



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

Report Nos.: 50-335/90-32 and 50-389/90-32

Licensee: Florida Power and Light Company  
9250 West Flagler Street  
Miami, Fl 33102

Docket No.: 50-335 and 50-389 License Nos.: DPR-67 and NPF-16

Facility Name: St. Lucie 1 and 2

Inspection Conducted: January 7 - 11, 1991

Inspectors:

B. Breslau  
B. Breslau, Team Leader

1/16/91  
Date Signed

Team Members:

R. Gibbs  
L. Mellen

Approved by:

L. Watson  
L. Watson, Chief  
Operational Programs Section  
Division of Reactor Safety

1-17-91  
Date Signed

SUMMARY

Scope: This inspection focused on control room operations to determine operator awareness of plant status and control room demeanor. A review was conducted to determine adequacy of Plant Work Order control, and adequacy of supporting documentation that substantiates effectiveness of the licensee's surveillance procedures. Additionally, items identified in NRC inspection reports 90-09, 89-27 and 88-08 were reviewed to determine adequacy of managements corrective actions to address noted weaknesses.

Results: In the areas inspected, no violations or deviations were identified. The inspection team concluded that St. Lucie was aggressive in the implementation of corrective actions for items identified by the NRC Operational Safety Team Inspection. The corrective actions were generally comprehensive and technically sound. The most significant single example of incomplete corrective actions was in the area of the Independent Safety Engineering Group's activity, paragraph 2.1. The corrective actions for this area were at least partially delayed by a reorganization, standardization, and relocation of the group and had not improved performance from the time of the NRC Operational Safety Team Inspection.



## REPORT DETAILS

### 1. Persons Contacted

#### Licensee employees

- \*R. Acosta, Company Nuclear Review Board Chairman
- \*G. Boissy, Plant Manager
- \*J. Barrow, Operations Superintendent
- \*C. Burton, Operations Supervisor
- \*D. Church, Independent Safety Engineering Group Chairman
- J. Clay, Facility Review Group Secretary
- \*D. Culpepper, Supervisor Site Nuclear Engineering
- \*R. Dawson, Maintenance Superintendent
- \*R. Englmeier, Manager, Site Quality
- \*C. Leppla, Instrument & Controls Supervisor
- \*B. Moss, Nuclear Assurance
- \*L. McLaughlin, Superintendent, Plant Licensing
- \*B. Parks, Superintendent, QC
- \*M. Powell, Licensing Engineer
- \*J. Riley, Information Services Supervisor
- \*L. Rogers, Assistant Supervisor, Electrical Maintenance
- \*D. Sager, Site Vice President
- \*D. Stewart, Technical Staff
- D. West, Technical Staff Supervisor
- \*C. Wood, Assistant Operations Supervisor

Other Licensee employees contacted included engineers, technicians, and office personnel.

#### NRC Representatives

- \*A. Gibson, Director, Division of Reactor Safety, R-II
- \*R. Crlenjak, Chief, Reactor Projects, Section 2B, R-II
- \*S. Elrod, Senior Resident Inspector
- \*M. Scott, Resident Inspector

\*Attended exit interview on January 11, 1991

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

### 2. Actions on Previous Inspection Findings (92701, 92702)

- a. (Closed) IFI 50-389/88-08-01, Correction of technical discrepancies in the EOPs as noted in Appendix B, NOD, and paragraph 4.

NRC inspection report 89-27 reported that all Appendix B EOP deficiencies were closed except items e. and f. of EOP-01 and items a. and b. of EOP-05. Report 89-27 also noted that inadequate corrective action for the NOD was identified as violation 89-27-01; closed the

Deviation and that corrective action would be tracked under the NOV. All paragraph 4 related items of 88-08 were closed by 89-27.

1) EOP-01, items e. and f:

- e. The Step Verification Document has been corrected to reflect the same 3.5 psig value as listed in the EOP.
- f. The licensee has included adequate technical justification for the deviation in the Step Validation Document.

