February 5, 2007

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

SUBJECT: DUANE ARNOLD ENERGY CENTER - ISSUANCE OF AMENDMENT RE: SYSTEM LEAKAGE AND HYDROSTATIC TESTING OPERATION (TAC NO. MD0293)

Dear Mr. Van Middlesworth:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 264 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated March 1, 2006, as supplemented by letter dated August 17, 2006.

The amendment modifies Special Operations Limiting Condition for Operation (LCO) 3.10.1, "System Leakage and Hydrostatic Testing Operation," to allow more efficient testing during a refueling outage. Specifically, the LCO 3.10.1 allowance for operation with the average reactor coolant temperature greater than 212 °F (while considering operational conditions to be in Mode 4), is extended to include operations where temperature exceeds 212 °F: (1) as a consequence of maintaining adequate reactor pressure for a system leakage or hydrostatic test; or (2) as a consequence of maintaining adequate reactor pressure for control rod scram time testing initiated in conjunction with a system leakage or hydrostatic test. This change is based on the NRC-approved Technical Specification Task Force (TSTF) standard TS change TSTF-484, Revision 0.

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/

Richard B. Ennis, Senior 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. 264 to License No. DPR-49
2. Safety Evaluation

cc w/encls: See next page

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October 12, 2006

FPL ENERGY DUANE ARNOLD, LLC

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 264
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 March 1, 2006, as supplemented by letter dated August 17, 2006, 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. 264, 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/

L. Raghavan, 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: February 5, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 264

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 page of the Appendix A, Technical Specifications 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
3.10-1	3.10-1

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. 264, 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. 264 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 March 1, 2006, as supplemented by letter dated August 17, 2006, FPL Energy Duane Arnold, LLC (the licensee) requested changes to the Technical Specifications (TSs) for the Duane Arnold Energy Center (DAEC).

The proposed amendment would modify Special Operations Limiting Condition for Operation (LCO) 3.10.1, "System Leakage and Hydrostatic Testing Operation," to allow more efficient testing during a refueling outage. Specifically, the LCO 3.10.1 allowance for operation with the average reactor coolant temperature greater than 212 °F (while considering operational conditions to be in Mode 4), would be extended to include operations where temperature exceeds 212 °F: (1) as a consequence of maintaining adequate reactor pressure for a system leakage or hydrostatic test; or (2) as a consequence of maintaining adequate reactor pressure for control rod scram time testing initiated in conjunction with a system leakage or hydrostatic test.

The DAEC proposed amendment is based on Technical Specification Task Force (TSTF) change traveler TSTF-484, Revision 0, "Use of TS 3.10.1 for Scram Time Testing Activities," which has been approved generically for the Standard Technical Specifications (STS) by the Nuclear Regulatory Commission (NRC or the Commission). A notice announcing the availability of a model application for TSTF-484 using the consolidated line item improvement process (CLIIP) was published by the NRC staff in the *Federal Register* on November 27, 2006 (71 FR 68642). In addition, a model Safety Evaluation (SE) and no significant hazards determination for TSTF-484 was published by the NRC staff in the *Federal Register* on October 27, 2006 (71 FR 63050). Sections 2.0 and 3.0 of this SE are based on the TSTF-484 model SE with minor editorial changes and changes to reflect the following differences between the DAEC TSs and the STS:

1) DAEC TS Table 1.1-1, "MODES," defines Mode 4, "Cold Shutdown," as pertaining to plant conditions when the average reactor coolant temperature is less than or equal to 212 °F. The STS that form the basis for TSTF-484 (NUREG-1433, Revision 3, and NUREG-1434, Revision 3) define Mode 4 as pertaining to plant conditions when the average reactor coolant temperature is less than or equal to 200 °F. The STS show the 200 °F value in

brackets indicating that the value is plant-specific. As such, Sections 2.0 and 3.0 of this SE have been modified accordingly to differentiate between the STS and the DAEC TSs.

