

September 27, 2001

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

SUBJECT: TURKEY POINT UNITS 3 AND 4 - ISSUANCE OF AMENDMENTS TO ALLOW
CONTAINMENT EQUIPMENT DOOR OPEN DURING CORE ALTERATIONS
AND MOVEMENT OF NON-RECENTLY IRRADIATED FUEL (TAC NOS.
MB2410 AND MB2411)

Dear Mr. Stall:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 216 to Facility Operating License No. DPR-31 and Amendment No. 210 to Facility Operating License No. DPR-41 for the Turkey Point Plant, Units Nos. 3 and 4, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated July 18, 2001, as supplemented August 30 and September 6, 2001.

The amendments revise Technical Specification 3.9.4 to allow the containment equipment door to be open during core alterations or movement of non-recently irradiated fuel within the containment, provided that the capability for closure is maintained.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Kahtan N. Jabbour, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosures:

1. Amendment No. 216 to DPR-31
2. Amendment No. 210 to DPR-41
3. Safety Evaluation

cc w/encls: See next page

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FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT PLANT UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 216
License No. DPR-31

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power and Light Company (the licensee) dated July 18, 2001, as supplemented August 30 and September 6, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-31 is hereby amended to read as follows:

(B) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 216, are hereby incorporated in the license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days within issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard P. Correia, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 27, 2001

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-251

TURKEY POINT PLANT UNIT NO. 4

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 210
License No. DPR-41

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power and Light Company (the licensee) dated July 18, 2001, as supplemented August 30 and September 6, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-41 is hereby amended to read as follows:

(B) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 210, are hereby incorporated in the license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

- (B) This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard P. Correia, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 27, 2001

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 216 FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 210 FACILITY OPERATING LICENSE NO. DPR-41

DOCKET NOS. 50-250 AND 50-251

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

Remove pages

3/4 9-4

Insert pages

3/4 9-4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 216 TO FACILITY OPERATING LICENSE NO. DPR-31
AND AMENDMENT NO. 210 TO FACILITY OPERATING LICENSE NO. DPR-41
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT UNIT NOS. 3 AND 4
DOCKET NOS. 50-250 AND 50-251

1. INTRODUCTION

By letter dated July 18, 2001, as supplemented August 30 and September 6, 2001, Florida Power and Light Company (FPL or the licensee) requested an amendment to the Turkey Point Units 3 and 4 Technical Specifications (TS). Specifically, the licensee proposed to revise Turkey Point TS 3.9.4, "Containment Building Penetrations." The proposed amendment would allow the containment equipment door to be open under administrative controls.

The August 30 and September 6, 2001, letters provided clarifying information that did not change the scope of the July 18, 2001, application and the initial proposed no significant hazards consideration determination.

2. BACKGROUND

Containment barriers are provided for nuclear power plants as the final barrier of the defense-in-depth concept to protect against uncontrolled release of radioactivity to the environs. The containment function, in combination with other fission product barriers and accident mitigating systems, limits the radiological dose consequence of design-basis transients and accidents to less than the regulatory limits defined by Title 10 of the *Code of Federal Regulations* (10 CFR) Part 100.

Historic development of regulatory requirements for commercial nuclear power plant operations was based on the premise that most potential risk was due to operations at power. Consequently, protection of the public could be assured by designs and operations that conservatively bounded all conditions by achieving defense-in-depth for power operation. Fuel movement was recognized as a situation for which there was no corresponding power operation scenario and was judged as an area where additional regulatory protection was necessary. This is reflected in the TS, in that there are many containment requirements during power operation, but few requirements apply during Cold Shutdown and Refueling Modes outside of fuel handling and core alterations.

During the late 1980s and early 1990s, the U.S. Nuclear Regulatory Commission (NRC) staff and Industry realized that significant risk reduction could be achieved during shutdown

operation. The staff responded with a rulemaking effort, and industry implemented voluntary initiatives to realize risk improvements. In recognition of these efforts, work to improve the TS was concentrated on power operation specifications, with the intention to address shutdown once a rule was in place. The Commission, however, subsequently declined to issue a shutdown rule for comment.

Since that time, however, in response to industry proposal, the staff has had an opportunity to re-examine its policy on the need for containment closure during shutdown operations such as fuel handling. During a public meeting on September 8, 1998, it was agreed that Perry Nuclear Power Plant would be the lead plant for this generic issue. In NRC's letter dated March 11, 1999, the licensee's request for Perry was approved and, subsequently, similar license amendments have been approved for nuclear facilities of various designs.

Recently, the NRC staff has approved this issue as part of a TS Task Force (TSTF) 51. The licensee's submittal of August 30, 2001, has adopted the TSTF format for the revision to the TS. Also, the licensee stated that it will adopt the commitment associated with TSTF -51 to follow NUMARC 93-01, Rev. 3, Section 11.3.6.5 guidelines on restoration capability of containment systems and closure. The staff finds this commitment acceptable.

