U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/81-27(DPRP)

Docket No. 50-331

License No. DPR-49

Licensee: Iowa Electric Light and Power Company Post Office Box 351 Cedar Rapids, IA 52406

Facility Name: Duane Arnold Energy Center

Inspection At: Palo, IA

Inspection Conducted: December 1, 1981 through January 31, 1982 Inspector: L. S. Clardy

Approved By: J. F. Streeter, Acting Chief Projects Section 2C

3/15/82

Inspection Summary

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Inspection on December 1, 1981 through January 31, 1982 (Report No. 50-331/81-27(DPRP))

Areas Inspected: Routine resident inspection of Operational Safety Verification; Maintenance Observation; Surveillance Observation; Plant Trip; IE Circular, Bulletin and TMI Action Plan Followup; Procedures; Licensee Event Report Followup; and Followup on Previously Identified Items. The inspection involved a total of 207 inspector-hours onsite by one NRC inspector including 34 inspector-hours onsite during offshifts. Results: Of the eleven areas inspected, no items of noncompliance or deviations were identified in seven areas, four items of noncompliance were identified in four areas. (Failure to follow procedures - Paragraph 2; failure to properly store safety related items - Paragraph 3; failure to follow procedures - Paragraph 11; organization different than technical specifications - Paragraph 12.)

DETAILS

1. Persons Contacted

- R. McGaughy, Director Nuclear Generation
- *D. Mineck, Chief Engineer
- *D. Wilson, Assistant Chief Engineer Rad Protection/Security
- *J. Vinquist, Assitant Chief Engineer Technical Support
- *B. York, Assistant Chief Engineer Operations
- D. Teply, Operations Supervisor
- C. Mick, Assistant Operations Supervisor
- *J. VanSickel, Technical Engineer
- L. Voss, Assistant Electrical Maintenance Supervisor, Acting
- R. McCracken, Quality Control Supervisor

In addition, the inspector interviewed several other licensee personnel including shift supervising engineers, control room operators, engineering personnel, administrative personnel, and contractor personnel (representing the licensee).

*Denotes those present at the exit interview.

2. Operational Safety Verification

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the months of December and January. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of the reactor building and turbine building were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan.

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the inspection period the inspector walked down the accessible portions of the LPCI & RHR systems to verify operability. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments and barreling.

During the IE Performance Appraisal Section (PAS) inspection of September 21-October 3 and October 19-23, 1981, a potential enforcement finding (PEF) was identified related to jumper control. The inspector followed up on this finding by reviewing the Jumper and Lifted Lead Log. The inspector confirmed that ACP 1404.6 was not followed in some cases in that: (a) 81-300 and 81-446 had no installation verification (b) 81-462 had no removal authorization or verification, and (c) 81-483, 486, 490, 492 and 493 had no removal authorization. ACP 1404.6, Section 6 states in part "The person verifying installation of a jumper or lifted lead shall sign in the Installation Verification space... When the clearance is to be removed the Shift Supervisor shall fill in the date, time and authorization... The qualified personnel verifying the removal shall sign the Removal Verification Space." Technical Specification 6.8.1 states in part, "Detailed written procedures involving nuclear safety...shall be prepared.... All procedures shall be adhered to." This violation of Technical Specification 6.8.1 was identified as a item of noncompliance. (331/81-27-01)

The licensee took immediate corrective action on these items and performed an audit of the Jumper and Lifted Lead Log to ensure compliance. The Operations Supervisor has also instructed personnel on the need to follow procedures more closely. The licensee corrective actions seem adequate and we have no further questions at this time.

3. Monthly Maintenance Observation

Station maintenance activities of safety related systems and components listed below were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with technical specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety related equipment maintenance which may affect system performance.

The following maintenance activities were observed/reviewed:

- a. Installation of Post Accident Sampling Systems
- b. Installation of Post Accident Level and Pressure Indicating Systems
- c. Repair of RHR snubber GBC-1-SS-56 and Control Valve CV-2037

Following completion of maintenance on the RHR and LPCI systems, the inspector verified that the systems had been returned to service properly.

