

September 18, 2001

Mr. Gary Van Middlesworth
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 50-331/01-10(DRS)

Dear Mr. Van Middlesworth:

On September 7, 2001, the NRC completed an inspection at your Duane Arnold Energy Center. The enclosed report documents the inspection findings which were discussed on August 17, 2001, with Mr. R. Anderson and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to changes to facility structures, systems, and components, normal and emergency procedures, and the Updated Safety Analysis Report in accordance with the requirements of 10 CFR 50.59, and changes to the facility via permanent plant modifications to verify compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of design documents, procedures, and representative records, and interviews with personnel.

No findings of significance were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

John M. Jacobson, Chief
Mechanical Engineering Branch
Division of Reactor Safety

Docket No. 50-331
License No. DPR-49

Enclosure: Inspection Report 50-331/01-10(DRS)

See Attached Distribution

cc w/encl: E. Protsch, Executive Vice President -
Energy Delivery, Alliant;
President, IES Utilities, Inc.
Robert G. Anderson, Plant Manager
State Liaison Officer
Chairperson, Iowa Utilities Board
The Honorable Charles W. Larson, Jr.
Iowa State Representative

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DATE	09/18/01	09/18/01	09/18/01		

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cc w/encl: E. Protsch, Executive Vice President -
Energy Delivery, Alliant;
President, IES Utilities, Inc.
Robert G. Anderson, Plant Manager
State Liaison Officer
Chairperson, Iowa Utilities Board
The Honorable Charles W. Larson, Jr.
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-331
License No: DPR-49

Report No: 50-331/01-10(DRS)

Licensee: Nuclear Management Company, LLC

Facility: Duane Arnold Energy Center

Location: 3277 DAEC Road
Palo, Iowa 52324-9785

Dates: August 13 through 17, 2001
September 4 through 7, 2001

Inspectors: K. O'Brien, Senior Reactor Inspector (Lead)
M. Farber, Senior Reactor Inspector

Approved by: John M. Jacobson, Chief
Mechanical Engineering Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000331-01-10(DRS), on 08/13-08/17/2001, and 09/04-09/07/2001, Nuclear Management Company, LLC, Duane Arnold Energy Center. Routine safety inspection.

This report covers a two-week routine inspection. The inspection was conducted by two regional inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRC/OVERSIGHT/index.html>. Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violations.

A. Inspector Identified Findings

No findings of significance were identified.

B. Licensee Identified Findings

No findings of significance were identified.

Report Details

Summary of Plant Status

The plant operated at full power for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R02 Evaluations of Changes, Tests, or Experiments (71111.02)

.1 Review of Evaluations and Screenings for Changes, Tests, or Experiments

a. Inspection Scope

The inspectors reviewed 16 safety evaluations performed pursuant to Federal Regulations 10 CFR 50.59. The safety evaluations were related to temporary and permanent plant modifications, procedure changes, potential conditions adverse to quality, and changes to the licensee's updated safety analysis report. The inspectors confirmed that the safety evaluations were thorough and that prior NRC approval was obtained when appropriate. The inspectors also reviewed 12 safety evaluation applicability reviews, where the licensee had determined that a 10 CFR 50.59 safety evaluation was not necessary. In regard to the changes reviewed where no 10 CFR 50.59 safety evaluation was performed, the inspector reviewed the changes to verify that they did not meet the threshold requiring a 10 CFR 50.59 safety evaluation. These safety evaluations and applicability reviews were chosen based on risk significance of samples from the different cornerstones. Documents reviewed during the inspection are listed at the end of the report.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17B)

.1 Review of Recent Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed 14 permanent plant modifications that had been installed during the last two years. The modifications were chosen based upon the effect on systems that had high probabilistic risk analysis significance in the licensee's Individual Plant Evaluation or high maintenance rule safety significance. The modifications were reviewed to verify that the completed design changes were in accordance with specified design requirements and the licensing bases and to confirm that the changes did not affect the modified system or other systems' safety function. Eight calculations and six commercial grade dedications, which were performed or revised to support

modifications, were also reviewed. Design and post-modification testing aspects were reviewed to verify the system, and associated support systems functioned properly. The inspectors also verified that the completed modifications did not place the plant in an increased risk configuration. Documents reviewed during the inspection are listed at the end of the report.

b. Findings

No findings of significance were identified.

2. **OTHER ACTIVITIES**

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed a selected sample of action requests associated with Duane Arnold Energy Center's permanent plant modification and 10 CFR 50.59 processes to verify that the licensee had an appropriate threshold for identifying issues and to verify the effectiveness of corrective actions for the identified issues.

b. Findings

No findings of significance were identified.

