



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

**REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931**

June 26, 2001

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

**SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC EXAMINATION REPORT 50-335/2001-301
AND 50-389/2001-301**

Dear Mr. Stall:

On May 18, 2001, the Nuclear Regulatory Commission (NRC) completed administration of operating examinations to employees of your company who had applied for licenses to operate the St. Lucie Nuclear Plant Units 1 and 2. The enclosed report documents the examination results and findings which were discussed on May 18, 2001, with Mr. R. Kundalkar and other members of your staff.

Three Reactor Operator and eight Senior Reactor Operator applicants were examined. Three Reactor Operator and eight Senior Reactor Operator applicants passed operating tests, while three Reactor Operator and six Senior Reactor Operator applicants passed written examinations, administered by your staff on May 21, 2001.

No findings of significance were identified; however, we noted that post examination comments were submitted by your staff for six questions, five affecting the Reactor Operator written examination and all six affecting the Senior Reactor Operator written examination. While it is not unusual for written examinations to result in comments pertaining to question quality, we have noted that, in this case, the number of comments was unusually high. Accordingly, we will be discussing the reasons for the high number of questions commented upon with your training staff to develop an understanding of the root causes and corrective actions.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael E. Ernstes, Chief
Operator Licensing and
Human Performance Branch
Division of Reactor Safety

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

Enclosure: (See page 2)

Enclosure: Examination Report 50-335/2001-301 and 50-389/2001-301

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NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-335 and 50-389

License Nos.: DPR-67, NPF-16

Report Nos.: 50-335/2001-301 and 50-389/2001-301

Licensee: Florida Power and Light Company (FPL)

Facility: St. Lucie Nuclear Plant, Units 1 and 2

Location: 6351 S. Ocean Drive
Jensen Beach, FL 34957

Dates: Operating Tests - May 14 - 17, 2001
Written Examination - May 21, 2001

Examiners: Mark S. Miller, Chief License Examiner
Ronald F. Aiello, License Examiner
Thomas F Stetka, License Examiner
Howard F. Bundy, License Examiner

Approved by: M. Ernstes, Chief
Operator Licensing and Human Performance Branch
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

ER 05000335-01-301, ER 05000389-01-301, May 18, 2001, Florida Power & Light, St. Lucie Nuclear Plant, Units 1 & 2.

The operator licensing initial examinations were developed by Florida Power and Light and administered by Florida Power and Light (written examination) and NRC examiners (operating examination) in accordance with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 8. The examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45.

Cross-cutting Issues: Human Performance

Three Reactor Operator (RO) applicants and eight Senior Reactor Operator (SRO) applicants were administered written examinations and operating tests. Two SROs failed the written portion of the examination. All other applicants passed the examination. Seven were issued operator licenses commensurate with the level of examination administered, and two had their operating licenses withheld (due to written examination scores) until the time for appeal has passed for the those failing the written examination.

No findings of significance were identified.

Report Details

4. OTHER ACTIVITIES (OA)

4OA5 Operator Licensing Initial Examinations

a. Scope

Florida Power and Light staff developed both the written examinations and the operating tests in accordance with NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," Revision 8. The draft examinations were reviewed by the NRC. Examination changes agreed upon between the NRC and the licensee were made according to NUREG-1021 and incorporated into the final version of the examination materials. The NRC administered the approved operating tests during the period of May 14 through May 17, 2001 to three RO applicants and eight SRO applicants. The licensee staff administered the approved written examination (accession number ML011730076) on May 21, 2001. The examiners reviewed the examination security measures to ensure examination security and integrity.

b. Findings

All three RO and six of the eight SRO applicants passed both examinations. Two SRO applicants passed the operating examination but failed the written examination. Details of each applicant's deficiencies are described in the individual's examination report, Form ES-303-1, "Operator Licensing Examination Report." Copies of these evaluations were forwarded under separate cover to the Training Manager to allow evaluation of noted deficiencies so appropriate remedial training may be provided, as necessary.

Two RO and five SRO applicants were issued operator licenses commensurate with the level of examination administered. One RO and one SRO applicant, who passed both exams, had their operating licenses withheld due to the potential for any changes to the grading key resulting from appeals of the written examination by the two applicants who failed. Their licenses will be issued when the period for appeals has expired (July 12, 2001) or when any appeals are resolved.

Post examination comments were submitted by the licensee (accession number ML011730065) and are included, with NRC responses, as Attachment 1 to this report.

