Mary Ann

June 29, 1994

Docket No. 50-331

IES Utilities Incorporated
ATTN: Mr. Lee Liu
Chairman of the Board and
Chief Executive Officer
IE Towers
P.O. Box 351
Cedar Rapids, IA 52406

Dear Mr. Liu:

SUBJECT: EXAMINATION REPORT (REQUALIFICATION RETAKE AND INITIAL LICENSE EXAMINATIONS)

During the week of June 6, 1994, Mr. D. McNeil and others of this office administered requalification retake and initial license examinations to employees of your organization who operate and handle fuel at your Duane Arnold Energy Center (DAEC). Initial Reactor Operator (RO) license examinations were given to two operators, and on June 9, 1994, a retake examination (written portion) was administered to one of your operators who failed the requalification examination administered on December 9, 1993. At the conclusion of the examinations preliminary findings were discussed with those members of your staff identified in the enclosed report. Final grading of examinations indicates all operators examined passed their respective examination.

During the administration of the initial license examination, several procedure weaknesses were found. One procedure weakness concerned restoration of power to in-plant electrical busses following a loss of site power. The weakness is described within Enclosure 1, Report Details, Section 4, and has been referred to the NRC Senior Resident Inspector (SRI) at DAEC for further review. Other procedure weaknesses noted during the examination are also detailed within the same section. No written response to these items is required from this report.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and the enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this examination, please contact us.

Sincerely,
Original signed by Mark A. Ring

Mark A. Ring, Chief
Operations Branch

See Attached Distribution

RIII	RIII	RIII	RIII	RIII
DRR			RDL	
Roth/cg	McNeil	Jordan	Lanksbury	Ring
06/27/94	06/27/94	06/27/94	06/28/94	06/29/94

Distribution

Enclosures:
1. Examination Report
   No. 50-331/OL-94-01
2. Simulator Facility Report
3. Examination (Reactor) and
   Answer Key

cc w/enclosures 1-2:
D. Wilson, Plant Superintendent - Nuclear
K. Young, Manager, Nuclear Licensing
OC/LFDCB
Resident Inspector, RIII
Stephen Brown, Iowa Department of Commerce
C. Y. Shiraki, LPM, NRR
S. Stein, SRS
R. M. Gallo, OLB

cc w/enclosures 1-3:
S. Swails, Plant Training Manager

bcc w/enclosures 1-3: PUBLIC-IE42

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/OL-94-01 Licenses No. DPR-49

Licensee: Iowa Electric Light and Power Company
IE Towers
P. O. Box 351
Cedar Rapids, IA 52406

Facility Name: Duane Arnold Energy Center

Examination Administered At: Duane Arnold Energy Center
Palo, Iowa

Examination Conducted: June 6 - 9, 1994

Examiner: In Training — D. E. Roth — Date 6/27/94

Chief Examiner: D. R. McNeil — Date 6/29/94

Approved By: M. J. Jordan, Chief, Operator Licensing Section 1 — Date 6/29/94

Examination Summary

Examinations were administered during the week of June 6, 1994 (Report No. 50-331/OL-94-01)

Initial licensed operator examinations were administered to two Reactor Operators (ROs). A requalification retake examination (written portion only) was administered to a Senior Reactor Operator (SRO).

Requal Retake Examination Results:

The individual who took the requalification re-take written examination passed his examination.

Initial Licensed Operator Examination Results:

Both individuals taking the Initial Licensed Operator Examinations passed all portions of their respective examinations and were issued operator licenses.

The following is a summary of the strengths and weaknesses noted during the performance of this examination.

STRENGTHS/WEAKNESSES:

Strengths:

- Pre-examination review of the initial license written examination. (See Enclosure 1, Section 3.a.2 for details.)
- Use of a Job Performance Measures (JPM) key ring to speed conduct of JPMs. (See Enclosure 1, Section 3.b. for details.)

Weaknesses:

- Difficulty level and inadequate use of simulator for the Category A written requalification examination. (See Enclosure 1, Section 3.a.1 for details.)
- Plant procedures in error, and difficult to execute. (See Enclosure 1, Section 4, Procedural Problems for details.)
- Crew communications during the initial license dynamic simulator examination. (See Enclosure 1, Section 3.c. for details.)

REPORT DETAILS

1. Examiners

*D. McNeil, Chief Examiner, NRC, Region III
M. Jordan, Chief OLS1, NRC, Region III
*D. Roth, Inspector, NRC, Region III

2. Persons Contacted

Facility

*G. Van Middlesworth, Assistant Plant Superintendent
*R. Anderson, Operations Supervisor
*J. Christensen, Assistant Operations Supervisor
*W. Render, Training Supervisor Ops
*C. Hunt, Principal Simulator Specialist
*T. Page, Licensing Engineer
*J. Sparano, Training Supervisor, Admin

U. S. Nuclear Regulatory Commission (NRC)

*J. Hopkins, Senior Resident Inspector, DAEC Site

*Denotes those present at the exit meeting on June 9, 1994.