2) EOP-05, items a. and b:

- a. The EOP procedure steps have been worded clearly to indicate "trip 2, leave 2" RCP trip strategy of CEN-152.
- b. Step sequences such as starting hydrogen analyzers before stabilizing RCS pressure and temperature were evaluated by the licensee and adequately reorganized to follow the guidance of CEN-152.

- b. (Closed) IFI 50-389/88-08-02, Correction of discrepancies noted during plant walkdowns as outlined in Appendix D.

NRC inspection report 89-27 closed all Appendix D items except for item b.2. This item identified that step 18a of the EOP directed "Manually close..." and that Manually was not defined in the writer's guide. A review of the EOP writer's guide revealed that the licensee has included an adequate definition for "Manually".

- c. (Closed) IFI 50-389/88-08-04, Correction of human factors discrepancies as outlined in Appendix C.

NRC inspection report 89-27 closed all human factors discrepancies outlined in Appendix C except as noted below:

- 1) Item A.1.e had a new problem created when "typical" was deleted from the figure title and the operator was required to "ensure" (ensure was not defined in the writer's guide) SI flow in accordance with figure 2. The licensee has taken action by inserting "typical" back in to figure 2, this figure is for guidance and is not intended

for the operator to stay directly on the applicable curve. Also, the writer's guide has been annotated to adequately define "ensure".

- 2) Item A.2.c. The revised Safety Function Status Check Sheets were noted as not complying with the Writer's guide. The term AND was not underlined and the right margin heavy bracket used to group two lines was not defined in the writers guide.

The current revision of the Writer's guide, Revision 11, adequately defines the right margin heavy brackets, but no longer requires underlining the term AND. A random review of EOPs indicates adequate usage of these logic terms.

- 3) Item A.5.e. Vocabulary concerns with multiple verbs listed in the Writer's Guide Verb List were inaccurate or incomplete in their meaning and had not been corrected during the licensee's review. For example "open" did not describe actions of the electrical breaker, and "verify" did not define what action the operator was to take if the component was NOT observed in the expected condition.

A review of the licensee's Writer's Guide Vocabulary List revealed adequate meanings were inserted for "open" and "verify". No other words were observed to be inaccurate or incomplete.

- 4) Item B.2.c. Recorders in the Unit 2 control room were not inking properly and labeling for the observed recorders were inconsistent with other similar recorders.

During this inspection, recorders in both Units were observed, all were inking properly. Recorder labeling was observed to be consistent within groupings.

- 5) Item B.2.f. The RCP Upper Guide Bearing Temperature gauge was not consistent with similar gauges for other RCPs in that it had no green, yellow, or red zones painted on its face.

During this inspection, this condition still exists. However, the licensee has an adequate schedule to replace the present indicators with digital indicators starting in the spring of 1991.



- d. (Closed) VIO 50-335,389/89-27-01, Repeated failure to follow commitments and procedures for development of EOPs.

The licensee has developed a step deviation document that addresses each step of their EOPs. A review of this documentation indicates that adequate technical justification has been provided for EOP differences from CEN-152.

- e. (Closed) IFI 50-335,389/89-27-02, Develop St. Lucie PSTG for the EOPs.

The revised step deviation document coupled with backup information, Writer's guide, and V&V guidance is considered as an acceptable PSTG

- f. (Closed) VIO 50-335,389/90-09-01, Failure to follow the Plant Work Order tagging procedure.

This violation reported that licensee personnel were not hanging deficiency tags on defective equipment when NPWOs were issued. Additionally, they were not removing deficiency tags as required by site procedures and attaching the tags to the completed NPWOs when defective conditions were corrected.

To correct this condition the licensee committed to the following corrective actions:

- 1) Correct the specific deficiencies addressed in the violation.
- 2) Operations personnel and maintenance personnel were to receive training which re-emphasized the site requirements.
- 3) Deficiency tags assigned to the control room were to be reviewed for validity on a monthly basis.
- 4) The site procedure (AP 0010432) was to be revised to address canceled NPWOs.