4OA6 Meetings

Exit Meeting Summary

The Chief Examiner presented the preliminary examination results on May 18, 2001, to members of licensee management. The licensee acknowledged the examination results presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

LIST OF PERSONS CONTACTED

R. Kundalkar, Site Vice President
R. West, Plant General Manager
R. Lindsey, Training Manager
L. Rich, Operations Training

NRC RESOLUTION OF FACILITY COMMENTS

● RO EXAM QUESTION 2/SRO EXAM QUESTION 2

Licensee Comment

This question asks which CCW header(s) will the 1A CCW pump be supplying after a LOOP followed by a LOCA. The key indicates that “C” is correct because it is assumed that SIAS has occurred isolating the “N” header therefore separating the “A” header from the “B” header. Some candidates selected distractor “D” because the stem did not provide enough information to determine that SIAS had actuated.

Recommendation: Accept C and D as correct responses.

NRC Response

Recommendation not accepted. Because the question stem postulated that a LOCA had occurred (indicating that a SIAS would, ultimately, occur for this plant condition) and that no operator action is taken, the applicant who answered the question on the basis of a LOOP without a SIAS made an incorrect assumption as to the moment in time to which the question referred. NUREG 1021, revision 8, Appendix E, “POLICIES AND GUIDELINES FOR TAKING NRC EXAMINATIONS,” (which was provided to each applicant and upon which each applicant was briefed) Part B, “Initial Examination Guidelines,” item 7 states:

“If you have any questions concerning the intent or the initial conditions of a question, **do not hesitate asking them before answering the question** [emphasis added]. Ask questions of the NRC examiner or the designated facility instructor *only*. When answering a question, **do not make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question** [emphasis added]. For example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*.”

In the case of this question, applicants were both free to ask whether a SIAS had occurred or were free to assume that a SIAS had occurred, in that a SIAS would “occur as a consequence of other conditions that [were] stated in the question.” Consequently, the sole correct answer remains C.

2. RO EXAM QUESTION 25/SRO EXAM QUESTION 20

Licensee Comment

This question asks the student to determine if the proper RWT inventory has been transferred to the containment sump.

Using the attached reference drawing (Figure 9) a diagonal line is drawn representing 33 feet between the two solid lines for 32 feet and 34 feet. Follow the 9 foot RWT level line straight across to where it intersects the initial 33 foot line. Drawing a straight line down to the x-axis from this point results in an expected CNTMT sump level of slightly greater than 22 feet (approx. 22.2 feet).

Since the actual sump level is 22 feet, it was assumed by some of the candidates that some sump inventory has been lost outside CNTMT. Conversely, depending on how precise the data is evaluated on Figure 9, it is evident how some students determined that all water in the RWT had been transferred to the CNTMT sump.

Recommendation: Accept B and D as correct answers.

NRC Response

Recommendation accepted. As due to the proximity of one particular distractor to the intended answer on the x-axis of a curve contained in EOP-15 (distance between the points on the order of 1/16"), a reasonable reading of the figure in question could result in an applicant concluding that volume was missing from the containment sump, answers B and D are both acceptable.

3. RO EXAM QUESTION 72/SRO EXAM QUESTION 58

Licensee Comment

The question describes an event regarding an unanticipated continuous withdrawal of a CEA on Unit 1. The question of concern is to assess the operability of the particular CEA and the necessity for subsequent operator actions. The correct choice selected by the student depends on the student's recognition of directions provided in the CEA Off-Normal procedure 1-0110030 Appendix A for verifying CEA operability.

Given that the stem provides for a deviation of 7.0 inches, a student knowledgeable of the Technical Specification 3.1.3 would assume that the Technical Specification requirement for being deviated less than 7.5 inches is met. Therefore, answer A is correct.

The CEA Off-Normal procedure utilizes "Appendix A" as its determinant for CEA operability. It establishes that for the CEA to be operable, it must be capable of smooth manual insertion and withdrawal using the Manual Individual mode for moving the CEA. Therefore, the student who correctly selected "D" conservatively assures an evaluation of the CEA and its drive mechanism prior to considering it operable (as defined by Appendix A). Assuming the CEA is initially inoperable until proven otherwise, Technical Specification Surveillance Requirement 4.1.1.1.1 requires a determination of the Shutdown Margin within 1 hour after detection of an inoperable CEA.

Since the stem of the question did not provide a reference to the use of a particular procedure or Technical Specifications, certain assumptions had to be made by the student.

Recommendation: Accept A and D as correct responses.