During the PAS inspection of September 21-October 3 and October 19-23, 1981, a PAS inspector found several bins of safety related stainless steel pipe fittings and flanges stored in the warehouse with openings not capped, plugged or sealed. In addition, weld and preparations were found protected from corrosion and physical damage. 10 CFR Part 50, Appendix B, Criterion XIII states in part, "Measures shall be established to control the handling, storage,...and preservation of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration." The licensee is also committed to WASH-1284 which contains Regulatory Guide 1.38 that references ANSI N45.2.2-1972, which states in Section 1.2, "The requirements are intended to assure that the quality of items is not degraded as a result of packaging, shipping, receiving, storage, and handling practices and techniques." Also, Section 3.2.4(2) states: "All openings into items shall be capped, plugged, and sealed. Weld end preparations shall be protected from corrosion and physical damage." This matter was identified as an item of noncompliance (331/81-27-02).

The licensee took immediate corrective actions. All of the subject material was withheld from issue and a search was made to ensure no other such material existed in the warehouse. The material was then cleaned, reinspected for damage and corrosion and restored in accordance with applicable guidelines. The licensee corrective actions seem adequate and we have no further questions at this time.

4. Monthly Surveillance Observation

The inspector observed technical specifications required surveillance testing on the LPCI & RHR Systems and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspector also witnessed portions of test STP 413D001, "Cardox Operability," and "Jet Pump Flow Instrument Calibration."

No items of noncompliance were identified.

5. <u>IE Bulletin Followup</u>

For the IE Bulletins listed below the inspector verified that the Bulletin was received by licensee management and reviewed for its applicability to the facility. If the Bulletin was applicable the inspector verified that the written response was within the time period stated in the Bulletin, that the written response included the information required to be reported, that the written response included adequate corrective action commitments based on information presented in the Bulletin and the licensee's response, that the licensee management forwarded copies of the written response to the appropriate onsite management representatives, that information discussed in the licensee's written response was accurate, and that corrective action taken by the licensee was as described in the written response.

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IEB 78-03 Potential Explosive Gas Mixture Accumulations in BWR Offgas Systems (Closed)

> The inspector verified that the licensee's procedures and system design adequately address the concerns of the Bulletin.

IEB 78-05 Malfunctioning of GE Circuit Breakers (Closed)

The inspector verified that the licensee replaced the binding parts in the affected circuit breakers.

IEB 78-06 Defective Cutler-Hammer Relays (Closed)

None of the referenced relays are installed in DAEC safety systems.

IEB 78-10 Bergen-Patterson Hydraulic Shock Suppressor Accumulator Spring Coils (Closed).

None of the referenced coils are installed at DAEC.

IEB 78-14 Deterioration of BUNA-N Components in ASCO Solenoids (Closed).

The inspector verified that the licensee has rebuilt 173 of 178 CRD scram solenoid valves. The remaining five will be rebuilt when ordered parts arrive. The licensee has placed the CRD scram solenoids on a five year rebuilding cycle.

IEB 79-08 Events Relevant to BWRs Identified During TMI (Closed)

The inspector verified that the licensee had adequately addressed all 11 concerns of the Bulletin. IE Inspection Reports 331/79-15, 79-18 and 79-24 address each item individually. NRR concurred in a December 21, 1979, letter (Ippolito to Arnold) that all items were satisfactorily addressed.

IEB 79-15 Deep Draft Pump Deficiencies (Closed).

The inspector verified the licensee had satisfactorily performed all items of the Bulletin.

IEB 79-26 Boron Loss from BWR Control Blades (Bulletin Supplement 1) (Closed).

The inspector verified the licensee had taken appropriate actions in accordance with the Bulletin.

IEB 80-03 Loss of Charcoal From Absorber Cells (Closed).

The inspector verified that the licensee took appropriate steps to determine that DAEC Absorber Cells are not affected by charcoal loss.

