07/22/04

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 - EMERGENCY RESPONSE CAPABILITY - CONFORMANCE TO NRC REGULATORY GUIDE 1.97, REVISION 2 (TAC NO. MC0748)

Dear Mr. Peifer:

By letter dated September 12, 2003, Nuclear Management Company, LLC (NMC) requested U.S. Nuclear Regulatory Commission (NRC) approval of a deviation from NRC Regulatory Guide 1.97, Revision 2, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," for the instrumentation that monitors standby liquid control system flow at the Duane Arnold Energy Center.

The NRC staff has evaluated the above request and finds that the NMC has provided adequate justification for it's proposed deviation from NRC Regulatory Guide 1.97. Enclosed is our Safety Evaluation Report.

If you have any questions regarding this matter, I may be reached at 301-415-3243.

Sincerely,

/RA/

David P. Beaulieu, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosure: Safety Evaluation Report

cc w/encl: See next page

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Duane Arnold Energy Center

cc:

Mr. John Paul Cowan
Executive Vice President &
Chief Nuclear Officer
Nuclear Management Company, LLC
700 First Street
Hudson, MI 54016

John Bjorseth
Plant Manager
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
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

Jonathan Rogoff
Vice President, Counsel & Secretary
Nuclear Management Company, LLC
700 First Street
Hudson, WI 54016

Bruce Lacy
Nuclear Asset Manager
Alliant Energy/Interstate Power
and Light Company
3277 DAEC Road
Palo, IA 52324

Daniel McGhee
Utilities Division
Iowa Department of Commerce
Lucas Office Buildings, 5th floor
Des Moines, IA 50319

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

Craig G. Anderson
Senior Vice President, Group Operations
700 First Street
Hudson, WI 54016

SAFETY EVALUATION REPORT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

CONFORMANCE TO REGULATORY GUIDE 1.97

NUCLEAR MANAGEMENT COMPANY, LLC

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By letter dated September 12, 2003, (ML032730547) Nuclear Management Company, LLC (NMC) identified a deviation from U. S. Nuclear Regulatory Commission (NRC) Regulatory Guide (RG) 1.97, Revision 2, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," for the instrumentation that monitors standby liquid control system (SLCS) flow for the Duane Arnold Energy Center (DAEC). The proposed deviation would change the SLCS flow instrumentation from a key variable to a backup variable and thus change the instrumentation from Category 2 to Category 3 as defined in NRC RG 1.97.

2.0 REGULATORY EVALUATION

The primary purpose of post accident monitoring instrumentation is to display plant variables that provide information required by the control room operator during accident situations. This information provides the necessary support for the operator to take manual actions to initiate safety systems and other appropriate systems important to safety. NRC RG 1.97 states that a key variable for system operating status is that single variable (or minimum set of variables) that most directly indicates the operation of a safety system and recommends the use of instrumentation that meets the Category 2 criteria. NRC RG 1.97 also recommends the use of instrumentation that meets the Category 3 criteria for instrumentation that provides system operating status backup or diagnostic information.

The Category 2 criteria includes the recommendation that Category 2 instrumentation be environmentally qualified in accordance with NRC RG 1.89, "Environmental Qualification of Certain Electrical Equipment Important to Safety for Nuclear Power Plants." The Category 3 criteria does not include this recommendation.

3.0 TECHNICAL EVALUATION

NRC RG 1.97 recommends that Category 2 instrumentation be provided to monitor SLCS flow to provide the operator with information concerning the operation of SLCS during and after an accident. In the May 9, 1990, safety evaluation (ML9005160131), the staff accepted the instrumentation supplied for this variable based on the licensee's May 3, 1989, letter (ML8905150106) that stated the SLCS flow instrumentation was located in a mild environment and that it met the Category 2 criteria. In its September 12, 2003, letter, NMC stated that they subsequently determined that this area is potentially harsh for radiation to certain electronic components. Because the existing SLCS flow instrumentation contains electronics that are sensitive to radiation, it is not qualified under the DAEC Environmental Qualification program and, therefore, does not meet the Category 2 criteria.

In its September 12, 2003, letter, NMC stated that because the design-basis mission of SLCS is to inject a specified quantity of sodium pentaborate into the reactor at 660 parts per million of boron, SLCS tank level is the "key variable," not SLCS flow rate. DAEC complies with the NRC RG 1.97 requirement for Category 2 instrumentation for SLCS tank level indication. Therefore, NMC has proposed that SLCS flow indication at the DAEC be designated as a "backup variable" under NRC RG 1.97 and qualified to Category 3 requirements. The existing SLCS flow instrumentation meets Category 3 requirements. NMC's submittal also notes that SLCS pump running indicator lights and SLCS pump discharge pressure also provide indication of SLCS operation.

The SLCS flow instrumentation provides indication that flow is occurring. Flow can also be determined using the Category 2 SLCS tank level instrumentation by observing a decrease in SLCS tank level. Other indications of SLCS system operation that are available to operators in the control room are the SLCS pump running indicator lights and SLCS pump discharge pressure. Therefore, the staff finds the use of Category 3 SLCS flow instrumentation is an acceptable alternative to the NRC RG 1.97 recommended Category 2 SLCS flow instrumentation.

4.0 CONCLUSION

Based on review of NMC's submittal, the staff finds that NMC has provided adequate justification for the deviation from the NRC RG 1.97, Revision 2, recommendations for the instrumentation that monitors SLCS flow at DAEC.

Principal Contributor: Barry S. Marcus