The inspectors verified that the above actions had been completed. In addition to the committed corrective actions the licensee had accomplished several additional actions to strengthen the area and prevent recurrence of the deficiency:

- 1) The licensee established a NPWO hard copy file in each control room to track control room NPWOs through completion. This file is maintained by

the operators to give them a more up-to-date status concerning the completion of control room NPWOs. The file is updated by the operators as new information about outstanding control room NPWO becomes available.

- 2) The deficiency tags on the control board have been replaced with a brown dot and the tags are now filed with the hard copy of the NPWO in the control room hard file.
- 3) The annunciator log has been divided up by control room panel, and the portion pertaining to each panel is placed on a rack directly below the panel. A sheet has been added to each of these logs which provides a quick reference for the operator concerning the cause of the problem for all deficient annunciators.
- 4) The maintenance department has trended control room NPWOs and performed a root cause analysis in an effort to reduce and prevent control room deficiencies. The number of control room deficiencies is tracked and a goal for the number of deficiencies has been established.
- 5) The maintenance department has conducted periodic checks to verify that deficiency tags are properly hung and removed. This check is not just for control room deficiencies, but, rather, reviews compliance in all areas of the plant.
- 6) A temporary change to AP 0010432 has been issued which requires operations to verify deficiency tag removal by maintenance during the NPWO closeout process. This change will become permanent once approved by the Facility Review Group.

These actions are considered extensive and should result in significant improvement in this area. This item is closed.

- g. (Closed) UNR 50-335,389/90-09-02 The licensee needs to define administratively the Nuclear Watch Engineer position to substantiate that the NWE meets the requirements of the TS defined watch.

A review of revised administrative procedure 0010120, Duties and Responsibilities of Operators on Shift, Revision 47, and Operations Organization, QI 1-PR/PSL-2, Revision 18 indicated that the licensee had adequately clarified the NWE's role as the TS shift





SRO. They also adequately defined the NWE's responsibility during Emergency Plan implementation within administrative procedures EPIP 3100021E, Duties and Responsibilities of the Emergency Coordinator.

