June 28, 2007

Mr. Gary Van Middlesworth
Site Vice President
Duane Arnold Energy Center
3277 DAEC Road
Palo, Iowa 52324-9785

SUBJECT: DUANE ARNOLD ENERGY CENTER - ISSUANCE OF AMENDMENT REGARDING TECHNICAL SPECIFICATION CHANGE RELATED TO THE REVISED RULE FOR COMBUSTIBLE GAS CONTROL (TAC NO. MD2619)

Dear Mr. Van Middlesworth:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 265 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center (DAEC). The amendment consists of a change to the Technical Specification (TS) in response to your application dated July 17, 2006, as supplemented by letter dated March 20, 2007.

The amendment revises the Limiting Condition for Operation (LCO) 3.6.3.1 to eliminate the requirement for the Containment Atmospheric Dilution system, allowing its removal from the DAEC. In your application you indicated that this change is in association with and evolved from the rule change to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.44 in 2003.

Your application further requested revisions to LCO 3.6.3.2 “Primary Containment Oxygen Concentration” to permit extending the period of deinerted operation. In your application, you proposed to change the mode of applicability for the LCO to simply “Mode 1"; change Action B.1 to “Be in Mode 2", but retain the associated action completion time of 8 hours; and revise completion time for Action A.1 from 24 hours to 72 hours.

By letter dated June 1, 2007, you withdrew your request for revisions to LCO 3.6.3.2. Your withdrawal of this part of your application should not prevent re-application, for revision of LCO 3.6.3.2, at some future time.

Lastly, in your application, you requested that we review the safety evaluation (SE) for Amendment No. 254 dated June 10, 2004, to Facility Operating License No. DPR-49 for DAEC to clarify that the oxygen monitoring equipment addressed in Section 4.2 of the SE has a post-accident monitoring function only. A correction letter dated May 23, 2007, including a corrected SE page pertaining to Amendment No. 254 that contains the clarification, has been issued to address this request. The enclosed SE also notes this action to address your concern.

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

Sincerely,

/RA/

Karl D. Feintuch, Project Manager
Plant Licensing Branch III-1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosures:
1. Amendment No. 265 to License No. DPR-49
2. Safety Evaluation

cc w/encls: See next page

June 28, 2007

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

Sincerely,

/RA/

Karl Feintuch, Project Manager
Plant Licensing Branch III-1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-331

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2. Safety Evaluation

cc w/encls: See next page

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Duane Arnold Energy Center

cc:

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

Mr. M. S. Ross
Managing Attorney
Florida Power & Light Company
P. O. Box 14000
Juno Beach, FL 33408-0420

Marjan Mashhadi
Senior Attorney
Florida Power & Light Company
801 Pennsylvania Avenue, NW
Suite 220
Washington, DC 20004

Mr. W. E. Webster
Vice President, Nuclear Operations
South Region
Florida Power & Light Company
P. O. Box 14000
Juno Beach, FL 33408-0420

John Bjorseth
Site Director
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324

Steven R. Catron
Manager, Regulatory Affairs
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324

U. S. Nuclear Regulatory Commission
Resident Inspector's Office
Rural Route #1
Palo, IA 52324

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
Suite 210
2443 Warrenville Road
Lisle, IL 60532-4351

Mr. M. Warner
Vice President, Nuclear Operations,
North Region
Florida Power & Light Company
P. O. Box 14000
Juno Beach, FL 33408-0420

Mr. D. A. Curtland
Plant Manager
Duane Arnold Energy Center
3277 DAEC Rd.
Palo, IA 52324-9785

Mr. R. S. Kundalkar
Vice President, Technical Services
Florida Power & Light Company
P. O. Box 14000
Juno Beach, FL 33408-0420

Daniel K. McGhee
Iowa Department of Public Health
Bureau of Radiological Health
321 East 12th Street
Lucas State Office Building, 5th Floor
Des Moines, IA 50319-0075

Chairman, Linn County
Board of Supervisors
930 1st Street SW
Cedar Rapids, IA 52404

May 4, 2007

FPL ENERGY DUANE ARNOLD, LLC

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 265
License No. DPR-49

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by FPL Energy Duane Arnold, LLC, dated July 17, 2006, as supplemented by letter dated March 20, 2007, 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 2.C.(2) of Facility Operating License No. DPR-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 265, are hereby incorporated in the license. FPL Energy Duane Arnold, LLC shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA Patrick Milano for/

Travis L. Tate, Acting Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility Operating License
and Technical Specifications

Date of Issuance: June 28, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 265

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NO. 50-331

Replace the following page of the Facility Operating License No. DPR-49 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
Page 3	Page 3

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

REMOVE	INSERT
3.6-32	3.6-32
3.6-33	3.6-33

2.B.(2) FPL Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended as of June 1992 and as supplemented by letters dated March 26, 1993, and November 17, 2000.

