U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/83-11(DPRP)

Docket No. 50-331

License No: DPR-49

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

Facility Name: Duane Arnold Energy Center

Inspection At: Palo, IA

Inspection Conducted: June 27 through August 30, 1983

Inspector: J. S. Clardy

Approved By: R. D. Walker, Chief,

Projects Section 2C

Inspection Summary

Inspection on June 27 - August 30, 1983 (Report No. 50-331/83-11(DPRP)) Areas Inspected: Routine, unannounced inspection by the resident inspector of licensee action on previous inspection findings; operational safety; maintenance; surveillance; Licensee Event Reports; procedures; plant operations; plant trips; IE Circulars; audits; TMI items; headquarters and regional requests; significant events; independent inspection; and licensee meetings. The inspection involved a total of 172 inspector-hours onsite by one NRC inspector including 20 inspector-hours onsite during off-shifts. Results: No items of noncompliance or deviations were identified.

9-16-83 Date

9-16-83

DETAILS

1. Persons Contacted

- *D. Mineck, Plant Superintendent-Nuclear
- J. Vinquist, Assistant Plant Superintendent-Technical Support
- *B. York, Assistant Plant Superintendent-Operations
- C. Mick, Operations Supervisor
- R. Zook, Assistant Operations Supervisor
- *W. Miller, Technical Support Supervisor
- K. Young, Radiation Protection Supervisor
- *R. McCracken, Quality Control Supervisor
- J. Rushwick, Plant Performance Supervisor
- *A. Clason, Maintenance Supervisor
- E. Matthews, Corporate Quality Assurance Manager
- *J. West, Site Quality Assurance

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 contacted at the exit interviews.

2. Action on Previous Inspection Findings

- a. (Closed) Open Item (331/81-15-01(DPRP)): Design review and replacement of Barton Model 288 pressure switches. The licensee has commenced replacement of Barton 288 pressure switches with suitably ranged instruments.
- b. (Open) Open Item (331/82-07-03(DPRP)): Bullet resistant fire doors. The licensee requested an extension on replacement of the doors due to delays in door delivery. Acceptable remedial action will remain in place until new door installation is completed. A new date of January 31, 1984 for door installation was established.

3. Operational Safety Verification and Engineered Safety Features System Walkdown

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the inspection period. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of 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 High Pressure Coolant Injection (HPCI), Reactor Core Isolation Cooling (RCIC), and Diesel Generator (D/G) systems to verify operability. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments and barreling.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

No items of noncompliance or deviations were identified.

4. 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:

Recirculation Pump Motor Generator Set Preventative Maintenance Standby Liquid Control Preventative Maintenance Secondary Containment Interlock Repairs HPCI Speed Control Unit Replacement Main St.am Line Isolation Control Logic

Following completion of maintenance on the Residual Heat Removal (RHR), HPCI and RCIC systems, the inspector verified that these systems had been returned to service properly.

No items of noncompliance or deviations were identified.

5. Monthly Surveillance Observation

The inspector observed technical specifications required surveillance testing on the HPCI, RCIC, and 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 the following test activities: Surveillance Test Procedure (STP) 45A001: Core Spray Operability.

No items of noncompliance or deviations were identified.

6. Licensee Event Reports Followup

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.

| 82-31/03-1 | Closed | Reactor Building Vacuum Breaker Pressure Switch Out of Calibration. |
|--------------------|------------------|--|
| 82-32/03-0 03-1 | Closed Closed | Hinge Pin on "D" Residual Heat Removal Service Water (RHRSW) Check Valve Broken. "D" valve was repaired; remaining valves were inspected satisfactorily. |
| 82-33/03-0 | Closed | Failure of Containment Isolation Valve. Control valve 4306 on the drywell purge line was cleaned, reassembled and tested satis- factorily. CV4306 and similar valves have been placed on a preventative maintenance schedule. |
| 82-36/03-0 | Closed | Torus Water Level Exceeded Technical Specification Limits. Surveillance pro- cedures have been revised to ensure a torus discharge flow path is available prior to performing evolutions which could effect torus level. |

| 82-38/03-0 | Closed | Torus to Drywell Vacuum Breaker Control Valve 4327D Failure. This and other similar control valves were cleaned, rebuilt, and added to a preventative maintenance schedule. |
|--------------------------|------------------|--|
| 82-39/03-0 | Closed | 1G-21 Diesel Generator Start Failure. The air start solenoid was cleaned and tested satisfactorily. The solenoid on 1G-31 was cleaned also. The solenoids have been placed on a preventative maintenance schedule. |
| 82-40/03-0 | Closed | 1G-21 Diesel Generator Coolant Pressure Indicator Leak. |
| 82-48/03-0 03-1 | Closed Closed | Inoperable Intermediate Range Monitors (IRM). The IRM's were repaired during the 1983 outage. Calibration and repair procedures were revised to be more explicit. |
| 82-49/03-0 03-1 | Closed Closed | Inoperable IRM's. See previous entry. |
| 82-54/03-0 82-61/03-0 | Closed Closed | Residual Heat Removal Service Water Pumps Failure to Meet Discharge Requirements. |
| 82-63/03-0 | Closed | Reactor Building Isolation Damper Failure. The damper was replaced, and the air drying equip- ment has been upgraded to prevent moisture related failures. |
| 82-65/03-0 | Closed | Racking Mechanism For Low Pressure Coolant Injection (LPCI) Breaker 4401 Open. Access doors are now locked and procedures require doors to be shut and locked after maintenance. |
| 82-67/03-0 | Closed | LPCI Injection Valve Failed to Close. Valve yoke was repaired and maintenance procedures rewritten. |
| 82-68/03-1 | Closed | River Water Supply (RWS) Traveling Screen Wash Pump Inoperable. Couplings for the pumps have been added to the preventative maintenance schedule. |
| 82-70/09-0 82-73/03-0 | Closed Closed | Missed Surveillance Test Procedures (STP) STP's are now scheduled, tracked and re- |