3. Training Program Observations

The trainers appeared to be knowledgeable and courteous throughout the examination process. They put in extra time when necessary without complaint and maintained a professional attitude at all times during the examination.

The following information is provided for evaluation by the licensee via their SAT based training program. No response is required.

a. Written Examination

1. Requalification written examination - the Category A and B examinations were given in the simulator. The licensee was given 3 hours to finish both sections of the examination. The category A examination had 20 questions, the category B examination had 25 questions. The licensee completed the examination within the allowed 3 hour time limit.

Strengths:

None noted during this examination.

Weaknesses:

The written examination as submitted to Region III was simplistic in nature and did not make extensive use of the simulator. Approximately one half of the questions in the Category A portion of the examination did not require use of the simulator to correctly answer the question. The examination was corrected by the facility prior to exam administration.

2. The initial license examination was a standard 100 question examination as prescribed by NUREG 1021, Revision 7.

Strengths:

The pre exam review for the initial license written examination was noted as a strength. The effectiveness of the review was demonstrated during administration of the examination where there was only one request for question clarification and after the examination where there were no post exam comments.

Weaknesses:

Grading of the initial written examination revealed two generic weaknesses. Both candidates failed to correctly answer questions concerning:

a. the Main Steam Isolation Valve Leakage Control System (MSIV LCS).
b. the Rod Worth Minimizer (RWM)

It is noted that the small sample size does not give a true indication of training weaknesses. However, these weaknesses are reported because both candidates missed the written examination questions in these areas and one or both candidates displayed weaknesses in these same areas during the plant walk-through portion of their examinations.

b. Job Performance Measures

The JPMs performed in the simulator/control room were;

1. Carry out required actions for an uncoupled control rod.
2. Take actions to restore Reactor Water Clean Up (RWCU) after spurious isolation.
3. Take actions for Standby Gas Treatment (SBGT) filter overheating/emergency overheating
4. Initiate Low Pressure Coolant Injection (LPCI)

following shutdown cooling isolation signal.

5. Bypass isolation signal and restore Oxygen/Hydrogen monitoring of the torus and drywell.
6. Place the main generator on the grid.
7. Unbypass a rod using NUMAC RWM.

The JPMs performed in the plant were:

1. Conduct a fast manual startup of the Standby Diesel Generator (SBDG) system from the SBDG room.
2. Manually initiate Carbon Dioxide into the cable spread room to suppress a fire. (Alternate Path)
3. Line-up Standby Liquid Control (SLC) flow path to inject into the Reactor Pressure Vessel (RPV).

Strengths:

A JPM key ring was assembled for use in performing all plant JPMs. This allows execution of all JPMs without disturbing control room activities.

Operators were familiar with procedures and were able to promptly retrieve and execute the correct procedure in nearly all instances.

Operators were familiar with component locations in the plant. They were able to rapidly proceed to equipment and simulate operation of the equipment as directed by procedures.

Upon discovery of a plant problem, both candidates notified the control room of the discrepancy during conduct of the examination, indicating a strong commitment to plant safety. Both candidates noticed the fire alarm light in the standby diesel generator room was flashing intermittently. When this item was discussed during the exit, plant staff indicated the light was being fixed.

Weaknesses:

Neither candidate was aware the facility had made the decision to no longer provide a copy of the SLC alternate injection procedure at the SLC station. (See Section 4.b for details.)

The JPM key ring was listed as a strength in the JPM training program, however, neither candidate was aware of the existence of the key ring. This caused candidate confusion when they were directed to get the JPM key ring.

When directed to parallel the main generator to the grid, one candidate demonstrated unfamiliarity with the procedure by allowing the main generator to trip on reverse power. (See section 4.c for details.)

c. Simulator Scenarios

Three scenarios were required to adequately evaluate the candidates' control room skills.

Scenario 1 included: 1) a reactivity manipulation (raise reactor power using control rods), 2) a normal evolution (securing Residual Heat Removal (RHR) suppression pool cooling), 3) a failure of the RHR pump "A" flow indicator, 4) a failure of Average Power Range Monitor (APRM) "B", 5) a trip of feed water pump "A", 6) a failure of drywell cooling and 7) a rupture of an RPV level instrument variable leg resulting in a small break Loss of Coolant Accident (LOCA).

Scenario 2 included: 1) a reactivity manipulation (reduction in reactor power using recirc flow), 2) a normal evolution (shift Reactor Protection System (RPS) power supplies), 3) a failure of a Reactor recirculation pump seal, 4) an upscale failure of an RPV level instrument, 5) a failure of the High Pressure Coolant Injection (HPCI) pump controller with inadvertent start of the system, 6) a loss of Electro Hydraulic Control (EHC) system pressure with accompanying turbine generator trip, 7) a trip of station site power with accompanying SBDG failures (A SBDG starts but output breaker fails to close, B SBDG starts, trips after two minutes) and 8) a stuck open relief valve.

