

March 18, 2005

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
INITIAL LICENSE EXAMINATION REPORT 05000331/2005301(DRS)

Dear Mr. Peifer:

On February 7, 2005, U.S. Nuclear Regulatory Commission (NRC) examiners completed initial operator licensing examinations at the Duane Arnold Energy Center. The enclosed report documents the results of the examination which were discussed on February 4 and February 15, 2005, with Mr. J. Bjorseth and Mr. C. Kress, respectively, and with other members of your staff.

The NRC examiners administered an initial license examination operating test during the week of January 31 through February 4, 2005. A written examination was administered by Duane Arnold Energy Center training personnel on February 7, 2005. Four reactor operator (RO) and five senior reactor operator (SRO) applicants were administered license examinations. The results of the examinations were finalized on March 1, 2005. Each of the applicants passed all sections of their respective examinations and were issued applicable operator licenses.

Although all nine applicants performed satisfactorily and passed the NRC initial license examination, the overall submittal of the examination material by your training staff was considered outside the acceptable quality range expected by the NRC in accordance with NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9. Specifically, the written test material was outside the 20 percent acceptable margin for quality in accordance with NUREG 1021. This determination was based on the observation that 3 out of 75 RO questions (4 percent) and 7 out of 25 SRO questions (28 percent) required replacement or significant modifications and were identified as unsatisfactory. The minimum requirement to determine an adequate quality range, assessed separately for each RO and SRO examination in accordance with ES-501 of NUREG-1021, was 20 percent or fewer questions identified as unsatisfactory. Furthermore, the operating test material (20 JPMs and 3 simulator scenarios), as submitted by the licensee, was outside the 20 percent acceptable margin for quality in accordance with NUREG 1021. This determination was based on the observation that 8 JPMs and 3 scenario events out of 46 possible evaluated items (20 JPMs and 26 scenario events) (24 percent) required replacement or significant modifications and were identified as unsatisfactory. The minimum requirement to determine an adequate quality range, assessed cumulatively for each JPM and scenario event, in accordance with ES-501 of NUREG-1021, was 20 percent or fewer items (JPM or event) identified as unsatisfactory.

In accordance with 10 CFR Part 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures 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/reading-rm/adams.html> (the Public Electronic Reading Room).

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

Sincerely,

/RA/

Roger D. Lanksbury, Chief
Operations Branch
Division of Reactor Safety

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

Enclosures: 1. Operator Licensing Examination
Report 05000331/2005301(DRS)
2. Simulation Facility Report
3. Post Examination Comments and
Resolutions
4. Written Examinations and Answer
Keys (RO & SRO)

cc w/encls 1, 2 & 3: E. Protsch, Executive Vice President -
Energy Delivery, Alliant;
President, IES Utilities, Inc.
C. Anderson, Senior Vice President, Group Operations
J. Cowan, Executive Vice President and Chief Nuclear Officer
J. Bjorseth, Plant Manager
S. Catron, Manager, Regulatory Affairs
J. Rogoff, Vice President, Counsel, & Secretary
B. Lacy, Nuclear Asset Manager
Chairman, Linn County Board of Supervisors
Chairperson, Iowa Utilities Board
The Honorable Charles W. Larson, Jr.
Iowa State Senator
D. McGhee - Department of Public Health

cc w/encls 1, 2, 3 & 4: C. Kress, Training Manager

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

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Roger D. Lanksbury, Chief
Operations Branch
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cc w/encls 1, 2 & 3: E. Protsch, Executive Vice President - Energy Delivery, Alliant; President, IES Utilities, Inc.
 C. Anderson, Senior Vice President, Group Operations
 J. Cowan, Executive Vice President and Chief Nuclear Officer
 J. Bjorseth, Plant Manager
 S. Catron, Manager, Regulatory Affairs
 J. Rogoff, Vice President, Counsel, & Secretary
 B. Lacy, Nuclear Asset Manager
 Chairman, Linn County Board of Supervisors
 Chairperson, Iowa Utilities Board
 The Honorable Charles W. Larson, Jr.
 Iowa State Senator
 D. McGhee - Department of Public Health

cc w/encls 1, 2, 3 & 4: C. Kress, Training Manager

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000331/2005301(DRS)

Licensee: Alliant, IES Utilities Inc.

Facility: Duane Arnold Energy Center

Location: 3277 DAEC Road
Palo, Iowa 52324-9785

Dates: January 31, 2005, through February 7, 2005

Examiners: H. Peterson, Chief Examiner
N. Valos, Examiner
C. Zoia, Examiner

Approved by: Roger Lanksbury, Chief
Operations Branch
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

ER 05000331/2005301(DRS); Nuclear Management Company, LLC; on 01/31/2005 - 02/07/2005; Duane Arnold Energy Center; Initial License Examination Report.

The announced operator licensing initial examination was conducted by NRC examiners in accordance with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9.

