June14, 2005

Mark A. Peifer
Site Vice President
Duane Arnold Energy Center
Nuclear Management Company, LLC
3277 DAEC Road
Palo, IA 52324-0351

SUBJECT: DUANE ARNOLD ENERGY CENTER - NUCLEAR REGULATORY COMMISSION (NRC) STAFF DENIAL OF LICENSEE REQUEST TO ADOPT TECHNICAL SPECIFICATION TASK FORCE (TSTF) TRAVELER 264 (TAC NO. MC7232)

Dear Mr. Peifer:

By letter dated January 28, 2004, as supplemented by letter dated November 22, 2004, Nuclear Management Company, LLC (NMC or the licensee) proposed to revise the Duane Arnold Energy Center (DAEC) technical specifications (TSs) 1.4, "Frequency," 5.5.2, "Primary Coolant Sources Outside Containment," and 5.5.11, "Safety Function Determination Program," by adopting three industry-proposed standard technical specifications (STS) changes, which the U.S. Nuclear Regulatory Commission (NRC) has approved and included in Revision 3 of the STSs. These TS changes are related to TSTF traveler Nos. 273, 284, and 299, and were approved by the NRC staff on May 12, 2005 (Amendment No. 258).

In the cover letter transmitting the NRC staff safety evaluation (SE) for Amendment No. 258, the NRC staff stated that the licensee's request to revise TS 3.3.1.1, "Reactor Protection System Instrumentation," which is associated with TSTF-264 would be addressed by a separate SE. Accordingly, the enclosed SE addresses the licensee's request to adopt TSTF-264. The proposed specific TS changes associated with TSTF-264 would: (1) delete surveillance requirement (SR) 3.3.1.1.6 and SR 3.3.1.1.7 which require the verification of Source Range Monitor (SRM)/Intermediate Range Monitor (IRM) overlap and IRM/Average Power Range Monitor (APRM) overlap respectively; (2) place the IRM/SRM and IRM/APRM overlap criteria in the bases section of SR 3.3.1.1.1, "Channel Check," and (3) modify the Bases Insert required by TSTF-264.

After careful review, the NRC staff has concluded that your request cannot be approved. The basis for this finding is documented in the enclosed SE.

A copy of the Notice of Denial of Amendment is enclosed and will be forwarded to the Office of the *Federal Register* for publication.

Sincerely,

/RA/

Deirdre W. Spaulding, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosures: 1. Safety Evaluation
2. Notice of Denial

cc w/encls: See next page

A copy of the Notice of Denial of Amendment is enclosed and will be forwarded to the Office of the *Federal Register* for publication.

Sincerely,

/RA/

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO FACILITY OPERATING LICENSE NO. DPR-49

NUCLEAR MANAGEMENT COMPANY, LLC

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By letter dated January 28, 2004, as supplemented November 22, 2004, Nuclear Management Company, LLC (NMC or the licensee), submitted a proposed amendment to the Technical Specifications (TS), of Operating License No. DPR-49 for Duane Arnold Energy Center (DAEC). The proposed amendment would revise TS 3.3.1.1, "RPS [Reactor Protection System] Instrumentation." Specifically, the changes would: (1) delete surveillance requirement (SR) 3.3.1.1.6 and SR 3.3.1.1.7 which require the verification of Source Range Monitor (SRM)/Intermediate Range Monitor (IRM) overlap and IRM/Average Power Range Monitor (APRM) overlap respectively, (2) place the IRM/SRM and IRM/APRM overlap criteria in the bases section of SR 3.3.1.1.1 "Channel Check," and (3) modify the Bases Insert required by Technical Specification Task Force (TSTF) 264.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed your request and determined that the proposed changes to TS 3.3.1.1 are unacceptable.

2.0 REGULATORY EVALUATION

2.1 TSTF-264, "3.3.9 and 3.3.10 - Delete Flux Monitors Specific Overlap Requirement SRS"

The NRC staff-approved TSTF-264 allows the removal of SR 3.3.1.1.6 and SR 3.3.1.1.7 from TS 3.3.1.1. The overlap requirements for the nuclear instrumentation channels were moved from the Surveillance Section to the Bases Section of SR 3.3.1.1.1, "Channel Check." These SRs were removed because it was found that the requirements of SR 3.3.1.1.6 and SR 3.3.1.1.7 duplicated the requirements SR 3.3.1.1.1. The TSTF instructs the licensee to place Insert 4 which states, "The agreement criteria includes an expectation of one decade of overlap when transitioning between neutron flux instrumentation...Overlap between SRMs and IRMs similarly exists when, prior to withdrawing the SRMs from the fully inserted position, IRMs are above mid-scale on range 1 before SRMs have reached the upscale rod block..." into the Bases section of SR 3.3.1.1.1. Thus, the nuclear instrumentation overlap verification would become part of the requirements of SR 3.3.1.1.1, "Channel Check."