4OA6 Meeting

Exit Meeting

The inspectors presented the inspection results to Mr. Gary Van Middlesworth and other members of NMC management on September 7, 2001. The licensee acknowledged the findings presented. The inspectors asked whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

KEY POINTS OF CONTACT

Licensee

R. Anderson, Plant Manager
J. Bjorseth, Manager, Engineering
D. Curtland, Operations Manager
R. Murrell, Site Assessment Manager
W. Simmons, Maintenance Superintendent
G. Van Middlesworth, Vice President Nuclear

LIST OF ACRONYMS USED

AR	Action Request
CFR	Code of Federal Regulations
DAEC	Duane Arnold Energy Center
DRP	Division of Reactor Projects
ECP	Engineering Change Package
EMA	Engineered Maintenance Action
IR	Inspection Report
NRC	Nuclear Regulatory Commission
SDP	Significance Determination Process
STP	Surveillance Test Procedure
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report

LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that NRC inspectors reviewed the documents in their entirety, but, rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion on this list does not imply NRC acceptance of the document, unless specifically stated in the inspection report.

1R02 Evaluation of Changes, Tests, and Experiments

Procedures

ACP 103.2, R14	Safety Evaluation Applicability Review Process	
ACP 103.3, R10	Safety Evaluation Process	
ACP 103.2, R15	Safety Evaluation Applicability Review Process	July 30, 2001
ACP 103.3, R11	Safety Evaluation Process	July 30, 2001
SpTP 200, R2	Turbine Cycle Performance Test	August 13, 2001
SpTP 201	Cycle 18 Power Ascension Test to 1658 MWTh	May 16, 2001
SpTP 204	Pressure Regulator Dynamic Tuning	May 16, 2001

10 CFR 50.59 Safety Evaluations

SE 97-114	Delete CS Inject Isolation Valves From Table Contained in Section 7.3.1.1.1.7	December 23, 1997
SE 99-012	Revise Licensing Basis to Reflect New ECCS Strainer Debris Loading, Headloss, etc.	August 31, 1999
SE 99-014	RWCU Return Isolation Valve Close Stroke Time Limit	September 9, 1999
SE 99-027	Remove References to Offgas Post-Treatment Radiation Monitor High-High-High Isolation Trip	June 8, 1999
SE 99-041	RHR Pump Seal Water Coolers Not Required at DAEC	August 31, 1999
SE 99-060	Adding Isolation Valve and Removing Check Valve Internals on ESW	December 2, 1999
SE 99-061	Removing Check Valve Internals on ESW	December 2, 1999

SE 00-002	GSW Piping Replacement for Hydrogen Cooler Modification	March 13, 2001
SE 00-014	ECP 1630 Penetration Replacement/Upgrade	June 20, 2000
SE 00-016	Discrepancies in CRD Cooling Water Flow Rates and System Flow Rates	June 20, 2000
SE 00-025	Revise Condenser Backpressure Alarm Setpoint	June 19, 2001
SE 00-032	MO1947 and MO2046 Logic Change	December 19, 2000
SE 00-039	ECP 1640, Circ. Water Pump Replacement	March 6, 2001
SE 01-009	SpTP 204 -Pressure Regulator Dynamic Tuning	May 1, 2001
SE 01-012, R1	Turbine Cycle Performance Test	August 13, 2001
SE 01-021	SpTP 201 - Cycle 18 Power Ascension Test to 1658 MWTh	May 15, 2001

Safety Evaluation Applicability Reviews

DCF 01-T-0068	Pressure Regulator Dynamic Tuning	May 24, 2001
DCF 01-T-0075	Pressure Regulator Dynamic Tuning	June 6, 2001
DCF 01-T-0076	Cycle 18 Power Ascension Test to 1658 MWTh	June 15, 2001
A41936-R0	Install Wiring inside Breaker Cubicles	September 7, 1999
A26878AG-R1	Installation of Replacement Valves for V49-0029 and V49-0031	November 19, 1999
A43580-R0	Relay 95-K0084A, "Aux. Relay, Drywell Coolers 1V-CC-7A, 7B"	November 19, 1999
A44840-R1	Replace Scram Accumulator 1S220(30-31)	November 29, 1999
A54260-R0	Replace HGA Relay E11A-K032B in the RHR Relay Logic B	December 7, 1999
A39201-R0	Remove and Test PSV5704B	December 10, 1999
1106460-R0	Replace LPRM String RE4751H Model R-0200 with Model NA-300	December 10, 1999
A22505-R0	Replace Stainless Steel Packing Spacer with One Made of Bronze	January 17, 2000
UFSAR Change Request 01-015	Revise Discussion of Keep Fill Pump in Section 5.4.7.2.1	June 5, 2001

1R17 Permanent Plant Modifications

Procedures

ACP 103.0, R10	Design Control Program	July 27, 2001
ACP 103.2, R14	Safety Evaluation Applicability Review Process	July 12, 2000
ACP 103.3, R10	Safety Evaluation Process	January 11, 1999
ACP 109.0, R20	Engineering Change Packages	June 22, 2001
ACP 109.1, R19	Engineered Maintenance Action	June 29, 2001
ACP 1203.26, R8	Engineering Acceptance Requirements	June 9, 2000
ACP 1203.42, R9	Field Variances	July 30, 2001
ACP 1203.43, R7	Field Change Notice	July 30, 2001
ACP 1403.3, R8	Modification Acceptance Test Control Program	June 9, 2000