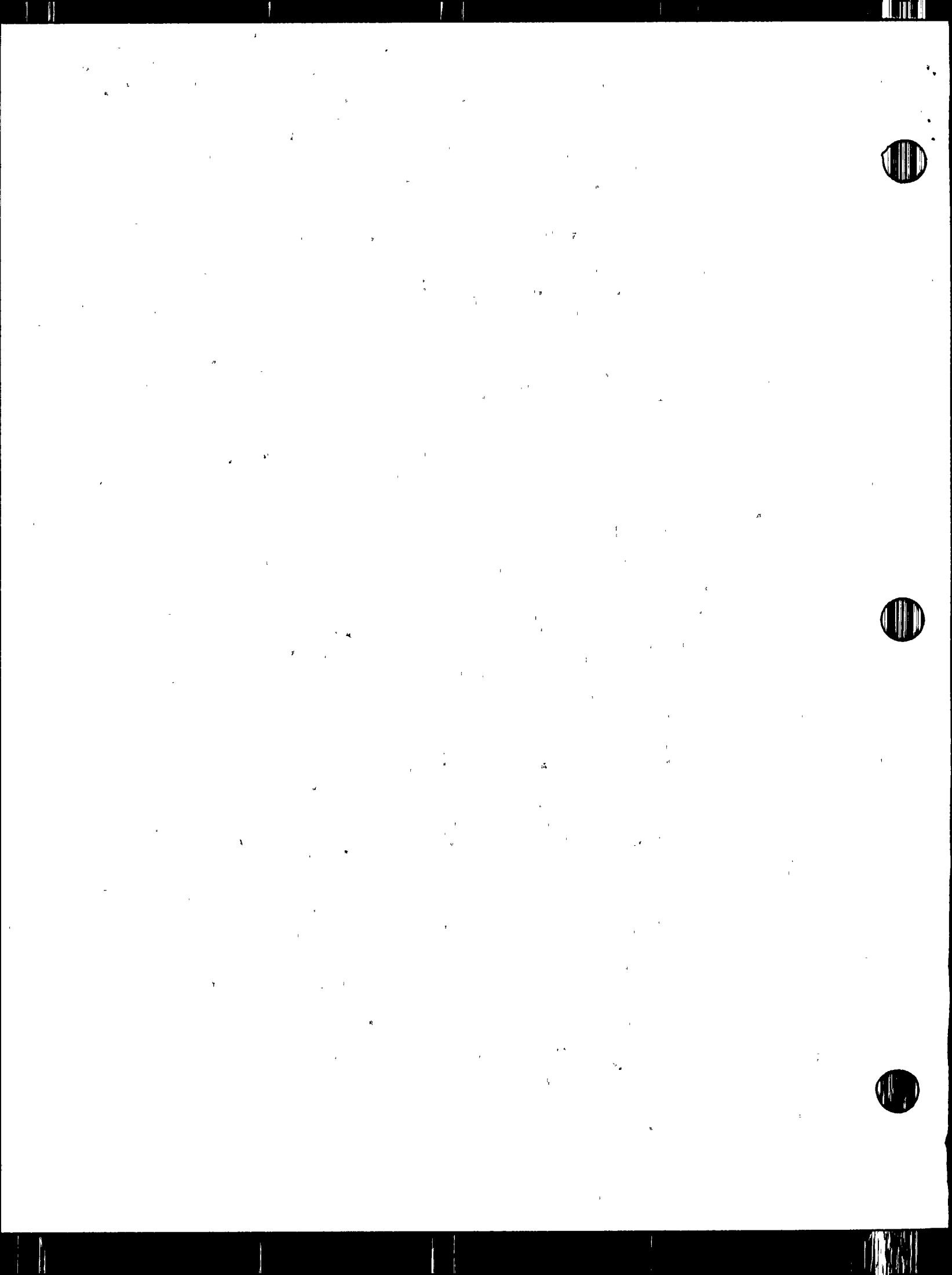
- h. (Closed) UNR 50-335,389/90-09-03 Review of historical documents is required to substantiate licensee's exception to 24 month procedure review.

During subsequent discussions with the licensee, the licensee stated that clarification will be added to their administrative procedure, QI 5-PR/PSL-1, Revision 42, to indicate how the intent of ANSI N18.7 standard is being met. Additionally, all procedures receive a review once each 36 months to assure the procedures represent current policy and practices. This item is considered as being adequately addressed.

- i. (Closed) IFI 50-335,389/90-09-04 Further review is necessary to verify licensee's calibration practices concerning SDAFW pump surveillance testing. This inspector follow-up item addressed three specific items.

The first item involved non-conservative calibration practices. The inspectors evaluated QI PR/PSL 11-4, Revision 18. Section 5.2.2.3 was rewritten during Revision 16 to incorporate instructions that the "as left readings must be within the tolerances specified on the data sheets or in the vendor instruction manuals. Attempts should be made to bring the readings as close as reasonably achievable to the desired readings." This item adequately addressed this concern in that an apparent root cause of the continued out-of-tolerance readings referenced in the OSTI report was because some instruments were calibrated to just within the specified tolerance. The changed methodology should minimize the number of out of tolerance readings.

The second item concerned the difference between the unit one and unit two AFW flow limits and each unit's respective TS limit. The inspectors reviewed OP 1-070050, OP 2-070050, and the applicable TS limits and determined that the unit 2 limits were set at 1270 psi and not at 1260 psi because the SDAFW and MDAFW pumps were 1260 and 1270 respectively. In order not to confuse the operators with two different AFW pump flows the licensee elected to use the more conservative of the two flows for unit 2.