2.2 NRC Issuance of the Safety Evaluation For "AMENDMENT NO. 223 TO FACILITY LICENSE NO. DPR - 49 - DUANE ARNOLD ENERGY CENTER (TAC NO. M97197)"

This document contains the Improved Standard Technical Specification (ISTS) pages that were approved by the NRC. The SRM/IRM overlap as discussed on page B 3.3-30 Section SR 3.3.1.1.6 and SR 3.3.1.1.7 (continued) states, in part, "Overlap between SRMs and IRMs similarly exists when, prior to withdrawing the SRMs from the fully inserted position, IRMs are above mid-scale on range 1 before SRMs have reached the upscale rod block (i.e.. Approximately one-half decade of range)."

3.0 TECHNICAL EVALUATION

The TSTF and the initial set of ISTS required that the IRM range 1 has to read at least mid-scale before the SRM reached its rod block set point. The NRC staff agrees with this requirement because the least amount of instrument error exists in the middle of an instrument range. Therefore, this requirement ensures the overlap is verified in a region with a low probability of instrument error. The licensee changed this requirement to "...IRMs are above 5/40 on range 1 before SRMs have reached 10^6 counts per second [off scale high] ..." This change requires the verification of approximately a 1/8 decade overlap while each instrument is operating with a higher probability of error. The NRC staff does not agree with the licensee's justification that the licensee can verify proper tracking and operation of the nuclear monitors under these conditions.

The TSTF as written, requires the expectation of a one decade overlap. The licensee's initial ISTS only required approximately one-half decade of overlap. Therefore, the licensee should comply with the approximately one-half decade requirement. However, the licensee changed this requirement to "expectation of sufficient overlap" (Approx. 1/8 decade due to the changes above). The NRC staff is unable to accept the technical justification for this decrease in the SRM/IRM overlap criteria. The NRC staff bases for requiring SRM/IRM overlap are as follows: 1) it provides the operators with a sufficient region to verify that both the SRM and the IRM indications are tracking together and indicating the same overall reactor power level; 2) proves that the indicated power on both the SRMs and IRMs are correct and that both systems are operating properly, and; 3) ensures that there is always a reliable indication of reactor power (whether the reactor is shut down or at 100 percent power). The NRC staff concludes that the proposed "expectation of sufficient overlap" or essentially an 1/8 decade overlap would not give the operators enough time to verify the proper tracking or operability of the instruments. Thus, the possibility exists that the operators could be starting up the reactor without a reliable indication of reactor power.

In the licensee's response to the request for additional information, the licensee stated that Section 7.6.1.4.1 of DAEC updated final safety analysis report (UFSAR) states, "The SRM subsystem is designed so that SRM channels are on scale when the IRM subsystem first indicates neutron flux during a reactor startup." However, Section 7.6.1.5.9 of DAEC UFSAR states, "The source range monitor overlaps the intermediate range monitor as shown in Figure 7.6-6." This figure shows 30 percent scale (12/40) on IRM range 1 approximately equating to 2.5E5 counts per second on the SRM. Therefore, this figure shows that the SRMs and the IRMs should overlap for more than half a decade. The figure also shows that the IRM range 1 will read 5/40 long before the SRM reads 10^6. Therefore, the NRC staff concludes that the

proposed requirements are inadequate to fulfill the purposes of the SRM/IRM overlap and to show SRM and IRM operability. For this reason, the UFSAR does not justify the less conservative proposed requirements.

4.0 CONCLUSION

The NRC staff finds the licensee's proposed requirement that states, "The agreement criteria includes an expectation of sufficient overlap when transitioning between neutron flux instrumentation. ...Overlap between SRMs and IRMs similarly exists when, prior to withdrawing the SRMs from the fully inserted position, IRMs are above 5/40 on range 1 before SRMs have reached 10^6 counts per second..." to be unacceptable. This is because the licensee's proposed inserted requirement instructs the operators to verify a 1/8 decade SRM/IRM overlap at the very extremes of the SRMs and the IRMs where a high probability of instrument error exists. Therefore, NRC staff finds the licensee's request to adopt TSTF-264 unacceptable, and therefore, the licensee's proposed changes to TS 3.3.1.1 are denied.

Principal Contributor: A. Attard

Date: June 14, 2005