NRC Response

Recommendation accepted. The specific question presents the applicant with a situation involving a group CEA withdrawal. At the conclusion of the withdrawal, one CEA continues to move out of the core and finally stops at a position which is misaligned from the group by 7 inches. The applicant is then asked which of four choices describes the operability of the CEA in question. The sole correct answer was intended to be A, “operable and meets the technical specification alignment requirements [of within 7.5 inches of the rest of the group].” This answer was predicated on technical specification 3.1.3.1, action a, which states:

“With one or more full length CEAs inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirements of specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.”

The licensee suggested that answer D, “inoperable, and shutdown margin requirements must be satisfied,” might also be considered as a correct answer, since the CEA off-normal procedure would drive operators to demonstrate that the CEA was, or was not, immovable. An operator who first assumes the CEA to be inoperable, the licensee suggested, would be conservatively assuring that technical specifications would be satisfied until the CEA is demonstrated to be operable. As the specifics of the question did not provide applicants with enough information to determine whether or not the CEA in question stopped moving as a result of mechanical difficulties or the clearing of an electrical problem, applicants were placed in a position of making a judgement on how the situation may have affected operability and which technical specification requirement applied based on that individual judgement.

Making a conservative judgement that the CEA in question was inoperable would be in keeping with NRC guidance on the subject contained in NRC Inspection Manual Chapter 9900, “OPERABLE/OPERABILITY: ENSURING THE FUNCTIONAL CAPABILITY OF A SYSTEM OR COMPONENT,” 4.0, “Background,” which states, in part, “The determination of operability for systems is to be made promptly, with a timeliness that is commensurate with the potential safety significance of the issue. If the licensee chooses initially not to declare a system inoperable, the licensee must have a reasonable expectation that the system is operable and that the prompt determination process will support that expectation. Otherwise, the licensee should immediately declare the system or structure inoperable.” An applicant who chose answer D, “inoperable, and shutdown margin requirements must be satisfied,” exercised judgement as to operability and correctly selected the applicable technical specification action based on that judgement.

4. RO EXAM QUESTION 90/SRO EXAM QUESTION 71

Licensee Comment

This question requests determination of the “preferred” method for maintaining the level of an isolated steam generator less than 100%.

A review of 1-EOP-04 *Steam Generator Tube Rupture* does not identify a “preferred” method for maintaining the level of an isolated steam generator but rather provides alternate methods of level maintenance.

The EOP directs the operator to depressurize the reactor coolant system 0 to 50 psi less than the isolated steam generator. If backflow is not desired, the operator is directed to align the steam generator blowdown system to the monitor storage tanks (MST’s). Any of the methods listed can be the “preferred” method depending on plant conditions that may exist at a particular time. No other information was provided in the question stem regarding plant conditions that would suggest that there was a “preferred” method.

Current plant practice is to maintain the “C” MST with enough capacity to drain a steam generator should plant conditions be such that backflow of a faulted and isolated steam generator into the RCS (causing a RCS dilution) is not desired.

Recommendation: Accept B and C as correct responses.

NRC Response

Recommendation not accepted. This question asked applicants to identify the “preferred” method of maintaining steam generator water level in an isolated steam generator which has experienced a tube rupture. The correct answer was C, “Depressurize the RCS to less than the ruptured steam generator pressure.” The licensee has suggested that distractor B, “Align and open S/G blowdown to the Monitor Storage tanks,” should also be considered correct. The basis for this suggestion is that EOP-4, “Steam Generator Tube Rupture,” does not identify a “preferred” method, but rather offers alternative methods, of level maintenance. It is true that the subject EOP does not identify a method with the word “preferred.” It is also true that the EOP in question allows steam generator level to be controlled through the operation of the blowdown system aligned to the monitor storage tanks, as is described in answer B.

If one refers to a standard definition of the word “prefer,” one finds it described as “...to put before something else in rank,” “to put before something or someone else in one’s liking,” or “to give preference or priority to” (Webster’s New World Dictionary, Third College Edition). In placing the control of steam generator level via RCS depressurization as the sole action in the “instruction” column of the EOP at step 22, this is the “preferred” action to take. The wording of the “contingency” column for step 22 (“If backflow from the S/G to the RCS is NOT desired, Then MAINTAIN isolated S/G level by **ONE** of the following methods:”) makes it clear that the actions of the contingency column should only be performed if backflow is a concern; otherwise, standard procedural usage dictates that the “instruction” column actions would be taken (indeed, if a contingency action were taken

under step 22 when backflow was not a concern, the case could be made that the procedure had been violated).