2.B.(3) FPL Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

2.B.(4) FPL Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated radioactive apparatus components;

2.B.(5) FPL Energy Duane Arnold, LLC, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

Maximum Power Level

2.C.(1) FPL Energy Duane Arnold, LLC is authorized to operate the Duane Arnold Energy Center at steady state reactor core power levels not in excess of 1912 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 265, are hereby incorporated in the license. FPL Energy Duane Arnold, LLC shall operate the facility in accordance with the Technical Specifications.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 265 TO FACILITY OPERATING LICENSE NO. DPR-49

FPL ENERGY DUANE ARNOLD, LLC

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By application dated July 17, 2006 (ADAMS Accession No. ML062080521), FPL Energy Duane Arnold, LLC (the licensee), requested changes to the Technical Specifications (TSs) for the Duane Arnold Energy Center (DAEC). The proposed changes would delete the TS requirements associated with Containment Atmospheric Dilution (CAD) system and allow an additional 48 hours on plant start-up or shutdown sequences for the primary containment to be de-inerted. The licensee indicated that these changes are in association with and evolved from the rule change in 2003 to Section 50.44, "Combustible Gas Control for Nuclear Power Reactors," of Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR).

By letter dated June 1, 2007 (ADAMS Accession No. ML071630258), the licensee withdrew the proposed change to allow additional time for the primary containment to be de-inerted.

As a result of the rule change, Technical Specification Task Force (TSTF) traveler TSTF-447, "Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors," was approved for adoption on September 25, 2003. Specifically, TSTF-447 provided model changes to the containment gas monitoring instrumentation requirements and the elimination of the hydrogen recombiner TS. By application dated January 30, 2004, the Nuclear Management Company, LLC (the licensee for DAEC at the time of the application), requested changes to the TSs for the DAEC (ADAMS Accession No. ML040420424), to delete the requirements associated with hydrogen and oxygen monitors, consistent with the Nuclear Regulatory Commission (NRC) approved TSTF-447. The requested changes were approved by License Amendment No. 254 dated June 10, 2004 (ADAMS Accession No. ML041480049).

In the present application dated July 17, 2006, the licensee requested a clarification that the commitment for oxygen monitoring equipment addressed in NRC staff's safety evaluation (SE) for Amendment No. 254, specifically Section 4.2 of the SE, is for post-accident monitoring function only, similar to the SE issued for the Monticello plant (ADAMS Accession No. ML041180612).

ENCLOSURE

During the comment period on the 10 CFR 50.44 rule change, and NRC staff review of TSTF-447, the industry noted that boiling-water reactors (BWRs) with Mark I containment designs either use a CAD system or hydrogen recombiners, and that both systems would no longer be required under the revised rule. However, since the proposed rule change and the associated model SE did not specifically address the elimination of the CAD system specification, the industry agreed to pursue elimination of the CAD system in a separate traveler. This was the primary objective of TSTF-478, Rev. 0, which was submitted by the BWR Owner's Group (BWROG) in a letter dated April 25, 2005 (ADAMS Accession No. ML051170308), as supplemented by letters dated February 7, 2007 (ADAMS Accession No. ML062770089) and February 21, 2007 (TSTF-478, Rev.1) (ADAMS Accession No. ML070530490). The changes requested by the licensee in the application dated July 17,2006, are intended to adopt the applicable portions of TSTF-478 to DAEC. The licensee stated that the changes are requested in advance of the NRC staff's generic review of TSTF-478, as the CAD System at DAEC has on-going maintenance problems and the present 24 hour "window" for inerting and de-inerting primary containment during start-up and shutdown creates operational hardships not commensurate with the risk of a beyond design-basis accident.

2.0 REGULATORY EVALUATION

The regulatory requirements and guidance which the NRC staff considered in assessing the proposed TS changes are as follows:

Section 50.44 of 10 CFR Part 50 provides standards for combustible gas control in light-water-cooled power reactors. As a result of studies that led to an improved understanding of combustible gas behavior during severe accidents, the NRC has revised the 10 CFR 50.44 rule in September, 2003 (68 FR 54123) to amend "Standards for Combustible Gas Control in Light-Water-Cooled Power Reactors." The studies confirmed that the hydrogen release postulated from a design-basis Loss-of-Coolant Accident (LOCA) was not risk significant because it was not large enough to lead to early containment failure, and that the risk associated with hydrogen combustion was from beyond design-basis (i.e. severe) accidents. As a result, requirements for maintaining hydrogen control equipment associated with a design-basis LOCA were eliminated from 10 CFR 50.44.

Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident," Revision 3, dated March 2007, provides detailed guidance that would be acceptable for implementing the 10 CFR 50.44.

