

**NUCLEAR REGULATORY
COMMISSION**

[Docket Nos. 50-250 and 50-251]

**Florida Power and Light Company
Turkey Point Plant, Units 3 and 4;
Exemption****1.0 Background**

The Florida Power and Light Company (the licensee) is the holder of Facility Operating License Nos. DPR-31 and DPR-41, which authorize operation of the Turkey Point Plant, Units 3 and 4. The licenses provide, among other things, that the facilities are subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect.

The facility consists of two pressurized water reactors located in Miami-Dade County in Florida.

2.0 Request/Action

By letter dated October 23, 2000, Florida Power and Light, the licensee for Turkey Point Plant, requested, among other things, an exemption from certain requirements of 10 CFR 50.44; 10 CFR part 50, Appendix A, General Design Criterion 41, 42, and 43; and 10 CFR part 50, Appendix E, section VI; related to the hydrogen control system (i.e., recombiners, hydrogen monitors, and post-accident containment vent system). The proposed exemption would remove the above requirements from the Turkey Point Plant design basis. The staff has reviewed the information provided and concludes that the requested exemption for the hydrogen recombiners and the post-accident containment vent system are justified. The staff will act on the exemption request for the containment hydrogen monitors, the requested modification to the revised Confirmatory Order issued on October 5, 2000, and the revision to the Technical Specifications related to the post-accident containment vent system and the hydrogen monitors by separate correspondence.

The post-accident containment vent system is provided to facilitate controlled venting through adding air (Service Air backed by Instrument Air) to the reactor containment and venting air from the containment to effectively maintain hydrogen concentration below 4.0 volume percent. Regulatory requirements for the hydrogen control system are specified in 10 CFR 50.44 and 10 CFR part 50, Appendix A, (General Design Criteria 41, 42, and 43). Additional staff guidance is provided in Regulatory Guide (RG) 1.7. Staff review

and acceptance criteria are specified in Section 6.2.5 of the Standard Review Plan.

3.0 Discussion

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR part 50, when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present.

For this exemption, these special circumstances include consideration that the quantity of hydrogen prescribed by 10 CFR 50.44(d) and RG 1.7 which necessitated the need for hydrogen recombiners and the post-accident containment vent system would be bounded by the hydrogen generated during a severe accident. As shown in the attached safety evaluation, the staff has found that the relative importance of hydrogen combustion for large, dry containments with respect to containment failure is quite low. This finding supports the argument that the hydrogen recombiners are not risk significant from a containment integrity perspective and that the risk associated with hydrogen combustion is not from design basis accidents but from severe accidents. Studies have shown that the majority of risk to the public is from accident sequences that lead to containment failure or bypass, and that the contribution to risk from accident sequences involving hydrogen combustion is actually quite small for large, dry containments such as Turkey Point's. This is true despite the fact that the hydrogen produced in these events is substantially larger than the hydrogen production postulated by 10 CFR 50.44(d) and RG 1.7. Hydrogen combustion sequences that could lead to early containment failure typically involve up to 75 percent core metal-water reaction. Hydrogen combustion sequences that could lead to late containment failure involve additional sources of hydrogen due to the interaction of corium and the concrete basemat after vessel breach. Although the recombiners and the post-accident containment vent system are effective in maintaining the RG 1.7 hydrogen concentration below the lower flammability limit of 4.0 volume percent (for a design basis loss-of-coolant accident (LOCA)), they are overwhelmed by the larger quantities of hydrogen associated with severe accidents that would typically be released over a much shorter time

period (e.g., 2 hours). However, NUREG/CR-4551 states that hydrogen combustion in the period before containment failure is considered to present no threat to large, dry containments. Table A.4-5 of NUREG/CR-4551 shows that the contribution of hydrogen combustion to late containment failure is also very small. Therefore, the relative importance of hydrogen combustion for large, dry containments with respect to containment failure has been shown to be quite low.

The recombiners can, however, prevent a subsequent hydrogen burn, if needed, due to radiolytic decomposition of water and corrosion in the long term. Analysis performed in accordance with the methodology of RG 1.7 shows that the hydrogen concentration will not reach 4.0 volume percent for 15 days after initiation of a design basis LOCA. Additionally, as described in the attached safety evaluation, hydrogen concentrations on the order of 6.0 volume percent or less are bounded by hydrogen generated during a severe accident and would not be a threat to containment integrity since there is ample time between burns to reduce elevated containment temperatures using the installed containment heat removal systems. The Turkey Point Individual Plant Examination (IPE) concluded that containment survival is almost certain following hydrogen combustion when the Reactor Building Cooling Units and the Reactor Building Spray System are operating.

The underlying purpose of 10 CFR 50.44 is to show that, following a LOCA, an uncontrolled hydrogen-oxygen recombination would not take place, or that the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function. Based on the analysis, which includes the staff's evaluation of the risk from hydrogen combustion, resolution of Generic Issue 121, "Hydrogen Control for PWR [pressurized-water reactor] Dry Containments," and the Turkey Point IPE, the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function and without credit for the hydrogen recombiners for not only the design basis case, but the more limiting severe accident with up to 100 percent metal-water reaction. Therefore, the requirements for hydrogen recombiners as part of the Turkey Point design basis are unnecessary and their removal from the design basis is justified. Additionally, elimination of the hydrogen recombiners from the Emergency Operating Procedures (EOPs)

would simplify operator actions in the event of an accident and, therefore, would be a safety benefit.