| 82-71/03-0 | Closed | Suppression Pool Water Temperature Recorder Inoperable. |
|--------------------------|------------------|--|
| 82-72/03-0 | Closed | Reactor Building to Suppression Chamber Pressure Switches Out of Calibration. |
| 82-74/03-0 | Closed | Valves Not Locked in Position. The valves were locked and personnel reinstructed on locking valves. Procedures have been revised to clearly define what constitutes a locked valve. |
| 82-75/03-0 03-1 | Closed Closed | Reactor Building to Suppression Chamber Vacuum Breaker Pressure Switch Out of Cali- bration. |
| 82-76/03-0 | Closed | Drywell Pressure Switch Out of Calibration. |
| 82-77/03-0 | Closed | RHRSW Pump Failure to Meet Discharge Require- ments. The first stage impeller had loosened due to normal wear. The pump was rebuilt and tested satisfactorily. |
| 82-78/03-0 03-1 | Closed Closed | 1G-31 Diesel Generator (D/G) Inoperable. Tubing on the air start regulator was broken. D/G 1G-21 was checked for the same problem and both D/G's were checked during the 1983 outage. |
| 82-79/03-0 | Closed | "B" Core Spray Pressure Switch Out of Calibration. |
| 82-80/03-0 03-1 | Closed Closed | RWS Traveling Screen Wash Pump Inoperable. The coupling was out of alignment following previous repair. The coupling was realigned and tested satisfactorily. |
| 82-81/03-0 | Closed | "B" Standby Filter Unit Inoperable. The inopera- bility resulted from failure of a controller amplifier. The amplifier was replaced and tested satisfactorily. |
| 82-82/03-0 | Closed | "B" Main Steam Isolation Valve Leakage Control System Inoperable. Bypass valve 8403 would not open. The valve was repaired and tested satisfactorily. |
| 82-83/03-0 | Closed | RHR Snubber Inoperable. An evaluation demon- strated that the snubber failure did not affect system operation. The snubber was replaced. |
| 83-01/03-0 83-04/03-0 | Closed Closed | Reactor Core Isolation Cooling (RCIC) Inoperable For Corrective Maintenance. |

83-02/03-0 Closed Drywell to Torus Low Differential Pressure. The pressurization control valve was recalibrated and tested satisfactorily. 83-05/03-0 Closed RWS Pumps Inoperable. An instrument error made required data exceed ASME limits. The instruments were recalibrated and new reference data was taken. 83-06/03-0 Closed "D" MSIV LCS Inoperable. A blown fuse was replaced and the system was checked each shift to ensure power availability. 83-08/03-0 Closed Hydraulic Snubber Inspections. All hydraulic snubbers were inspected in the 1983 outage in accordance with revised inspection and surveillance procedures. Any degraded snubbers were repaired. "B" RHR Pump Running Pressure Switches Out 83-09/03-0 Closed of Calibration. The switches were recalibrated and tested satisfactorily. "B" Standby Gas Treatment Charcoal Bed 83-11/03-0 Closed Saturated. The fire protection deluge system leaked into the bed. The deluge system was modified so leakage will not drain into the charcoal beds. The charcoal bed was replaced and tested satisfactorily. 83-12/01-0 Closed Failure to Full Scram in Shutdown. The problem was identified as poor connections on the reactor protective system bridge rectifier. Full description of event and corrective actions are in Inspection Report 331/83-07(DPRP). 83-24/01-0 Closed Pipe Support Missing. A walkdown for torus attached piping modifications identified a possible overstress condition on a 3/4" RHR test/drain line. Engineering determined that a pipe support should have been installed in 1974, but never was. Emergency Core Cooling (ECC) was not degraded and the licensee promptly replaced the pipe support and evaluated the line for possible damage. In addition, no similar probems were identified and engineering personnel were retrained on prompt resolution of such issues.

No items of noncompliance or deviations were identified.

