

July 10, 2003

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

SUBJECT: DUANE ARNOLD ENERGY CENTER  
NRC INSPECTION REPORT 07200032/2003-001(DNMS)

Dear Mr. Peifer:

On June 20, 2003, the NRC completed an inspection at the Duane Arnold Energy Center. The purpose of the inspection was to determine whether dry cask storage activities were conducted safely and in accordance with NRC requirements. Specifically, licensee preparations for dry-run welding, cutting, and helium leak detection activities were examined. At the conclusion of the inspection on June 20, 2003, the NRC inspectors discussed the findings with members of your staff.

This inspection consisted of an examination of dry cask construction activities at the Duane Arnold Energy Center as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations. The dry-run activities reviewed were being conducted in accordance with applicable regulations and license conditions.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

M. Peifer

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We will gladly discuss any questions you may have regarding this inspection.

Sincerely,

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Christopher G. Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

Docket No. 07200032

Enclosure: Inspection Report 07200032/2003-001

cc w/encl: E. Protsch, Executive Vice President -  
Energy Delivery, Alliant;  
President, IES Utilities, Inc.  
J. Cowan, Chief Nuclear Officer  
J. Forbes, Senior Vice President  
J. Bjorseth, Plant Manager  
S. Catron, Manager, Regulatory Affairs  
J. Rogoff, Esquire General Counsel  
B. Lacy, Nuclear Asset Manager  
D. McGhee, Iowa Department of Commerce  
Chairman, Linn County Board of Supervisors  
State Liaison Officer  
Chairperson, Iowa Utilities Board  
The Honorable Charles W. Larson, Jr.  
Iowa State Representative

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 07200032

Report No. 07200032/2003-001(DNMS)

Licensee: Alliant, IES Utilities, Inc.

Facility: Duane Arnold Energy Center

Location: 3277 DAEC Road  
Palo, IA 53234-9785

Dates: June 18-20, 2003

Inspector: Ross B. Landsman, Project Engineer  
Magdalena Dziejczak, Nuclear Safety Intern

Approved by: Christopher G. Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

## **EXECUTIVE SUMMARY**

### **Duane Arnold Energy Center NRC Inspection Report 07200032/2003-001(DNMS)**

The purpose of this inspection was to review the licensee's preparations for dry-run welding, cutting, and helium leak detection activities for the spent fuel storage casks at the Duane Arnold Energy Center. The welding and cutting activities using the Transnuclear automated welding system are proceeding appropriately. The helium leak detection practices are acceptable.

## Report Details

### **1.0 Pre-operational Testing of the Independent Spent Fuel Storage Installation (ISFSI) Facility (60854)**

The purpose of the inspection was to determine whether the licensee has developed, implemented, and evaluated pre-operational testing activities to demonstrate readiness to safely load spent fuel from the spent fuel pool into the dry cask storage system and transfer it to the Independent Spent Fuel Storage Installation (ISFSI). The inspectors evaluated welding, lid removal, and helium leak detection during the inspection.

#### **1.1 Welding**

##### a. Inspection Scope

The inspectors reviewed procedures and observed welding in progress in order to evaluate whether the licensee had effectively implemented procedures to weld the dry shielded canister (DSC) lids in accordance with the requirements specified in the Certificate of Compliance (CoC).

The inspectors reviewed the general work instructions, Work Order: 1125200, "Dry Spent Fuel Storage," which provided the procedures and steps to weld and inspect the DSC lids. Included in this document (traveler) were: the dry-run procedure, DFS-901, Revision 1, "Dry-Run Scenario Dry Shielded Canister Welding," dated June 16, 2003; the welding specifications, WPS #P8-AWS-Ag, Revision 0, "Welding Procedure Specification," dated May 16, 2003; the weld rod control procedures, ACP 1503.1, Revision 17, "Welding Filler Control Procedure Specification (WFMC-1)," dated March 26, 2001; and ACP 1503.2, Revision 6, "Welding Electrodes and Filler Metal," dated February 16, 1999; the procedure qualification record for the welding procedure; the welding checklists used to document the welding and QC; and the welders' qualification records.

The inspectors also reviewed: the procedure for visual inspection, ACP 1502.1, Revision 19, "Welding Inspection and Documentation Program," dated April 12, 2001; the procedures for liquid penetrant inspection, ACP 1211.4, Revision 0, "NDE Procedure For Visible Dye Penetrant-Expanded Temperature Applications (60°F - 350°F)," dated June 11, 2003; the procedure for QC personnel, ACP 1211.1, Revision 9, "Written Practice for Qualification and Certification of NDE Personnel," dated March 3, 2003; the qualification records for the NDE personnel; and the liquid penetrant material certifications.

