December 27, 2000

Mr. Gary Van Middlesworth
Site General Manager
Duane Arnold Energy Center
Nuclear Management Company, LLC
3277 DAEC Road
Palo, IA 52324

SUBJECT: DUANE ARNOLD - NRC INSPECTION REPORT 50-331/00-16(DRS)

Dear Mr. Van Middlesworth:

On December 15, 2000, the NRC completed a routine inspection at the Duane Arnold Nuclear Plant. The enclosed report presents the results of this inspection. The results were discussed on December 15, 2000, with you and other members of your staff.

The inspection was an examination of activities conducted under your license as they relate to radiation safety and to compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selective examination of representative records, tours of your facility and interviews with personnel. Specifically, this inspection focused on aspects of Occupational Radiation Safety.

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).

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

***/RA Steven K. Orth Acting for/***

Gary L. Shear, Chief
Plant Support Branch
Division of Reactor Safety

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

Enclosure: Inspection Report 50-331/00-16(DRS)

See Attached Distribution

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

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| DATE | 12/27/00 | | 12/27/00 | | 12/27/00 | | 12/27/00 | |

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cc w/encl: E. Protsch, Executive Vice President -
Energy Delivery, Alliant;
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Robert G. Anderson, Plant Manager
K. Peveler, Manager, Regulatory Performance
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: | 50-331 |
| License No: | DPR-49 |
| Report No: | 50-331/00-16(DRS) |
| Licensee: | Alliant, IES Utilities Inc. |
| Facility: | Duane Arnold Energy Center |
| Location: | Palo, Iowa |
| Dates: | December 11-15, 2000 |
| Inspector: | D. Nelson, Radiation Specialist |
| Observer: | R. Schmitt, Radiation Specialist |
| Approved by: | Gary L. Shear, Chief, Plant Support Branch<br>Division of Reactor Safety |

# NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas) reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

| Reactor Safety | Radiation Safety | Safeguards |
|---|---|---|
| ● Initiating Events | ● Occupational | ● Physical Protection |
| ● Mitigating Systems | ● Public | |
| ● Barrier Integrity | | |
| ● Emergency Preparedness | | |

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

## SUMMARY OF FINDINGS

IR 05000331-00-26(DRS), on 12/11-12/15/00, Alliant, IES Utilities Inc., Duane Arnold Nuclear Plant. Radiation Specialist report.

This inspection was conducted by regional radiation specialists. No findings of significance were identified.

Report Details

Summary of Plant Status: The Unit was at full power during the inspection.

## 2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control

.1 Plant Walkdowns and Radiological Boundary Verifications

a. Inspection Scope

The inspectors performed walkdowns of the radiologically controlled area (RCA) to verify the adequacy of radiological controls and postings. Specifically, the inspectors performed confirmatory radiation measurements in the Reactor Buildings to verify that radiologically significant work areas (high radiation areas (HRA) and radiation areas) were properly posted and controlled in accordance with 10 CFR Part 20 and the licensee's procedures.

b. Findings

No findings of significance were identified.

.2 Reviews of Radiation Work Permits

a. Inspection Scope

The inspectors reviewed selected routine radiation work permits and electronic dosimeter alarm set points for both dose rate and accumulated dose for access to high radiation areas. The inspectors verified that adequate work controls were in place to maintain worker exposures as-low-as-is-reasonably-achievable (ALARA).

b. Findings

No findings of significance were identified.

.3 Reviews of Licensee's Programmatic Controls for Highly Activated/Contaminated Materials

a. Inspection Scope

The inspectors reviewed procedure ACP 1407.2, "Material Control in the Spent Fuel Pool and Cask Pool," to verify that all highly activated/contaminated materials were properly stored and controlled in the spent fuel pool. The inspectors also discussed with the Radiation Protection Manager the licensee's programmatic controls over the highly activated/contaminated materials.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

.1 Source Tests and Calibration of Radiological Instrumentation

a. Inspection Scope

The inspectors verified that radiological instruments associated with transient high and very high radiation areas (area radiation monitors (ARM)) and instruments used for coverage of high radiation work and/or for air monitoring for jobs with the potential for workers to receive greater than 100 millirem committed effective dose equivalent (CEDE) had been properly calibrated and had their alarm set-points (if applicable) properly set. The inspectors verified that selected ARMs (Reactor Building 757 foot transverse incore probe (TIP) room, access control, resin processing area, drywell, and torus) had been appropriately calibrated, and function and operation tested in 1999 and 2000. The inspectors reviewed the calibration procedures and calendar year 2000 calibration records to verify that selected portable radiation survey instruments (RO-2) and selected portable continuous air monitors (AMS-3) had been properly calibrated. The inspectors also reviewed the calibration procedures and calendar year 2000 calibration records for the whole body counters (Canberra Fastscan WBC and whole body NAI count chair), selected Eberline PCM-1Bs (access control and radwaste control room), and selected contamination monitors (Ludlum model 43-5 alpha scintillation probe with attached Ludlum Model 3 count rate meter) to verify that they had been properly calibrated. The inspectors observed the calibration of an R0-2 portable survey instrument, a 43-5 alpha scintillation probe with attached Ludlum Model 3 count rate meter, and selected Merlin Gerin models DMC 100 and DMC 2000 electronic dosimeters to verify that the instruments were calibrated in compliance with the appropriate procedures.

b. Findings

No findings of significance were identified.