In addition, in the August 30, 2001, submittal, the licensee defined the term "recently irradiated fuel" as fuel that has occupied part of a critical reactor core within the previous 100 hours. The licensee will add this definition to the Bases for TS 3.9.4. Based on a telephone call with Steve Franzone, Licensing Manager at Turkey Point, on September 26, 2001, the licensee committed to modify or delete the second sentence of the third paragraph and the first sentence in the fourth paragraph of Bases page B 3/4 9-1a to make it consistent with TS 3.9.3, which prohibits movement of recently irradiated fuel in the reactor vessel. The staff finds this commitment acceptable.

3.0 EVALUATION

To ensure that the current acceptable level of safety is maintained, the evaluation of the licensee's proposed TS change focused on two main areas:

- (1) dose calculations
- (2) administrative controls

3.1 Dose Calculations

The containment equipment door is part of the containment pressure boundary and provides a means for moving large equipment and components into and out of the containment. The current Turkey Point TS requires that the equipment door be closed during core alterations and movement of irradiated fuel assemblies within the containment. The requirement on containment equipment door closure ensures that any potential release of fission products from the containment to the environment as a result of a postulated design basis accident is minimized. During core alterations or movement of non-recently irradiated fuel assemblies, the most severe radiological consequences would result from a fuel-handling accident (FHA). The licensee submitted a radiological consequence analysis resulting from an FHA with the containment equipment door open during core alterations and movement of non-recently irradiated fuel in containment, and concluded that the release of fission products will result in

doses that are well within the acceptable dose criteria specified in 10 CFR 50.67 for the exclusion area boundary (EAB) and for control room operator.

The licensee reached this conclusion based on the following:

- (1) assuming one whole fuel assembly with the highest radial peaking factor of 1.7 is damaged releasing its entire fission products in the fuel gap into the spent fuel pool and reactor cavity water,
- (2) using a fission product decay period of 100 hours (time period from the reactor shutdown to the first fuel movement),
- (3) using an overall effective decontamination factor of 200 for the iodine isotopes in the spent fuel pool and reactor cavity with minimum water depth of 23 feet,
- (4) using the guidance provided in Regulatory Guide 1.183, for fission product inventory, and fractions in fuel rod gap and the iodine species in airborne release from the containment, and
- (5) using the bounding fission product inventory in fuel assemblies with respect to fuel enrichments and burnups.

The licensee calculated the bounding values for fission product inventory in fuel gap with ORIGEN-2 computer code developed by the Oak Ridge National Laboratory and described in "ORIGEN 2.1 - Isotope Generation and Depletion Code - Matrix Exponential Method," dated August 1991. The licensee used the highest bounding values of fission product nuclides inventory (noble gases, iodine, and alkali metals) in the radiological consequence dose calculations for the postulated FHA. In selection of the highest bounding values, the licensee considered the following four fuel management cases at Turkey Point:

- Core-average assembly with 3.0% U-235 and 40 gigawatt days per metric ton of uranium (GWD/MTU)
- Core-average assembly with 4.5% U-235 and 40 GWD/MTU
- Peak-power assembly with 3.0% U-235 and 62 GWD/MTU
- Peak-power assembly with 4.5% U-235 and 62 GWD/MTU

The staff finds that the bounding fission product inventory values selected and used by the licensee for the postulated FHA are acceptable.

For the control room habitability assessment, the licensee assumed, without verification, an unfiltered control room air leakage rate of 500 standard cubic feet per minute (scfm). The staff's confirmatory assessment indicates that the control room operator dose will be still within the dose acceptance criterion specified in 10 CFR 50.67 with the control room open (no iodine removal by charcoal adsorbers in the control room ventilation system). Therefore, the staff finds the 500 scfm unfiltered leakage rate assumed by the licensee is acceptable. However, the staff's acceptance of 500 scfm unfiltered leakage rate is limited to the design basis FHA.

For the atmospheric relative concentrations (χ/Q values) for the EAB and control room air intake, the licensee used the current design basis values in the Turkey Point Updated Final Safety Analysis Report (UFSAR). For the control room χ/Q value for the shorter duration for the FHA (2 hours), the licensee extrapolated the 0 to 8 hour value in the UFSAR. The staff finds that the licensee's extrapolation of the UFSAR value to obtain more conservative χ/Q value for the 0 to 2 hour duration is acceptable.

The staff reviewed the licensee's analysis and finds that the major parameters and assumptions used for the radiological consequence analysis for the postulated FHA are consistent with those provided in the Standard Review Plan (SRP) Section 15.0.1, "Radiological Consequence Analyses Using Alternative Source Terms," and Regulatory Guide 1.183. Table 1 summarizes the results of the licensee's radiological consequence analyses for the EAB and control room. Table 2 lists the major assumptions and parameters used by the licensee in its radiological consequence calculations and by the staff in its confirmatory dose calculations.