##### b. Observations and Findings

The inspectors observed welding and non-destructive examination (NDE) dry-runs of two DSC mockups in the welding shop. The Nuclear Management Company (NMC) fleet weld crew performed the welding. The weld team consisted of six qualified welders, two each from: Duane Arnold, Point Beach, and Palisades. The licensee used the NUHOMS cask system. The advantage of establishing a fleet welding crew to conduct DSC closure welding for the three plants was that only one dry-run demonstration for the NRC would be required. Duane Arnold quality control (QC) personnel performed the NDE examinations.

The licensee conducted a previous on-the-job welding training session for the NUHOMS Automated Welding System (AWS) where the welders were qualified on the welding procedure using the AWS. The purpose of this two-week dry-run preparation session was to perform additional welding on mockups of canister top ends in order to demonstrate weldability. It was also to perform drilling and cutting on mockups in order to demonstrate retrievability of the fuel.

The inspectors observed various portions of the welding and NDE of the two mockups. The welders and QC personnel demonstrated skilled practices and were very professional. No concerns were identified with any of the procedures or documents reviewed.

c. Conclusions

The welding and NDE met the applicable code requirements specified in the CoC.

**1.2 Lid Removal**

a. Inspection Scope

The inspectors reviewed the cutting procedure, which was included in the dry-run scenario procedure, DFS-901, and evaluated whether the licensee had effectively implemented procedures to remove the DSC lids in accordance with the requirements specified in the CoC.

b. Observations and Findings

The inspectors observed DSC lid removal on a DSC mockup in the welding shop being performed by the NMC fleet weld crew. The AWS is used to remove the lid by replacing the welding head with a plasma cutting torch. The cutting procedure contained all of the CoC required attributes. The lid was removed appropriately.

c. Conclusions

The DSC lid cutting and removal met the CoC requirements.

**1.3 Helium Leak Detection**

a. Inspection Scope

The inspectors reviewed the helium leak detection procedure, which was also included in the dry-run scenario procedure, DFS-901, and evaluated whether the licensee could perform helium leak detection at the lid welds.

b. Observations and Findings

The licensee contracted with Leak Testing Specialists, Inc. (LTS) to perform all leakage testing. The testing was performed by certified personnel in accordance with LTS qualification and certification requirements NOE-QUAL-LTS, Revision 1, "Written Practices for the Qualification and Certification of Non-Destructive Examination (NDE) Personnel." The inspector compared these requirements to the guidelines required by

the CoC and the guidelines of the American Society for Non-Destructive Testing Recommended Practice No. SNT-TC-1A (1992 Edition), and found them to be acceptable.

c. Conclusions

The helium leak practices met the CoC requirements.

**1.4 Summary**

The licensee demonstrated that the designated welders could weld and seal the DSC, and remove lids; and the LTS personnel could detect leaks in the DSC welds using helium. The craft demonstrated the ownership, skill and knowledge necessary to perform their tasks. The licensee plans to conduct the formal NRC observed dry-runs of the remaining activities during a dry-run in July 2003.

**2.0 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management during an exit meeting on June 20, 2003. The licensee acknowledged the findings presented. The licensee did not identify any information discussed as being proprietary.

**PARTIAL LIST OF PERSONS CONTACTED**

Brian Wahlers, Dry Fuel Storage Project Manager  
Suzanne Leblang, NMC High Level Waste Manager  
Doreen Barta, Senior Licensing Analyst  
Scott Presler, NMC Fleet Welding Lead  
John Flaherty, High Level Waste Welding Engineer  
Rau Patrilla, Senior Technical Training Instructor

**INSPECTION PROCEDURE USED**

IP 60854: Pre-operational testing of the Independent Spent Fuel Storage Installation

**LIST OF DOCUMENTS REVIEWED**

The licensee documents reviewed and utilized during the course of this inspection are specifically identified in the "Report Details" above.

## LIST OF ACRONYMS USED

AWS	Automated Welding System
CoC	Certificate of Compliance
DSC	Dry Shielded Canister
ISFSI	Independent Spent Fuel Storage Installation
LTS	Leak Testing Specialists
NDE	Non-destructive Examination
NMC	Nuclear Management Company
QC	Quality Control