.

The inspector reviewed operator actions for conformance with technical specifications. No items of noncompliance or deviations were identified. The inspector considered the time period between the plant staff identifying

that the plant was not responding as anticipated and the notification to the NRC operations center to be and in noncompliance with 10 CFR 50.72(a)(3) (50-335/80-17-02).