2) Section 2.2 , "Control Rod Scram Time Testing," of the TSTF-484 model SE discusses STS surveillance requirements (SRs) 3.1.4.1 and 3.1.4.4. The DAEC TS format, cross references and nomenclature is slightly different than the STS. DAEC SRs 3.1.4.1 and 3.1.4.2 are equivalent to STS SRs 3.1.4.1 and 3.1.4.4. As such, Sections 2.0 and 3.0 of this SE have been modified accordingly to differentiate between the STS and the DAEC TSs.

The supplement dated August 17, 2006, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on December 5, 2006 (71 FR 70560).

2.0 REGULATORY EVALUATION

2.1 Inservice Leak and Hydrostatic Testing

The Reactor Coolant System (RCS) serves as a pressure boundary and also serves to provide a flow path for the circulation of coolant past the fuel. In order to maintain RCS integrity, Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) requires periodic hydrostatic and leakage testing. Hydrostatic tests are required to be performed once every 10 years and leakage tests are required to be performed each refueling outage. Appendix G to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 states that pressure tests and leak tests of the reactor vessel that are required by Section XI of the ASME Code must be completed before the core is critical.

NUREG-1433, Revision 3, "Standard Technical Specifications General Electric Plants, BWR/4" and NUREG-1434, Revision 3, "Standard Technical Specifications General Electric Plants, BWR/6" both currently contain LCO 3.10.1, "Inservice Leak and Hydrostatic Testing Operation." LCO 3.10.1 was created to allow for hydrostatic and leakage testing to be conducted while in Mode 4 with average reactor coolant temperature greater than the temperature limit specified in TS Table 1.1-1 for Mode 4, provided certain secondary containment LCOs are met.

TSTF-484 modifies LCO 3.10.1 to allow a licensee to implement LCO 3.10.1, while hydrostatic and leakage testing is being conducted, should average reactor coolant temperature exceed the Mode 4 temperature limit during testing. This modification does not alter current requirements for hydrostatic and leakage testing as required by Appendix G to 10 CFR Part 50.

2.2 Control Rod Scram Time Testing

Control rods function to control reactor power level and to provide adequate excess negative reactivity to shut down the reactor from any normal operating or accident condition at any time during core life. The control rods are scrammed by using hydraulic pressure exerted by the control rod drive (CRD) system. Criterion 10 of Appendix A to 10 CFR Part 50 states that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences. The

scram reactivity used in design-basis accidents and transient analyses is based on an assumed control rod scram time.

NUREG-1433 and NUREG-1434 both currently contain SRs to conduct scram time testing when certain conditions are met in order to ensure that Criterion 10 of Appendix A to 10 CFR Part 50 is satisfied (STS SRs 3.1.4.1 and 3.1.4.4). SR 3.1.4.1 requires scram time testing to be conducted following a shutdown greater than 120 days while SR 3.1.4.4 requires scram time testing to be conducted following work on the CRD system or following fuel movement within the affected core cell. Both SRs must be performed at reactor steam dome pressure greater than or equal to 800 psig and prior to exceeding 40 percent rated thermal power (RTP).

For DAEC, adoption of TSTF-484 would modify LCO 3.10.1 to allow SRs 3.1.4.1 and 3.1.4.2 to be conducted in Mode 4 with average reactor coolant temperature greater than 212 °F. Scram time testing would be performed in accordance with LCO 3.10.4, "Single Control Rod Withdrawal - Cold Shutdown." This modification to LCO 3.10.1 does not alter the means of compliance with Criterion 10 of Appendix A to 10 CFR Part 50.

3.0 TECHNICAL EVALUATION

For DAEC, the existing provisions of LCO 3.10.1 allow for hydrostatic and leakage testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 212 °F, while imposing Mode 3 secondary containment requirements. Under the existing provision, LCO 3.10.1 would have to be implemented prior to hydrostatic and leakage testing. As a result, if LCO 3.10.1 was not implemented prior to hydrostatic and leakage testing, hydrostatic and leakage testing would have to be terminated if average reactor coolant temperature exceeded 212 °F during the conduct of the hydrostatic and leakage test. For DAEC, adoption of TSTF-484 would modify LCO 3.10.1 to allow the licensee to implement LCO 3.10.1, while hydrostatic and leakage testing is being conducted, should average reactor coolant temperature exceed 212 °F during testing. The modification will allow completion of testing without the potential for interrupting the test in order to reduce reactor vessel pressure, cool the RCS, and restart the test below 212 °F. Since the current LCO 3.10.1 allows testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 212 °F, the proposed change does not introduce any new operational conditions beyond those currently allowed.