A. Examination Summary

- Four reactor operator (RO) and five senior reactor operator (SRO) applicants were each administered an initial license operating test and written examination.
- All nine applicants (four RO and five SRO) passed all sections of their respective examinations and were issued applicable reactor operator and senior reactor operator licenses. (Section 40A5.1)

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA5 Other

.1 Initial Licensing Examinations

a. Examination Scope

The NRC examiners conducted an announced operator licensing initial examination during January 31, 2005, through February 7, 2005. The plant's training staff used the guidance established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, to prepare the examination outline and to develop the written examination and operating test. The NRC examiners administered the operating test from January 31 through February 4, 2005. Duane Arnold Energy Center training staff members were directed to administer the written examination on February 7, 2005. Four reactor operator (RO) and five senior reactor operator (SRO) applicants were examined.

b. Findings

Written Examination

The licensee developed the written examination. During their review, NRC examiners determined that the initially proposed 100 question written examination (75 RO questions and 25 SRO only questions), as submitted by the licensee, was outside the acceptable quality range expected by the NRC in accordance with NUREG-1021, Revision 9. This determination was based on the observation that 3 out of 75 RO questions (4 percent) and 7 out of 25 SRO questions (28 percent) required replacement or significant modifications and were identified as unsatisfactory. The minimum requirement to determine an adequate quality range, assessed separately for each RO and SRO examination in accordance with ES-501 of NUREG-1021, was 20 percent or fewer questions identified as unsatisfactory. Of the 7 SRO questions identified as unsatisfactory, the questions contained various psychometric errors including low level of difficulty (or direct look-ups), more than one (or no) correct answer, examination questions that did not match the selected outline Knowledge and Ability statements, improperly applied level of knowledge for SRO, and two or more question distractors that were not plausible. In addition, 46 questions (32 RO and 14 SRO questions) needed enhancements which were required to be completed prior to administration of the examination.

During January 6 - 7, 2005, and the week of January 10, 2005, examination changes were agreed upon between the NRC and the licensee and were made according to NUREG-1021, Revision 9. The licensee graded the examination on February 7, 2005, and conducted a review of each question to determine accuracy and validity of the examination questions. The licensee submitted one post-examination question comment.

Operating Test

The licensee developed the operating test, including the Job Performance Measure (JPM) walkthrough and the dynamic simulator scenarios. During their review, NRC examiners determined that the initially proposed operating test (20 JPMs and 3 simulator scenarios), as submitted by the licensee, was outside the acceptable quality range expected by the NRC in accordance with NUREG-1021, Revision 9. This determination was based on the observation that 8 JPMs and 3 scenario events out of 46 possible evaluated items (20 JPMs and 26 scenario events) (24 percent) required replacement or significant modifications and were identified as unsatisfactory. The minimum requirement to determine an adequate quality range, assessed cumulatively for each JPM and scenario event, in accordance with ES-501 of NUREG-1021, was 20 percent or fewer items (JPM or event) identified as unsatisfactory. Of the 8 JPMs and 3 scenario events identified as unsatisfactory, the items contained various errors including low level of difficulty (direct look-ups, too much information which could be considered unnecessary prompting, or no appreciable evaluative action by the operator), missing critical steps, and incorrect task standards. In addition, 11 JPMs and 14 scenario events needed enhancements which were required to be completed prior to administration of the examination.

During the validation week of January 10, 2005, examination changes were agreed upon between the NRC and the licensee and were made according to NUREG-1021, Revision 9.

Future examination submittals and examination administration should incorporate any lessons learned from this evaluation. The licensee documented the examination review issues in their corrective action program (CAP) as CAP034872.

Examination Results

Four reactor operator and five senior reactor operator applicants were administered written examinations and operating tests for initial operator licensing. Each of the applicants passed all sections of their respective examinations and were issued applicable operator licenses.

.2 Examination Security

a. Scope

The NRC examiners observed the licensee's implementation of examination security and integrity measures (e.g., physical barriers, sequestering, security agreements, sampling criteria, and test item repetition) throughout the examination process.

b. Findings

The licensee's implementation of examination security requirements during examination preparation and administration were acceptable and met the guidelines provided in NUREG-1021, Revision 9. However, during the facility licensee's written examination development two examination security incidents occurred which had the potential to affect the integrity of the written examination.

The first incident was during the development of the written examination outline. On two separate occasions, one of the examination developers removed both electronic and hard copies of the examination outline from the examination development room to work on at home. The licensee's examination security procedure did not specifically prohibit this action; however, the licensee conducted an investigation of this incident. The licensee's investigation concluded that the individual adequately followed the licensee's security containment requirements at home. The hard copy outline materials were maintained in the possession of the individual at all times to and from his home, and locked in his home at all other times. The electronic documents were transported using a portable hard drive and password protected. The licensee conducted a computer evaluation of the individual's home computer and ascertained that there was adequate computer security.

The second incident involved computer security during the revision of one written examination question with NRC's comments. An examination developer forgot to password protect the question on the computer. The individual identified the mistake and subsequently corrected the issue. However, this was a violation of the licensee's examination security procedure which required password protection of all electronic examination material on the computer. The licensee's investigation determined that adequate examination security was still maintained via the second barrier. The examination question was stored in a stand alone secure computer within the secure examination development room.