If no clear preference existed as to how RCS level was maintained, one might expect that the “instructions” column of step 22 would have been worded in much the same fashion as the “contingency” column (e.g., “MAINTAIN isolated S/G level by **ONE** of the following methods:). Contrary to this, however, the procedure makes it clear that maintenance of steam generator level via RCS depressurization is the method to employ UNLESS a contingent consideration makes this an unattractive alternative. Consequently, it was determined that the EOP in question does describe a preferred method (as the word preferred is understood under a reasonable man standard) and so only one correct answer to the question (answer C) exists.

Finally, EOP-4, step 22 states “MAINTAIN the isolated S/G level less than 100% (wide range) by depressurizing the RCS 0 to 50 psi less than the isolated S/G pressure.” The CONTINGENCY ACTIONS for this step state “If backflow from the S/G to the RCS is NOT desired, Then MAINTAIN isolated S/G level by **ONE** of the following methods:” The procedure then describes the method to be employed in aligning the blowdown system to the monitor storage tanks, as described in answer B, and steaming the affected steam generator to the condenser, as described in answer A. If the licensee’s suggestion (that the lack of the use of the word “preferred” means, in essence, that all options are equally preferable) is considered correct, it would appear that there are three, rather than two, correct answers to this question, necessitating the removal of the question from the test. However, it was concluded, for the reasons described above, that there remains only one correct answer.

5. RO EXAM QUESTION 94/SRO EXAM QUESTION 74

Licensee Comment

The stem of the question asks for initial plant response and all of the distracters [sic] ask for the initial contribution of negative reactivity.

To discriminate between answers B and D, the candidate must assume a value for MTC. Although the stem clearly identifies that the plant conditions are “beginning of core life”, it does not identify whether MTC is positive or negative (nor does it provide a power level to help discriminate). St. Lucie plants can have +MTC at low power at the beginning of core life. This information is critical to discriminating between answers B and D.

This question describes a Loss of Feedwater ATWS event. The initial plant response to this transient will be the same as the non-ATWS event before the reactor trip. The key issue is that the change in reactivity is due to an event external to the reactor. As such, the physical change to the moderator is the first event which can change reactivity.

RCS hot leg temperature is initially constant but RCS cold leg temperature increases. The initial reactivity change will be determined by MTC. There are two cases, positive and negative. (Refer to the attached documentation for additional information on the expected RCS temperature response: a) Combustion Engineering Emergency Procedure Training

Materials, “Loss of Feedwater Lesson, pages 2-2, 2-3, and Figure 7”, CEOG, b. Post-TMI Reactor Operation Training Materials – Lesson Plans for Transients and Accidents {CEN-128}, pages 3-1, slide 15, CEOG)

Case 1: Negative MTC

As RCS cold leg temperature increases, negative reactivity is inserted into the core. Physically fewer neutrons are available to cause fission. If MTC is negative, then the first negative reactivity will be due to RCS temperature effects.

Conclusion: Answer B is correct.

Case 2: Positive MTC

As RCS cold leg temperature increases, positive reactivity is added to the core so more neutrons are available to cause fission. More energy is generated in the fuel pin causing fuel temp to increase. This immediately inserts negative reactivity. So although the change in RCS temperature inserts the first reactivity, it is the resultant fuel temperature increase that inserts the first negative reactivity.

Conclusion: Answer D is correct.

Recommendation: Accept B and D as correct responses.

NRC Response

Recommendation accepted. The licensee’s contention that the failure of the stem to provide more information on the nature of moderator temperature coefficient (i.e., describing it as either positive or negative, both possible early in core life) creates the possibility of two answers to this question is correct. Accordingly, either B or D are considered acceptable answers to this question.

6. SRO EXAM QUESTION 98

Licensee Comment

The question asks for the implementation strategy of Off Normal Procedures during Mid Loop conditions. Distractor “A” which states: “Implement SDC ONOP and 2-ONP-01.04 PC-4 *SDC in Operation-Reduced Inventory*. Implement the actions of both procedures until all exit conditions are met” is also correct.

The first step in 2-0440030 directs the operator to perform safety function status checks per Low Mode Off-Normal Procedure Appendix A, for the current plant condition every 15 minutes until exit conditions are met. Essentially both the SDC ONOP and the Low Mode ONOP are implemented together until exit conditions are met.

Distractor ‘B’ is also correct in that PC-4 Safety Functions are analyzed every 15 minutes and if not met, the SDC ONOP is exited. The stem of the question does not state Safety Functions are not met.

Recommendation: Accept A and B as correct responses.

NRC Response

Recommendation accepted. The licensee's contention that answer A could be considered appropriate is correct. In point of fact, option A represents, under one reading, a superset of option B and, as such, is correct. Options A and B are considered correct.