The third item concerned the ability of an operator to read 1342 psi on a gauge that was calibrated in 20 psi increments. The licensee issued a night order dated January 9, 1991, that required that measurement accuracy should be such that no more than one half the scaled readings would be required for an acceptable reading. The licensee will evaluate this issue and modify the training program as appropriate.

Additionally, the inspectors witnessed the SDAFW pump surveillance testing completed on January 9, 1991, for both units. The testing was accomplished in accordance with OP 1(2)-070050. The testing was terminated when the appropriate acceptance criteria were met. The work package was completed and appropriately signed and reviewed.

- j. (Closed) IFI 50-335,389/90-09-05 Review licensee's corrective actions taken to correct control of TCs.

The inspectors reviewed CAR 052190 dated June 8, 1990 that delineated the implementation of a new system for TCs. QI 5-PR/PSL-1, revision 41 was revised to include the requirement that TCs are removed after 90 days. The inspectors reviewed the temporary change log book and noted that all TCs had been in effect for less than 90 days. The inspectors discussed the TC program changes with licensee personnel involved in the process. This item was appropriately dispositioned by the licensee.

- k. (Closed) IFI 50-335,389/90-09-06 Review licensee's actions concerning exemption of licensed operators from taking requalification exams.

The licensee has revised administrative procedure 0005720, Licensed Operator Requalification Program, Revision 23, to reflect that exemptions to the comprehensive written examination or the annual operating test should not be granted. Discussions with training staff indicated that the intent of this statement will not allow exemptions based on the premise that since an instructor prepared and/or assisted in the preparation of the exam, they will be allowed to be exempted from taking the required exam. The individual will be required to take an exam that is prepared by a different individual. However, exemption may be allowed, but each case will be evaluated on a case-by-case basis. This item is considered to be adequately dispositioned.

1. (Open) IFI 50-335,389/90-09-07 Review implementation of enhancements to improve Independent Safety Engineering Group performance.

Inspection report 90-09 identified several weaknesses in the performance of the ISEG which reduced the overall effectiveness of the group. These weaknesses concerned a lack of productivity within the group, a lack of timeliness in the issuance of reports, and a corrective action program which was weak and lacked an aggressive approach toward resolution of identified deficiencies. Review of performance during this inspection noted very little improvement. Projects continue to take an excessive amount of time and reports are not issued in a timely manner. In spite of the fact that a corrective action section has been added to report files, corrective action follow-up is not accomplished on a frequent basis, and nearly half of the group's outstanding items are over a year old (20 of 47 items). ISEG has been undergoing a significant reorganization since the previous inspection, and now reports to the Company Nuclear Review Board Chairman. The Chairman is in the process of standardizing the ISEGs at both Turkey Point and at St. Lucie. This standardization involves surveys of ISEGs throughout the country and interface meetings between the St. Lucie and Turkey Point ISEGs and the CNRB Chairman. The ISEG at St. Lucie has also changed locations since the previous inspection. These efforts have had a negative impact on the St. Lucie ISEG to date and are at least partially responsible for the lack of improvement. Discussion with the CNRB Chairman concluded that concerns noted in the previous inspection, as well as, this inspection would be resolved as a part of his reorganization efforts. This item remains open for inspection at a later date.

- m. (Open) IFI 50-335,389/90-09-08 Review licensee's actions concerning improvements in the Facility Review Group approval process.

The previous inspection (90-09) concluded that the FRG was very effective in the review of plant activities. There were, however, several areas identified for improvement. These included a more formalized approach to approval of items which had FRG comments, signature of the minutes by the alternate chairman when an alternate chairman conducts the meeting, and more timely distribution of meeting minutes. Each of these items had been satisfactorily addressed by the licensee since the previous inspection, with the exception of

the timely distribution of meeting minutes. No improvement had been made in that area. This item is being held open for future inspection to review this issue.

n. NRC inspection report 90-09 addressed other concerns in addition to those identified as VIO, IFIs and/or Unresolved items, these concerns are addressed by their respective paragraph numbers.