IEB 80-06 Engineered Safety Feature Reset Control (Open).

The inspector closed Item 2 in Inspection Report 331/81-16. NRR completed its review of Items 1 and 3 in May 1981 and did not note any discrepancies. On September 29, 1981, the licensee submitted a revision to their previous response. The revision is under review by NRR.

IEB 80-17 Failure of Control Rods to Insert During a Scram (Bulletin and Supplements 1-5) (Closed).

The inspector verified that the licensee had satisfactorily performed all required tests and modifications.

IEB 80-25 Target Rock Safety Relief Valves (Closed).

The inspector verified that the licensee removes the entire valve from service if an indeterminate malfunction occurs and that a high/low mitrogen supply alarm had been installed and was operational and procedures existed which adequately cover operator response.

IEB 81-02 Failure of Gate Type Valves (Supplement 1) (Closed).

None of the referenced valves are installed or maintained as spares at DAEC.

No items of noncompliance were identified.

6. IE Circular Followup

For the IE Circulars listed below, the inspector verified that the Circular was received by the licensee management, that a review for applicability was performed, and that if the circular were applicable to the facility, appropriate corrective actions were taken or were scheduled to be taken.

IEC 78-06 Potential Common Mode Flooding of ECCS Rooms (Closed).

The licensee verified that the flooding mode as described in the Circular could not occur at DAEC.

IEC 79-25 Shock Arrestor Strut Assembly Interference (Circular and Supplement 1) (Closed).

The inspector verified that the licensee had taken appropriate actions and determined the strut assemblies are not subject to interference or overloading.

No items of noncompliance were identified.

7. Independent Inspection

a. <u>Diesel</u> Generator Governor Oil Level

The inspector verified that the licensee's procedures for operation of the diesel generators contain precautions to periodically check the governor oil level while the engine is running, and state the correct oil level to be maintained. The vendor technical manual does not address this concern. The surveillance test for diesel generator operability does not address this item either, but the licensee is in the process of incorporating this check into the test.

b. Shield Weight

The inspector expressed concern over the added weight of temporary shielding on plant systems. The licensee has initiated a design review to address installed temporary shielding and installation of future shielding.

No items of noncompliance were identified.

8. Licensee Event Report

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with technical specifications.

LER	78-031/01-0	Closed	
LER	78-031/01-1	Closed	
LER	79-012/03-0	Closed	
LER	80-009/01-0	Closed	
LER	80-009/01-1	Closed	
LER	80-067/03-0	Closed	,
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d The RWCU to main condenser valve CV 2729 developed a body to bonnet leak. The valve was repaired and hydrostatically tested. A new valve will be installed when parts are available.

LER 81-014/01-0	Closed	During relief valve testing four relief valves were found to have out of speci- fication as found setpoints. Wyle Laboratories cleaned and reworked the valves. No definitive cause for the problem was determined. The valves were retested satisfactorily.
LER 81-015/01-0	Closed	The D/G bearings were replaced and reinspected six months later with no failures noted. The licensee and vendor are continuing analysis of the problem.
LER 81-016/01-0	Closed	
LER 81-017/01-0	Closed	
LER 81-019/01-0	Closed	A technical specification change was submitted to reduce the required river water supply system pump head from 57 to 46 feet.
LER 81-021/03-0	Closed	
LER 81-022/03-0	Closed	
LER 81-024/03-0	Closed	
LER 81-025/03-0	Closed	
LER 81-026/03-0	Closed	
LER 81-029/03-0	Closed	
LER 81-032-03-0	Closed	LER's 81-026, 029 and 032 pertain to containment atmosphere not monitored as required by technical specifications due to personnel error. Personnel were reinstructed on CAMS operation and sample point verification was added to the shift instrument check list. The licensee was cited in Inspection Report 331/81-19 for failure to follow technical specifications.
LER 81-027/03-0	Closed	
LER 81-028/03-0	Closed	
LER 81-030/03-0	Closed	Torus atmosphere sampling valve, SV 8108A, would not close during surveillance testing. The redundant isolation valve

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was closed. The solenoid was jammed by rust in the mechanical portion. The valve was cleaned and tested satisfactorily. Similar valves were inspected to ensure operability.