The licensee documented these incidents in the corrective action program (CAP) as CAP032682 and CAP034614, respectively. The NRC examiners were appropriately notified of the incidents. The examiners reviewed the licensee's investigation and assessed the overall incident for possible violation of 10 CFR 55.49, "Integrity of Examinations and Tests." The examiners determined that no actual examination compromise had occurred. The apparent violation of the licensee's examination security procedure concerning password protection of the one examination question was considered minor in nature and was not subject to enforcement action in accordance with NRC enforcement policy.

4OA6 Meetings

Exit Meeting

The chief examiner presented the examination team's preliminary observations and findings on February 4, 2005, and a subsequent exit meeting via teleconference on February 15, 2005, to Mr. Bjorseth and other members of the Operations and Training Department staff. No proprietary items were identified during the administration of the examination nor during the exit meetings with the licensee. The licensee acknowledged the observations and findings presented.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Peifer, Site Vice President
J. Sorensen, Vice President Training
J. Bjorseth, Site Director
D. Curtland, Plant Manager
C. Kress, Training Manager
G. Rushworth, Operations Manager
M. Davis, Emergency Planning
K. Gassman, ILC Instructor/Exam Developer
D. Gibson, Exam Developer
T. Gordon, General Supervisor Operations Training
W. Render, Operation Instructor/Exam Developer
C. Rushworth, Regulatory Affairs Engineer
G Thullen, Operation Instructor/Exam Developer

Nuclear Regulatory Commission

G. Wilson, Senior Resident Inspector
S. Caudill, Resident Inspector

ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

None

Discussed

None

LIST OF ACRONYMS USED

ADAMS	Agency-Wide Document Access and Management System
CAP	Corrective Action Program
DRS	Division of Reactor Safety
JPM	Job Performance Measure
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RO	Reactor Operator
SRO	Senior Reactor Operator

SIMULATION FACILITY REPORT

Facility Licensee: Duane Arnold Energy Center

Facility Docket No.: 50-331

Operating Tests Administered: January 31, 2005, through February 4, 2005

The following documents observations made by the NRC examination team during the initial operator license examination. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of non-compliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

During the conduct of the simulator portion of the operating tests, the following items were observed:

ITEM	DESCRIPTION
Period Meter	During validation of simulator scenario ESG 17, event 3, performance of STP 3.4.3-03, "Manual Opening and Exercising of the ADS and LLS Relief Valves," the simulator experienced a 20 second period apparently due to the pressure transient on cycling the relief valve. It was unexpected and was not repeatable. Also, the transient was not observed during the administration of the simulator scenario examination.
Turbine Stop Valve	During validation of the simulator scenario ESG 18, event 1, performance of NS 930002, "Turbine Stop Valve and Combined Intermediate Valve Test," the 'D' stop valve pegged high above 100% indication. Also, the valve experienced a step decrease to 75% position indication when it should have gradually lowered as the valve was closed during the test.

Question RO No. 21:

Which of the following is the basis for the automatic Main Steam Isolation Valve (MSIV) closure when a Main Condenser High Backpressure transient occurs while operating at 93 percent thermal power?

The MSIVs are designed to automatically close at 19" Hg Abs to prevent

- a. over pressurizing the Main Condenser
- b. over pressurizing the Low Pressure Turbine Exhaust Hoods
- c. damaging the turbine final stages due to aerodynamic buffeting
- d. High exhaust hood temperatures and moisture caused erosion of the last stage buckets.

Answer: a

Facility Comment:

The main condenser and low pressure turbine exhaust hood are the same pressure volume. Even though the function is titled, "Condenser Backpressure - High," per Technical Specification Bases 3.3.6.1, function 1.d, the ultimate protective function is to prevent pressurization and rupture of the diaphragms in the Low Pressure Turbine Exhaust Hoods. Recommend allowing both answers (a) and (b) as correct.

NRC Resolution:

The Technical Specification Bases 3.3.6.1, item 1.d, "Condenser Backpressure - High," states, in part, "the closure of the MSIVs is initiated to prevent the addition of steam that would lead to additional condenser pressurization and possible rupture of the diaphragm installed to protect the turbine exhaust hood thereby preventing a potential radiation leakage path following an accident." Although MSIV closure possibly prevents rupture of the diaphragms in the Low Pressure Turbine Exhaust Hoods, it is not necessarily the ultimate protective function. The technical specification bases indicates that the protective function of the MSIV closure for high condenser backpressure is to protect the condenser from over pressurization. However, the secondary or subsequent effects of MSIV closure is to prevent rupture of the Low Pressure Turbine Exhaust Hood diaphragms. Therefore, based on the technical specification information the NRC has accepted the recommendation. The answer key was amended to accept both answers (a) and (b) as correct answers for RO question #21.

WRITTEN EXAMINATIONS AND ANSWER KEYS (RO/SRO)

RO Initial Examination ADAMS Accession # ML050690222

SRO Initial Examination ADAMS Accession # ML050690225