- 1) Paragraph 2.a. identified control room decorum as casual, though acceptable; control of access to the area around the control boards was weak. It appeared that operators had become desensitized to the number of alarms and PWO tags in the control room, as well as equipment that was in the warning range by indication. The operators were slow to acknowledge the annunciator alarms both when the alarms initiate and when they reset.

The licensee conducted meetings to emphasize the existing policy concerning control of access and established one access point barricade. The licensee also took extensive action to improve the NPWO and deficiency tagging area which have strengthened the operators reliance on and trust in the deficiency tagging program (See paragraph 2.f).

The inspectors witnessed several hours of normal operations in the control room during this inspection and noted that operators appeared to be attentive to their duties and cognizant of all alarms and their causes. Further discussion with the licensee revealed that a renewed effort has been undertaken to eliminate nuisance alarms and an engineering PCM is being developed to remove the automatic alarm cutout. Once the cutout is removed, operator attentiveness will be further enhanced.

- 2) Paragraph 2.b.2) noted housekeeping to be weak (e.g., trash, booties, gloves, consumable material were noted on the floors/equipment). The inspectors did not observe other examples of poor housekeeping.
- 3) Paragraph 2.b.3) identified transient combustibles left in open buckets approximately one-foot from the 1A EDG fuel oil flexible coupling. The inspectors did not observe other examples of uncontrolled transient combustibles.



- 4) Paragraphs 3.b and 3.c identified inappropriate values being recorded in surveillance procedures and attention to detail as being weak in the performance of technical reviews for completed packages.

The inspectors examined approximately 50 work packages completed since May 1990. The technical details and the technical reviews appeared satisfactory. The STAs had been tasked with the review of completed surveillances on a trial basis. This review appeared to be effective in eliminating some of the problems noted in the previous inspection. The licensee included selected portions of the OSTI inspection report in operator training. These portions primarily concerned inattention to detail, which included the specific example of inappropriate values being recorded in surveillance procedures.

Additionally, the inspectors reviewed selected night orders that directed the operators and other plant personnel to pay more attention to detail in completing surveillances. The night orders referred to the OSTI report and several other examples of inattention to detail. The licensee's corrective actions have thoroughly addressed this area.

- 5) Paragraph 3.d noted that there were numerous examples of control room instruments reading erratic when compared to other channels of similar instrumentation or as having indicated operation outside the normal operating band.

The inspectors walked down the control boards on both units to determine if this condition still existed. The results of the walk down were as follows:

- a) The control board SIGMAS for CCW to the RCPs were reading above their maximum value of 1500 GPM. The licensee stated "although this was not an optimum condition, all four instruments were operable and would indicated the correct value as CCW flow decreased.." These instruments indicated total CCW return flow for the RCPs and the CEDM coolers. This total flow exceed 1500 GPM during normal conditions. This flow changed with changes in intake temperature and adjustments to





system configuration. The plant was evaluating a change to a wider range instrument during implementation of PCM 116-289D which replaces the analog SIGMAS with VMI digital indicators. This condition existed on unit 2 since start-up.

- b) The feed flow and steam flow recorders for both units were near their maximum value. These instruments were near the top of their respective scales as originally installed. When the respective units went to stretch power the problem was exacerbated. REE 90-453 had been submitted to engineering to expand the current range of these instruments.
- c) FIS-14-10B CCW to the SDC HX was observed to be periodically oscillating around the zero indication when there was no flow. After the inspector asked about this condition, the licensee issued a work order, XA910108145303, to investigate this condition. When there was CCW flow to the SDC HX the appropriate value was indicated.

The items listed above are considered to be appropriately dispositioned.