Engineering Change Packages

ECP 1604	Well Water Control Enhancement	October 4, 2000
ECP 1616	MO1947 and MO2046 Logic Changes	May 11, 2001
ECP 1622	Upgrade Instrument AC	May 4, 2001
ECP 1630	Penetration Upgrade/Replacement	February 15, 2001
ECP 1639	GSW Piping Replacement for Hydrogen Cooler Modification	August 31, 2001
ECP 1640	Replace Circulating Water Pump	May 15, 2001

Engineered Maintenance Actions

A41936-R0	Install Wiring Inside Breaker Cubicles	September 7, 1999
A26878AG-R1	Installation of Replacement Valves for V49-0029 and V49-0031	November 19, 1999
A43580-R0	Relay 95-K0084A, "Aux. Relay, Drywell Coolers 1V-CC-7A, 7B"	November 19, 1999

A44840-R1	Replace Scram Accumulator 1S220 (30-31)	November 29, 1999
A54260-R0	Replace HGA Relay E11A-K032B in the RHR Relay Logic B	December 7, 1999
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1106460-R0	Replace LPRM String RE4751H Model R-0200 with Model NA-300	December 10, 1999
A22505-R0	Replace Stainless Steel Packing Spacer with One Made of Bronze	January 17, 2000

Calculations

CAL-417-E-001	Heating of Penetration Conductors	January 27, 1986
CAL-E88-002, R3	48 Volt Battery 1D93 Load & Sizing Calc.	September 14, 1999
CAL-E92-007, R4	Battery 1D1 Load and Margin	September 13, 1999
CAL-E97-004, R2	Self-Heating of Conductors in Low Voltage Drywell Electrical Penetrations Due to Continuous Load Current During Normal Operations	May 10, 2001
CAL-E97-007, R2	Verification of Ampacity for Darmatt Wrapped Penetration	May 11, 2001
CAL-E99-003, R1	125 VDC Electrical Distribution System Short Circuit Calculation	December 4, 2000
CAL-M99-003, R1	Estimated Effect of Errors in CS and LPCI Flowrates Used in DAEC LOCAL Analysis on Peak Cladding Temperature	February 16, 2000
CAL-E00-001, R1	Study of the Electrical Power Distribution System for the DAEC Power Uprate Project	January 25, 2001

Dedications

D1999-014, R0	120V Instrument AC Distribution Panels	September 9, 1999
D2001-001, R0	Diesel Generator Governor Hose Assembly	January 18, 2001
D2001-002, R0	Diesel Generator Governor Series E-8 Float Actuated Level Switch	February 2, 2001
D2001-005, R0	CB H&V Control Valves	February 28, 2001

D2001-009, R0	125VDC Division 1 Battery (1D1) Jumpers	April 11, 2001
D2001-010, R1	Refuel Platform Fuel Handling Hoist Cable Assembly	April 28, 2001

Updated Final Safety Analysis Report Change Requests

99-009	Change stroke time listed in UFSAR table	September 15, 1999
99-018	Revise UFSAR to reflect Amendment 228, revision of SRV setpoint tolerance	February 17, 2000
99-024	Remove references to offgas post-treatment radiation monitor high-high-high isolation trip	February 1, 2000
99-033	Various pages changed to incorporate revisions to the method of calculating NPSH for the ECCS Systems.	September 30, 1999
99-039	Delete CS inject isolation valves from table contained in Section 7.3.1.1.1.7	October 28, 1999
01-014	Total flows in the columns in Table 9.2-1. UFSAR Change Request 99-030 updated the RHR pump seal cooler information but failed to total the flow in the columns	August 7, 2001
01-015	Revise discussion of keep fill pump in section 5.4.7.2.1	August 9, 2001

Miscellaneous

M475-001, R0	ANSI/ASME Code Reconciliation for Replacement Material, Parts, and Components (Reedy Report)	January 7, 2000
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4OA2 Problem Identification and Resolution

Action Requests

13930	14382	13938	14536	14571	14589
14491	14655	15374	15340	15090	15101
15500	15530	15531	15533	15681	15682
15228	15753	15766	15895	15894	16211
16240	16604	16742	16901	17219	17337
17461	17595	17608	17686	17957	18559
18766	18768	16767	18733	19015	19276
19277	19313	19409	18160	19646	19204
20097	20163	20309	20007	20808	20809
21298	21285	21413	21515	21604	20894
21406	22291	22737	22823	22918	22972

Action Requests Written as a Result of the Inspection

27053	NRC 50.59/Modification Inspection Found Overlap in ECP Scopes	August 16, 2001
27054	Safety Evaluation 99-041, ESW Flow to RHR Pump Seal Coolers, Requires Clarification	August 16, 2001
27055	Safety Evaluation for Removal of HPCI/RCIC Auto Open Logic Lacks Discussion of Less Than Full Open Annunciation	August 16, 2001
27056	NRC 50.59/Modification Inspection Found Inadequate Engineering Evaluations for FVs for ECPs 1622 and 1604	August 16, 2001