The staff examined the licensee's rationale that supports the exemption request and concluded that the exemption requested for the recombiners and the post-accident containment vent system is justified as stated in the supporting safety evaluation. Additionally, elimination of the hydrogen recombiners and the post-accident containment vent system from the EOPs would be a simplification and a safety benefit. Consequently, pursuant to 10 CFR 50.12(a)(2)(ii), application of the regulation is not necessary to achieve the underlying purpose of the rule.

The safety evaluation may be examined, and/or copied for a fee at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the ADAMS Public Library component on the NRC Web site, <http://www.nrc.gov> (the Public Reading Room).

4.0 Conclusion

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the exemption pertaining to the recombiners and the post-accident containment vent system is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. Also, pursuant to 10 CFR 50.12(a)(2)(ii), special circumstances are present. Therefore, the Commission hereby grants Florida Power and Light Company an exemption from the requirements for the recombiners and the post-accident containment vent system as stated in 10 CFR 50.44 and 10 CFR part 50, Appendix A, General Design Criteria 41, 42 and 43 for the Turkey Point Plant, Units 3 and 4.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (66 FR 59266).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 12th day of December, 2001.

For the Nuclear Regulatory Commission.

John A. Zwolinski,

Director, Division of Licensing Project Management, Office of Nuclear Reactor Regulations.

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NUCLEAR REGULATORY COMMISSION

Advisory Committee on Nuclear Waste; Notice of Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold its 131st meeting on January 8–10, 2002, at 11545 Rockville Pike, Rockville, Maryland, Room T-2B3.

The entire meeting will be open to public attendance.

The schedule for this meeting is as follows:

Tuesday, January 8, 2002

A. 8:30–10:15 A.M.: Opening Statement/Planning and Procedures (Open)—The Chairman will open the meeting with brief opening remarks. The Committee will then review items under consideration at this meeting and consider topics proposed for future ACNW meetings.

B. 10:30–11:30 A.M.: Proposed Rule on Probability of an Unlikely Event (Open)—The staff will provide an information briefing on the proposed rule: 10 CFR Part 63, "Specification of a Probability for Unlikely Features, Events and Processes".

C. 1–3 P.M.: Preparation of ACNW Reports (Open)—The Committee will discuss proposed reports on the following topics:

- ACRS/ACNW November 14, 2001 Joint Subcommittee Meeting on Risk-Informed Regulation in NMSS
- Annual Research Report to the Commission
- Proposed Rule on Probability of an Unlikely Event

D. 3:15–6 p.m.: Discussion of Topics for Meeting with the NRC Commissioners (Open)—The Committee will discuss topics scheduled for its January 9, 2002 meeting with the Commission.

Wednesday, January 9, 2002

E. 8:30–8:35 A.M.: Opening Remarks by the ACNW Chairman (Open)—The ACNW Chairman will make opening remarks regarding the conduct of the meeting.

F. 8:35–9:30 A.M.: Final Preparation for Committee Meeting with the NRC Commissioners (Open)—The Committee will finalize preparations for meeting with the NRC Commission.

G. 9:40–11:30 A.M.: Meeting with the NRC Commissioners (Open)—The Committee will meet with the NRC Commissioners in the Commissioners' Conference Room, One White Flint North, to discuss: Issue Resolution and Sufficiency Review, Total Systems Performance Assessment for Site

Recommendation, High-Level Waste Chemistry Issues, Research Program in Radioactive Waste, and related matters.

H. 1–2 P.M.: ACNW Planning Retreat (Open)—The Committee will finalize plans for its February 27–28–March 1, 2002 retreat.

Thursday, January 10, 2002

I. 8:30–8:35 A.M.: Opening Remarks by the ACNW Chairman (Open)—The ACNW Chairman will make opening remarks regarding the conduct of the meeting.

J. 8:35–11:30 A.M.: Preparation of ACNW Reports (Open)—The Committee will continue its discussion of proposed ACNW reports.

K. 12:30–1:30 P.M.: Miscellaneous (Open)—The Committee will discuss matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

Procedures for the conduct of and participation in ACNW meetings were published in the **Federal Register** on October 3, 2001 (66 FR 50461). In accordance with these procedures, oral or written statements may be presented by members of the public, electronic recordings will be permitted only during those portions of the meeting that are open to the public, and questions may be asked only by members of the Committee, its consultants, and staff. Persons desiring to make oral statements should notify Mr. Howard J. Larson, ACNW (Telephone 301/415-6805), between 8 A.M. and 4 P.M. EST, as far in advance as practicable so that appropriate arrangements can be made to schedule the necessary time during the meeting for such statements. Use of still, motion picture, and television cameras during this meeting will be limited to selected portions of the meeting as determined by the ACNW Chairman. Information regarding the time to be set aside for taking pictures may be obtained by contacting the ACNW office, prior to the meeting. In view of the possibility that the schedule for ACNW meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should notify Mr. Howard J. Larson as to their particular needs.

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefore can be obtained by contacting Mr. Howard J. Larson.