To verify the licensee's analyses, the staff performed a confirmatory radiological consequence calculation. In its dose calculation, the staff assumed all fission products are released to the environment within 2 hours without retention by the containment. The staff's analysis confirmed the licensee's conclusion that the radiological consequences would be well within the dose guideline values specified in 10 CFR 50.67. Although the staff performed independent calculations to confirm the licensee's results, the staff's acceptance is based on the licensee's analyses.

The radiological consequences calculated by both the licensee and the staff for the EAB are well within the dose acceptance criteria specified in 10 CFR 50.67. The dose to the control room operator calculated by the staff and the licensee are also within the acceptable dose criterion given in the 10 CFR 50.67. Therefore, the staff concludes that the license amendment requested by the licensee, to have the containment equipment door open during core alterations or movement of non-recently irradiated fuel in containment, is acceptable.

3.2 Administrative Controls

The licensee stated, in the August 30, 2001, submittal under the heading "Commitment to NUMARC 93-01: Administrative Controls," the following: "Insert O of TSTF-51 requires that licensees commit to the guidelines of draft NUMARC 93-01, Rev. 3, Section 11.2.6, regarding restoration capability of containment closure. In the official issue of Revision 3 of NUMARC 93-01, Section 11.2.6 became Section 11.3.6.5. In the cover letter for this response to request for additional information, FPL has formally committed to revise administrative procedures to implement the provisions of NUMARC 93-01, Rev.3 Section 11.3.6.5. The specifics of Section 11.3.6.5 are as follows:

"During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of release from fuel."

Availability of the ventilation system is assured by compliance with Turkey Point Technical Specifications 3.9.9. Availability of the radiation monitor is assured by compliance with Turkey Point Technical Specification 3.9.13.

“A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.”

As stated in FPL letter L-2001-152, dated July 18, 2001, Turkey point will have a closure crew available to close the containment equipment door. The closure crew is trained for timely equipment door closure. The door can be closed without electrical power, and within 30 minutes of notification.

Based on its review of the licensee's actions, the staff finds that the administrative controls are acceptable, and that they provide an adequate means for supporting the proposed TS change.

4.0 STATE CONSULTATION

Based upon a letter dated March 8, 1991, from Mary E. Clark of the State Florida, Department of Health and Rehabilitative Services, to Deborah A. Miller, Licensing Assistant, U.S. Nuclear Regulatory Commission, the State of Florida does not desire notification of issuance of license amendments.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (66 FR 41622). Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Attachments: 1. Radiological Consequences for
Fuel Handling Accident
2. Parameters and Assumptions Used in
Radiological Consequence Calculations
Fuel Handling Accident

Principal Contributors: Jay Y. Lee, NRR
Ujagar S. Bhachu, NRR

Date: September 27, 2001

TABLE 1
Radiological Consequences
for
Fuel Handling Accident
(rem TEDE⁽¹⁾)

Exclusion Area Boundary	0.41
Control Room	1.41
Dose Acceptance Criteria:	
Exclusion area boundary	6.3 ⁽²⁾
Control Room	5.0 ⁽³⁾

⁽¹⁾ Total effective dose equivalent

⁽²⁾ From SRP 15.0.1

⁽³⁾ From 10 CFR 50.67

Table 2
Parameters and Assumptions Used in
Radiological Consequence Calculations
Fuel Handling Accident

<u>Parameter</u>	<u>Value</u>
Radial peaking factor	1.7
Fission product decay period	100 hours
Number of fuel assemblies	1
Fuel pool/reactor cavity water depth	23 ft
Fuel gap fission product inventory	
Noble gases excluding Kr-85	5%
Kr-85	10%
Iodine except I-131	5%
I-131	8%
Fuel pool decontamination factors	
Iodine	200
Noble gases	1
Control room	
Unfiltered infiltration	500 scfm
Recirculation flow through charcoal adsorber	375 scfm
Makeup air flow	1025 scfm
Charcoal adsorber iodine removal efficiency	95%
Atmospheric relative concentrations (sec/m)	
Exclusion area boundary	
0 to 2 hours	1.54E-4
Control room	
0 to 2 hours	1.51E-4
2 to 8 hours	9.58E-4
8 to 24 hours	7.52E-4
1 to 4 days	5.26E-4
4 to 30 days	2.94E-4
Duration of fission product release	2 hours

The licensee has supplied analysis based on conservative assumptions that indicate the doses resulting from postulated fuel accidents are well within the regulatory-required limits as specified by 10 CFR Part 100 and Part 50, Section 50.67.

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cc:

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