- 6) Paragraph 3.e.2 noted a poor work practice concerning operations personnel using a "cheater bar" on a handwheel to apply torque to a motor operated valve in an attempt to correct the errant local indication.

The licensee had issued a standing night order following the OSTI that prohibited the use of "cheater bars" to apply torque to a motor operated valves. Since the night order was issued the licensee told the inspector that there had been only one violation of this night order and that the violator was disciplined. The inspectors reviewed the Standing Night Order T-5 and Night Orders dated March 26, 1990, May 7, 1990, and June 26, 1990. The inspectors determined that they adequately addressed the use of "cheater bars". Additionally, the inspectors reviewed the training records for the night orders and discussed the use of "cheater bars" with licensed and non-licensed operators. After the inspectors requested specific information on the status of the MOV that had been closed with the cheater bar, FCV-9011,

the licensee issued a work request, XA91010992128, to inspect the internals of the valve. The licensee adequately addressed this area.

No violations or deviations were noted within the areas inspected

### 3. Exit Interview

An exit interview was conducted on January 11, 1991, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection results noted below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

<u>Item:</u>	<u>Status</u>	<u>Description/Paragraph</u>
389/88-08-01	Closed	IFI - Correction of technical discrepancies in the EOPs as noted in Appendix B, NOD, and paragraph 4 (reference paragraph 2.a).
389/88-08-02	Closed	IFI - Correction of discrepancies noted during plant walkdowns as outlined in Appendix D (reference paragraph 2.b).
389/88-08-04	Closed	IFI - Correction of human factors discrepancies outlined in Appendix C (reference paragraph 2.c).
335,389/89-27-01	Closed	VIO - Repeated failure to follow commitments and procedures for development of EOPs (reference paragraph 2.d).
335,389/89-27-02	Closed	IFI - Develop St. Lucie PSTG for the EOPs (reference paragraph 2.e).
335,389/90-09-01	Closed	VIO - Failure to follow PWO tagging procedure (reference paragraph 2.f).
335,389/90-09-02	Closed	UNR - The licensee needs to define the NWE position to substantiate that the NWE meets the requirements of TS defined watch (reference paragraph 2.g).



335,389/90-09-03	Closed	UNR - Review of historical documents is required to substantiate licensee's exception to 24 month procedure review (reference paragraph 2.h).
335,389/90-09-04	Closed	IFI - Further review is necessary to verify licensee's calibration practices concerning SDAFW pump surveillance testing (reference paragraph 2.i).
335,389/90-09-05	Closed	IFI - Review licensee's corrective actions taken to correct control of TCs (reference paragraph 2.j).
335,389/90-09-06	Closed	IFI - Review licensee's actions concerning exemption of licensed operators from taking requalification exams (reference paragraph 2.k).
335,389/90-09-07	Open	IFI - Review implementation of enhancements to improve ISEG performance (reference paragraph 2.l).
335,389/90-09-08	Open	IFI - Review licensee's actions concerning improvements in the FRG approval process (reference paragraph 2.m).

#### 4. Acronyms

CCW	Component Cooling Water
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
FRG	Facility Review Group
IFI	Inspector Follow-up Item
ISEG	Independent Safety Engineering Group
MDAFW	Motor Driven Auxiliary Feedwater
NOD	Notice of Deviation
NOV	Notice of Violation
NWE	Nuclear Watch Engineer
OSTI	Operational Safety Team Inspection
PCM	Plant Change Modification
psig	Pounds per square inch gauge
PSTG	Plant Specific Technical Guidelines
PWO	Plant Work Order
SDAFW	Steam Driven Auxiliary Feedwater
RCP	Reactor Coolant Pump

RCS	Reactor Coolant System
REE	Request for Engineering Evaluation
SI	Safety Injection
SRO	Senior Reactor Operator
STA	Shift Technical Advisor
TC	Temporary Change
TS	Technical Specification
UNR	Unresolved Item
VIO	Violation