Scenario 3 included: 1) a slow failure of the reference leg on the "B" GEMAC RPV level instrument.

Strengths:

No major strengths were noted during the dynamic simulator scenarios.

Weaknesses:

Communications between crew members was poor. Use of three-way closed loop communications was not stressed or demanded by the Senior Reactor Operator. Frequent use of "aye," "ok," or partial repeat-backs were noted by the examiners.

During the second scenario one candidate and the SRO had difficulty restoring power to plant emergency electrical busses. (See section 4.a for details.)

Remedial training was recommended for the SRO concerning his communications skills and weaknesses displayed during bus power restoration.

4. Procedural Problems:

During the conduct of the examination several procedural problems were noted. The following details are provided:

a. Station blackout

During the second simulator scenario, a generator trip was initiated which caused a trip of off site power (switchyard). Both SBDGs started; the "A" SBDG output breaker failed to automatically close, the "B" SBDG energized its respective bus for 2 minutes and then tripped. A Safety Relief Valve (SRV) stuck open when opened by high pressure. One candidate shut down the "A" SBDG without direction from the SRO and without attempting to shut the SBDG output breaker. Later in the scenario when the "B" SBDG tripped, the SRO directed the candidate to start the "A" SBDG and shut its output breaker. While attempting to restore power to the bus, it was determined by the candidate and SRO that no procedure existed that would successfully direct restoration of the emergency busses. The SRO directed the candidate to properly align the synchronizing selector switch and attempt to shut the SBDG output breaker. This was accomplished and the bus reenergized. The "A" SBDG ran unloaded without cooling water for approximately 10 minutes while the operator and SRO were trying to execute a procedure to get the breaker shut.

b. SLC Alternate Injection

When directed to line up Standby Liquid Control (SLC) to inject with the test tank, both candidates went to the SLC cage to perform the lineup assuming the procedure would be in the SLC procedure booklet kept at the remote location. The facility has made the decision to remove the procedure from the remote location and pass the procedure out the control room back door during emergency conditions. Candidates were not informed that this decision had been made.

c. Paralleling the Main Generator to the Grid

While executing the procedure to parallel the main generator to the grid, the main generator tripped on reverse power. The procedure directs operators to do things unnecessary to the safe operation of the unit prior to raising the load set on the turbine control system. If the load set is not quickly increased and the generator loaded, the generator may trip on reverse power. During the exit it was suggested that the procedure sequence be changed to direct operators to raise load set immediately after shutting the main generator breaker.

5. Operations, Security, Rad Protection, Other

a. Strengths:

Training, Operations, and Security were all professional in their dealings with the examination team. The examination team was able to quickly process through the gate house and into the plant. The examination team was able to quickly obtain all materials needed for efficient administration of the examination.

b. Weaknesses:

No major weaknesses were noted in this area during the administration of the examination.

6. Simulator Observations:

a. Simulator discrepancies were identified. Enclosure 2 lists the problems encountered with the simulator.

7. Exit Meeting

a. An exit meeting with the Duane Arnold Energy Center management was held at the DAEC training offices on June 9, 1994. Those attending the meetings are listed in Section 2 of this report. The following items were discussed during the exit meeting:

- Strengths and weaknesses noted in this report.
- Procedure review history for the station blackout procedure.
- Remedial training for the surrogate SRO assigned to the examination.
- No proprietary information was disclosed during the examination, no licensing commitments were made during the examination.

Enclosure 2

SIMULATION FACILITY REPORT

Facility Licensee: Duane Arnold Energy Center

Facility Docket No.: 50-331

Operating Test Administered on: 06/6 - 9/94

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10CFR55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed:

ITEM	DESCRIPTION
Simulator thermodynamics	During the walk-through portion of the examination the simulator was reset to a cold condition. The suppression pool temperature was lower than river water temperature. Laws of nature (thermodynamics) indicates this condition is in error. The station is aware of the problem. The conditions are repeatable.
Simulator instructor console	During validation of the dynamic simulator scenarios one of the simulator instructor terminals stopped responding (froze). The facility is aware of the problem, the conditions are repeatable.
Rod Worth Minimizer	While reset to a cold condition, a control rod was bypassed and a snapshot taken in preparation for the walk through portion of the examination. The bypassed control rod was selected at the rod select matrix at C05 in the snapshot. When the simulator was reset to the snapshot, an additional control rod was bypassed. A candidate was directed to unbypass the bypassed control rod. Immediately before the candidate went to unbypass the control rod, the examiner randomly selected a different control rod. The RWM would not allow the rod selected to be changed at the back panel. The candidate then went to C05 and selected the control rod to be unbypassed. The RWM would still not allow the bypassed control rod to be selected. The candidate depressed the exit pad and then reselected the bypassed rod display. The rod selected at C05 was then selected by the RWM and the candidate was allowed to unbypass the control rod. This item was new, and may not be repeatable.