LER 81-031/03-0 Closed

LER 81-033/03-0 Closed

LER 81-034/01-0 Closed

LER 81-035/03-0 Closed Drywell oxygen concentration exceeded the technical specification limit due to personnel error. The drywell was immediately inerted. The licensee has instituted a disciplinary action program for personnel error. New drywell monitoring equipment has been installed also.

LER 81-036/03-0 Closed

LER 81-037/01-0

Closed Valve 84-16 was shut instead of locked open. This made the "D" MSFV Leakage Control System inoperable. The licensee performed a valve lineup on the entire leakage control system to verify operability. The licensee also labeled the valves and is reviewing their independent verification program. The licensee was cited in Inspection Report 331/81-18.

LER 81-038/03-0 Closed

LER 81-039/01-0 Closed The licensee was cited for this problem in Inspection Report 331/81-26.

LER 81-041/03-0 Closed

Open

LER 81-043/01-0

The station 24 VAC battery charger was inoperable is required to be operable by Technical Specifications during power operation but no LCO statement is given. This discrepancy was also identified by the licensee and by a licensee consulting firm (NUS). NUS has recommended that the licensee submit a technical specification change which would clarify operability requirements. The licensee is reviewing the recommendation. This is an open item

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pending completion of the licensee's review. The inspector will review the licensee's actions at a later date.

This is an Open Item (331/81-27-05).

No items of noncompliance were identified.

9. TMI Related Items

The inspector reviewed the TMI related items due for April 1981 for development and implementation per NUREG-0737, and licensee commitments.

a. <u>Reactor Coolant System Vent Procedures</u>, Item II.B.1.3 (Closed).

The inspector verified that the licensee has established adequate procedures addressing venting of the Reactor Coolant System in IPOI volume 1, Section 5, and OI 62/80/83.

b. <u>Plant Shielding Modifications</u>, Item II.B.2.2.B (Open).

The licensee has installed additional shielding at the sampling stations. The adequacy of this shielding and the licensee's shielding analysis is under review by the inspector and Region III personnel.

c. Post Accident Sampling, Item II.B.3.2.B (Open).

The licensee has not yet completed this item due to delays in component delivery. The licensee has committed to an installation date of April 1, 1982.

d. Long Term Accident Monitoring, Items II.F.1.1.B.2, II.F.1.2.B.2, II.F.1.3, II.F.1.4, II.F.1.5, and II.F.1.6. (Open).

NRR has accepted the licensee's design. However, due to delays in component delivery the licensee has committed to an installation date of May 1, 1982.

e. Inadequate Core Cooling, Item II.F.2.3.B (Open).

The licensee has taken the position of the BWR Owners Group. This item will be reviewed further upon NRR resolution.

f. <u>RCIC Suction</u>, Item II.D.3.22B (Closed).

The inspector verified that the automatic switchover has been installed and procedures are in place which govern its use.

g. <u>HPCI/RCIC Space Cooling</u>, Item II.F.3.24 (Closed).

The inspector verified that the licensee has adequate spare cooling for HPCI and RCIC under the postulated conditions.

h. Loss of Power to Pump Seals, Item II.K.3.25B.1 (Closed).

The inspector verified that the licensee can restore power to RBCCW by supplying them from onsite emergency power. This would allow cooling for the recirculation pump seal coolers to be supplied.

The operators who were questioned as to how to connect the RBCCW pumps to onsite emergency power knew the correct method. However, they were unfamiliar with the TMI item, its requirements, and the licensee's response. The inspector informed the licensee that this type of information must be made available to the operators in order for them to understand the possible occurrences and know how to effectively handle them.

i. ADS Accumulator Qualification, Item II.K.3.28 (Open).