.2 Self-Contained Breathing Apparatus (SCBA) Program

a. Inspection Scope

The inspectors reviewed HPP 3106.04, “Inspection, Maintenance, Quality Assurance of Respiratory Protection Equipment,” Revision 8, and verified the adequacy of the program to provide self-contained breathing apparatus (SCBA) for unknown or emerging conditions. The inspectors walked down the available equipment, reviewed the status and surveillance records of SCBA staged for use in the plant, verified the licensee’s capability for refilling and transporting SCBA bottles to the control room and support locations in the plant, and verified the training, medical, fit test, and qualification records of selected individuals in the year 2000.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed radiological protection self-assessments and Quality Assurance Department first, second, and third quarter assessment reports to evaluate the effectiveness of the self-assessment process to identify, characterize, and prioritize problems and verified that previous radiological instrumentation related issues were adequately addressed. The inspectors also reviewed all year 2000 Action Requests (AR) that addressed radiation instrument deficiencies. The review determined if any significant radiological incidents involving radiation instrument deficiencies had occurred during the year 2000. The review was conducted to verify that the licensee had effectively implemented the corrective action program.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors verified the licensee's assessment of its performance indicators (PI) for public radiation safety and reactor coolant system (RCS) specific activity. Since no reportable elements were identified by the licensee for the 1st, 2nd, and 3rd quarters of 2000, the inspectors compared the licensee's data with 1st, 2nd, and 3rd quarter ARs to verify that there were no occurrences concerning the public radiation safety cornerstone and RCS specific activity. The inspectors also observed a chemistry technician collect a RCS sample to verify that the technician had complied with the applicable procedure during the collection and processing of the sample.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Van Middlesworth and other licensee management and staff in an exit meeting on December 15, 2000. The licensee representatives acknowledged the information and findings presented. No proprietary information was identified by the licensee.

## PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Anderson, Plant Manager
R. Brown, Quality Assurance Manager
H. Giorgio, Radiation Protection Manager
L. Kriege, Chemistry Supervisor
S. Nelson, Health Physics Supervisor
J. Newman, Radiological Engineering Supervisor
R. Perry, Quality Assurance
K. Putnam, Licensing Manager
G. Van Middlesworth, Site General Manager

## ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

| | |
|---|---|
| ALARA | As-Low-As-Is-Reasonably-Achievable |
| AR | Action Request |
| CFR | Code of Federal Regulations |
| CEDE | Committed Effective Dose Equivalent |
| HRA | High Radiation Area |
| NEI | Nuclear Energy Institute |
| PI | Performance Indicator |
| QA | Quality Assurance |
| RCS | Reactor Coolant System |
| RPM | Radiation Protection Manage |
| SCBA | Self-Contained Breathing Apparatus |
| TIP | Transverse Incore Probe |

PARTIAL LIST OF DOCUMENTS REVIEWED

Station Procedures

| | |
|---|---|
| ACP 1407.2 (Revision 8) | Material Control in the Spent Fuel Pool and Cask Pool |
| ACP 1402.4 (Revision 0) | NRC Performance Indicator Collection and Reporting |
| ACP 1411.20 (Revision 10) | Respiratory Protection |
| PCP2.1 (Revision 1) | Plant Chemistry Sampling Program Guidelines |
| PCP2.2 (Revision 7) | Collection of Liquid Grab Samples from Sample Stations and Local Sample Points |
| I.RIM-E070-02 (Revision 2) | Eberline EC4 Series Area Radiation Monitors |
| I.RIM-G080-01 (Revision 15) | G.E. Area Radiation Monitors |
| I.RIM-V115-01 (Revision 6) | Victoreen, Inc. Model 876A Containment Radiation Monitors |
| HPP 3106.04 (Revision 8) | Inspection, Maintenance and Quality Assurance of Respiratory Protection Equipment |
| HPP 3110.01 (Revision 5) | Calibration of Eberline RO-2, RO-2A, and RO-20 Ion Chambers |
| HPP 3110.11 (Revision 1) | Calibration of Ludlum 177 Count Rate Meter |
| HPP 3110.12 (Revision 1) | Calibration of Ludlum Model 3, Count Rate Meter with Model 43-5 Alpha Scintillation Probe. |
| HPP 3110.17 (Revision 5) | Calibration of Whole Body Counting Systems |
| HPP 3110.27 (Revision 6) | Calibration of Merlin Gerin DMC-Electronic Dosimeters |

Radiological Protection Self-Assessments

Radiological Protection Self-Assessment Team Report, July 24 through July 28, 2000

Calibration Records

| | |
|---|---|
| PCM-1B | Instru No 464 (September 13, 2000) |
| PCM-1B | Instru No 475 (November 9, 2000) |
| PCM-1B | Instru No 476 (October 11, 2000) |
| PCM-1B | Instru No 517 (October 11, 2000) |
| Air Monitor | Instru No 0408 (October 4, 2000) |
| Air Monitor | Instru No 0558 (September, 1999) |
| Air Monitor | Instru No 0529 (October 4, 2000) |
| Canberra FASTSCAN | FASTCAN (September 28, 2000) |
| Canberra NAI CHAIR | NAI CHAIR (November1, 2000) |

Quality Assurance Assessments

Quality Assurance Quarterly Assessment Report, First Quarter, Second Quarter and Third Quarter 2000

ARs

Action Requests: AR # 20841, AR # 22693, AR # 22151, AR # 22694, AR # 22922,

Other Documents

Respiratory Qualification Due Reports
SCBA Training
Medical Examinations

Special Order #00-04, Respiratory Qualifications for DAEC personnel

Health Physics Memorandum: SCBA Air Cylinder Complement at the DAEC

Spent Fuel Pool/Cask Material Storage Log

Area Radiation Monitor Information Sheet