General Design Criterion (GDC) 41, "Containment Atmosphere Cleanup," of Appendix A to 10 CFR Part 50 requires, in part, that systems to control hydrogen, oxygen and other substances which may be released into the reactor containment shall be provided as necessary to reduce, and to control the concentration of hydrogen or oxygen and other substances in the containment atmosphere following postulated accidents to assure that containment integrity is maintained.

3.0 TECHNICAL EVALUATION

3.1 Proposed TS Changes

The proposed change to the DAEC TSs, exclusive of the withdrawn change to LCO 3.6.3.2, is to delete specification LCO 3.6.3.1 “Containment Atmosphere Dilution (CAD) System” and its associated Bases in its entirety.

3.2 Containment Atmosphere Dilution System Specification

In accordance with the requirements originally imposed by 10 CFR 50.44, BWRs with Mark I containment designs either installed hydrogen recombiners or CAD systems to meet requirements for hydrogen control. The original purpose of the CAD system was to maintain combustible gas concentrations within the primary containment at or below the flammability limits following a LOCA by diluting hydrogen and oxygen with nitrogen. Studies performed in support of the 10 CFR 50.44 rule change have confirmed that this hydrogen release is not risk-significant because the design-basis LOCA hydrogen release does not contribute to the conditional probability of a large release up to approximately 24 hours after the onset of the core damage. The CAD system is considered ineffective at mitigating hydrogen releases from the more significant beyond design-basis accidents that could threaten primary containment integrity. The revised 10 CFR 50.44 rule requires systems and measures be in place to reduce the risks associated with hydrogen combustion from beyond design-basis accidents and eliminates requirements for maintaining hydrogen control equipment associated with a design-basis LOCA.

Furthermore, BWROG indicated in TSTF-478 submittal, that the cost of maintaining the CAD system is significant at BWRs and exceeds the reported cost of maintaining the recombiners. According to the BWROG’s topical report NEDO-33033, “Regulatory Relaxation for the H2/O2 Monitors and Combustible Gas Control System,” dated July 2001, the typical yearly cost to maintain a BWR CAD system is approximately $200,000.00.

Removal of hydrogen recombiners from the TS has been approved by NRC staff’s model SE for TSTF-447. The hydrogen recombiners and the CAD system perform the exact same function for post-LOCA gas control. The NRC staff finds that requirements related to the CAD system no longer meet any of the four criteria in 10 CFR 50.36(c)(2)(ii) for retention in TS and the existing TS requirements for DAEC may be eliminated, based on the rule change and to reduce unnecessary regulatory burden.

3.3 Primary Containment Oxygen Concentration Specification

The proposed change to the current LCO 3.6.3.2 was related to de-inert time, to revise completion time for Action A.1 from 24 hours to 72 hours.

By letter dated June 1, 2007, the licensee withdrew the proposed changes to LCO 3.6.3.2 that would allow additional time for the primary containment to be de-inerted.

3.4 Oxygen Monitoring Equipment

NRC staff has reviewed the SEs for Amendment No. 254 to Facility Operating License (FOL) No. DPR-49 (DAEC) and Amendment No. 138 to FOL No. DPR-22 (Monticello). The amendments relocated the hydrogen and oxygen monitors from the TSs to the Technical Requirements Manual for DAEC and to the Commitment Tracking System for Monticello. These oxygen monitors are needed to implement severe accident management strategies during a beyond design-basis accident, and therefore, their function is for post accident monitoring. The monitors no longer meet any of the four criteria in 10 CFR 50.36(c)(2)(ii) for retention in TS and, therefore, may be relocated to other licensee-controlled documents. The discussions provided in Sections 3.3 and 4.2 of the referenced SEs for both DAEC and Monticello clearly recognize that the oxygen monitoring equipment addressed in Section 4.2 is meant for post-accident monitoring. NRC staff, therefore, confirms that the commitment for the oxygen monitoring equipment in Section 4.2 of the SE has post-accident monitoring function only. The clarification is addressed in a separate correction letter.

4.0 STATE CONSULTATION

In accordance with the Nuclear Regulatory Commission's regulations, the Iowa State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATIONS

The amendment changes a requirement with respect to 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 amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding issued on November 21, 2006 (71 FR 67395). Accordingly, the amendment meets 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 amendment.

6.0 CONCLUSION

Based on the rule change, the NRC staff finds the deletion of the CAD system specification and the associated Bases comply with the applicable regulatory requirements. The proposed change to LCO 3.6.3.1 is consistent with the applicable requirements of 10 CFR 50.36, 10 CFR 50.44, and GDC 41 of 10 CFR Part 50, Appendix A.

The licensee's withdrawal of its proposed change to LCO 3.6.3.2 by letter dated June 1, 2007, does not prevent re-application for revision of LCO 3.6.3.2 at some future time.

The Commission has concluded, for the proposed changes to LCO 3.6.3.1, 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: N. Karipineni
K. Feintuch

Date: June 28, 2007