DAEC SRs 3.1.4.1 and 3.1.4.2 require that control rod scram time be tested at reactor steam dome pressure greater than or equal to 800 psig and before exceeding 40 percent rated thermal power (RTP). Performance of control rod scram time testing is typically scheduled concurrent with inservice leak or hydrostatic testing while the RCS is pressurized. Because of the number of control rods that must be tested, it is possible for the inservice leak or hydrostatic test to be completed prior to completing the scram time test. Under existing provisions, if scram time testing can not be completed during the LCO 3.10.1 inservice leak or hydrostatic test, scram time testing must be suspended. Additionally, if LCO 3.10.1 is not implemented and average reactor coolant temperature exceeds 212 °F while performing the scram time test, scram time testing must also be suspended. In both situations, scram time testing is resumed during startup and is completed prior to exceeding 40 percent RTP. TSTF-484 modifies LCO 3.10.1 to allow a licensee to complete scram time testing initiated during inservice leak or hydrostatic testing. As stated earlier, since the current LCO 3.10.1 allows testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 212 °F, the

proposed change does not introduce any new operational conditions beyond those currently allowed. Completion of scram time testing prior to reactor criticality and power operations results in a more conservative operating philosophy with attendant potential safety benefits.

It is acceptable to perform other testing concurrent with the inservice leak or hydrostatic test provided that this testing can be performed safely and does not interfere with the leak or hydrostatic test. However, it is not permissible to remain in TS 3.10.1 solely to complete such testing following the completion of inservice leak or hydrostatic testing and scram time testing.

Since the tests are performed with the reactor pressure vessel (RPV) nearly water solid, at low decay heat values, and near Mode 4 conditions, the stored energy in the reactor core will be very low. Small leaks from the RCS would be detected by inspections before a significant loss of inventory occurred. In addition, two low-pressure emergency core cooling systems (ECCS) injection/spray subsystems are required to be operable in Mode 4 by TS 3.5.2, "ECCS-Shutdown." In the event of a large RCS leak, the RPV would rapidly depressurize and allow operation of the low pressure ECCS. The capability of the low pressure ECCS would be adequate to maintain the fuel covered under the low decay heat conditions during these tests. Also, LCO 3.10.1 requires that secondary containment and standby gas treatment system be operable and capable of handling any airborne radioactivity or steam leaks that may occur during performance of testing.

The protection provided by the normally required Mode 4 applicable LCOs, in addition to the secondary containment requirements required to be met by LCO 3.10.1, minimizes potential consequences in the event of any postulated abnormal event during testing. In addition, the requested modification to LCO 3.10.1 does not create any new modes of operation or operating conditions that are not currently allowed. Therefore, the NRC staff finds the proposed change acceptable.

The licensee stated that the TS Bases would also be changed (under the TS Bases Control Program specified in TS 5.5.10) to reflect the changes to LCO 3.10.1. The NRC staff considered the proposed TS Bases changes as information only. The NRC staff did not review or make a finding with respect to these changes.

4.0 STATE CONSULTATION

In accordance with the 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 CONSIDERATION

The amendment changes a requirement with respect to 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 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 (71 FR 70560). 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

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. NUREG-1433, Revision 3, “Standard Technical Specifications General Electric Plants, BWR/4.”

2. NUREG-1434, Revision 3, “Standard Technical Specifications General Electric Plants, BWR/6.”

3. Request for Additional Information (RAI) Regarding TSTF-484, April, 7, 2006 (ADAMS Accession No. ML060970568).

4. Response to NRC RAIs Regarding TSTF-484, June 5, 2006 (ADAMS Accession No. ML061560523).

5. TSTF-484 Revision 0, “Use of TS 3.10.1 for Scram Times Testing Activities”, May 5, 2005 (ADAMS Accession No. ML052930102).

6. TSTF Response to NRC Notice for Comment, September 20, 2006, (ADAMS Accession No. ML062650171).

Principal Contributors: A. Lewin
R. Ennis

Date: February 5, 2007