November 2, 2006

MEMORANDUM TO: Martin Murphy, Acting Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Timothy Kobetz, Chief ***/RA/***
Technical Specifications Branch
Division of Inspections and Regional Support
Office of Nuclear Reactor Regulation

SUBJECT: DUANE ARNOLD NUCLEAR PLANT - STAFF'S REVIEW OF THE ADOPTION OF TSTF-484, REV. 0, "USE OF TS 3.10.1 FOR SCRAM TIME TESTING ACTIVITIES" TECHNICAL SPECIFICATION AMENDMENT (TAC NO. MD0293)

By letter dated March 01, 2006 (ML060720038), FPL Energy Duane Arnold, LLC (the licensee) submitted a license amendment request (LAR) regarding Duane Arnold Nuclear Plant system leakage and hydrostatic testing operation technical specifications (TSs). The proposed amendment would revise the existing system leakage and hydrostatic testing operation TS to be consistent with the U.S. Nuclear Regulatory Commission's approved Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-484, "Use of TS 3.10.1 for Scram Time Testing Activities," Revision 0. TSTF-484 is part of the consolidated line item improvement process (CLIIP).

The staff of the Technical Specifications Branch (ITSB) of the Division of Inspections and Regional Support (DIRS) has completed its review of the LAR. The staff's review is enclosed.

Docket No.: 50-331

Enclosure:
Staff Safety Evaluation

CONTACTS: Aron Lewin, ITSB/DIRS
301-415-2259

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STAFF SAFETY EVALUATION

DUANE ARNOLD NUCLEAR PLANT SYSTEM LEAKAGE AND HYDROSTATIC TESTING

OPERATION TECHNICAL SPECIFICATION AMENDMENT

TAC NO. MD0293

DOCKET NO. 50-331

1.0 INTRODUCTION

By application dated March 01, 2006, (Agencywide Documents Access and Management System Accession No. ML060720038) FPL Energy Duane Arnold, LLC (the licensee) requested changes to the Technical Specifications (TS) for the Duane Arnold Nuclear Plant.

The proposed changes would revise Limiting Condition for Operation (LCO) 3.10.1, and the associated Bases, to expand its scope to include provisions for temperature excursions greater than 212°F as a consequence of inservice leak and hydrostatic testing, and as a consequence of scram time testing initiated in conjunction with an inservice leak or hydrostatic test, while considering operational conditions to be in Mode 4.

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 (ASME) Pressure Vessel Code requires periodic hydrostatic and leakage testing. Hydrostatic tests are required to be performed once every ten years and leakage tests are required to be performed each refueling outage. Appendix G to 10 CFR Part 50 states that pressure tests and leak tests of the reactor vessel that are required by Section XI of the American Society of Mechanical Engineers (ASME) Pressure Vessel Code must be completed before the core is critical.

NUREG-1433, General Electric Plants, BWR/4, Revision 3, Standard Technical Specifications (STS) and NUREG-1434, General Electric Plants, BWR/6, Revision 3, STS 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 212°F provided certain secondary containment LCOs are met.

TSTF-484, Revision 0, Use of TS 3.10.1 for Scram Time Testing Activities, 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 212°F 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 (DBA) and transient analyses is based on an assumed control rod scram time.

NUREG-1433, General Electric Plants, BWR/4, Revision 3, STS and NUREG-1434, General Electric Plants, BWR/6, Revision 3, STS both currently contain surveillance requirements (SR) 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. 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).

The Duane Arnold Nuclear Plant TS contain cross references and nomenclatures that are slightly different from the STS. Duane Arnold Nuclear Plant TS contain SR 3.1.4.1 and SR 3.1.4.2 that are equivalent to STS SR 3.1.4.1 and SR 3.1.4.4 that are discussed above.

TSTF-484, Revision 0, Use of TS 3.10.1 for Scram Time Testing Activities, would modify LCO 3.10.1 to allow SR 3.1.4.1 and SR 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

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. TSTF-484, Revision 0, Use of TS 3.10.1 for Scram Time Testing Activities, 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 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.

SR 3.1.4.1 and SR 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, Revision 0, Use of TS 3.10.1 for Scram Time Testing Activities, 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 staff finds the proposed change acceptable.

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. [If comments were provided, they should be addressed here].

5.0 ENVIRONMENTAL CONSIDERATION

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 [Date] ([ ] FR [ ]) . 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, "General Electric Plants, BWR/4, Revision 3, Standard Technical Specifications (STS)", August 31, 2003
2. NUREG-1434, General Electric Plants, BWR/6, Revision 3, Standard Technical Specifications (STS)", August 31, 2003
3. Request for Additional Information (RAI) Regarding TSTF-484, April, 7, 2006, ADAMS accession number ML060970568
4. Response to NRC RAIs Regarding TSTF-484, June 5, 2006, ADAMS accession number ML061560523
5. TSTF-484 Revision 0, "Use of TS 3.10.1 for Scram Times Testing Activities", May 5, 2005, ADAMS accession number ML052930102
6. TSTF Response to NRC Notice for Comment, September 20, 2006, ADAMS accession number ML062650171

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