Initial licensee studies indicate the accumulators are designed per item recommendation. GE is performing a second evaluation though and the item is still under NRR review.

No items of noncompliance were identified.

10. Plant Trip

Following the plant trip on December 6, 1981, the inspector ascertained the status of the reactor and safety systems by observation of control room indicators and discussions with licensee personnel concerning plant parameters, emergency system status and reactor coolant chemistry. The inspector verified the establishment of proper communications and reviewed the corrective actions taken by the licensee.

All systems responded as expected and the plant was returned to operation on December 7, 1981.

No items of noncompliance were identified.

11. Procedures

The inspector verified that review and approval of permanent and temporary procedure changes were done in accordance with technical specifications; that temporary changes do not conflict with technical specification requirements; that procedure changes reflect technical specification revisions; that records of changes are maintained; that overall procedure content is consistent with technical specification requirements; and that technical contents are adequate to control safety related operations within applicable regulatory requirements. The following procedures were reviewed:

- а.
- ACP 1404.5, "Hold-Off Procedure" ACP 1404.6, "Jumper and Lifted Lead Control" b.
- c.
- OI 53, "Standby Liquid Control" d.
- е.
- f.
- g.
- IPOI IV.C.1, "Loss of Offsite Power" IPOI II.C, "Standby Gas Treatment Operation" h.
- IPOI III.C, "Reactor Scram" i.
- Fuel Loading and Reactor Loading Components Procedures 5, 9 and 29. j.

Technical Specification 6.8.3 states in part, "Temporary changes to procedures...shall be documented and promptly reviewed by the Operations Committee and by the Chief Engineer."

Administrative Control Procedure 1402.2, Section 6.3.4, states in part, "Temporary revisions shall be submitted to the Operations Committee and Chief Engineer within 30 days for review.

Contrary to the above Document Change Form Numbers 3197, 3246, 3253 and 3320 were not reviewed within 30 days.

This was identified as an item of noncompliance. (331/81-27-03)

12. Followup on Previously Identified Noncompliance, Unresolved, or Open Items

The inspector reviewed the following items to verify that the licensee's response and actions taken were in accordance with regulatory requirements, technical specifications, approved procedures, and accepted industry standards. The inspector also verified that the response and actions were done in a timely manner, and were in accordance with previously made commitments.

а. During the Performance Appraisal Inspection, it was found that several significant organization changes were made during the past year including the addition of a third Assistant Chief Engineer with the responsibility of Radiation Protection and Security, a Training Coordinator under the supervision of the Assistant Chief Engineer Technical Support, and Assistant Supervisors in both the Operations and Maintenance Departments. None of these organizational changes were reflected in Figure 6.2-1 of the Technical Specifications.

This was identified as an item of noncompliance (331/81-27-04).

The licensee has since submitted a Technical Specification change to reflect the current organization. As such we have no further questions regarding this matter.



- b. The Performance Appraisal Inspection also identified that the licensee did not appear to track cyclic design limits as required by Technical Specification 6.10.2.6. The inspector verified that the licensee does track these items as part of their startup/ shutdown packages and as required by surveillance Procedure STP 46A003. These records are available in the surveillance coordinator's office and on microfilm.
- c. Followup on OII 81-18-03. (Closed). The inspector verified that the licensee's valve lineup records are indexed and filed correctly.
- d. OII 81-18-02 Diesel Generator Fuel Oil (Closed). The licensee has been able to meet the required accuracy and repeatability of testing diesel fuel oil as required by ANSI N 195-1976. The licensee changed the fuel oil and cleaned thefuel oil tanks during the October 1981 outage. The licensee will continue to test the fuel oil for insolubles. Fuel oil exceeding the allowed specifications shall be placed within the required seven days.

No new items of noncompliance were identified.

13. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) throughout the inspection period and on January 14, 1982, to summarize the scope and findings of the inspection activities. The licensee acknowledged the statement by the inspector with respect to the four items of noncompliance (see paragraphs 2, 3, 11 and 12).