7. 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:

IPOI Volume 1, Section V.C. Shutdown IPOI Volume 1, Section III Scram OI 49, Residual Heat Removal System OI 16, Residual Heat Removal Service Water System OI 62/80/83, Nuclear Boiler, Main Steam ADS OI 70, Standby Gas Treatment System OI 03, Electrical Power System IPOI Volume C.4, Section R, Recirculation System Failures IPOI Volume C.4, Section H, Residual Heat Removal System Failures IPOI Volume C.4, Section V, Main Steam Pressure Control Failures ACP 1404.1 Shift Organization, Operation and Turnover ACP 1404.4 Operating Logs.

No items of noncompliance or deviations were identified.

8. Review of Plant Operations

During the inspection period the inspector reviewed the following activities:

a. Procurement

The inspector reviewed procurement and storage activities to ascertain whether the purchase of components, materials and supplies used for safety related functions, is in conformance with the licensee's approved QA program and implementing procedures; non-conforming items are segregated and marked accordingly; applicable preventative maintenance is performed; housekeeping and environmental requirements are met; and, limited shelf-life items are controlled.

b. Review and Audits

On July 13, 1983, the inspector attended a safety review committee meeting. The inspector verified that provisions of technical specifications dealing with membership, review process, frequency, and qualifications were met. The inspector also verified that decisions made were reflected in the meeting minutes and that corrective actions proposed were taken. During the inspection period, the inspector reviewed preparations for and portions of an audit conducted by the licensee's offsite audit team and verified conformance with technical specifications and QA procedures.

c. Training

The inspector attended portions of the licensee's operator requalification lecture series and verified that lesson plan objectives were met and that training was in accordance with the approved operator requalification program schedule and objectives.

The inspector verified by direct questioning of one new, one existing, and one temporary employee that administrative controls and procedures, radiological health and safety, industrial safety, controlled access and security procedures, emergency plan, and quality assurance training were provided as required by the licensee's technical specifications; verified by direct questioning of one craftsman and one technician that on-the-job training and fire fighting training were provided.

d. Environmental Protection

The inspector verified the installation and operability of selected sampling (monitoring) stations and associated equipment.

e. Licensee Action Concerning Identified Problems

The inspector reviewed corrective actions taken by the licensee pertaining to recurring failures and resolution of identified discrepancies involving safety-related components.

During the inspection period the licensee identified several occurrences which did not affect plant operability or safety. However, if corrective actions are inadequate there is a possibility of recurrence of events that could affect plant operability or safety.

On July 11, the licensee notified the resident inspector of a possible overstressed condition on a Residual Heat Removal (RHR) test line vent and drain. An additional pipe support should have been installed in 1974 but never was. The possible overstressed line was discovered in April 1983 by a contractor performing a torus attached piping walkdown. The vent and drain line was not part of the walkdown, but identified as a peripheral observation. The issue was not resolved until July 1983. Emergency Core Cooling (ECC) capability was not degraded and the pipe support was installed. Licensee engineering personnel were reinstructed on recognition of important events and their prompt resolution. In addition, on July 11, the licensee identified a supplemental design change had been performed prior to obtaining Quality Control (QC) or Quality Assurance (QA) approval. The change added a seismic support to a Reactor Core Isolation Cooling (RCIC) electrical junction box. RCIC operability was not impaired and QA and QC subsequently approved the change.

Two incidents of wires being installed to the wrong connections during a design change request (DCR 1016B) were also discovered. The contractors working on the DCR package found and corrected the errors. The problem though was not identified to the licensee until one week later.

On August 11, at the conclusion of surveillance testing on the CARDOX system, a fire watch was released from the cable spreading room without the CARDOX being returned to service. This condition existed for 10 minutes. Technical Specifications require the CARDOX to be operable but allow the licensee one hour to establish a fire watch. The cause for the event was operator error in that a fuse block was improperly replaced and verification of control room annunciators did not occur. The licensee restored the system to operation and retrained the operator on fuse block installation and verification of actions. The licensee will also revise the surveillance procedure to address installation and verification.

The corrective actions associated with alleviating these types of preceeding events is an Open Item (331/83-11-01(DPRP)).

No items of noncompliance or deviations were identified by the resident inspector; however, on August 10 the licensee identified ground water analysis for Sr-89 and Sr-90 had not been performed in 1981 or 1982. This is required by Environmental Technical Specifications Section 4.3.1.A. The licensee is reviewing their environmental sampling program for other oversights. A regional specialist will follow up on this event. This event is also considered an Unresolved Item (50-331/83-11-02(DPRP)).

9. Plant Trips

Following the plant trip on July 1, 1983, 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 July 2, 1983.

No items of noncompliance or deviations were identified.

10. IE Circular Follow-up

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.

(Closed) IE Circular 80-10: Environmental Qualification of Equipment. The licensee is working on this circular in conjunction with IE Bulletin 79-01B.

(Closed) IE Circular 80-12: Valve Actuator Failures. The licensee uses none of the subject valves at DAEC. Similar valves were inspected and no problems identified.

(Closed) IE Circular 81-03: Shift Technical Advisors (STA) Role. The licensee's procedures adequately address the STA's role and importance of reporting operational events.

(Closed) IE Circular 81-05: Self-Aligning Rod End Bushings. The licensee has taken actions in accordance with the circular and revised their inspection procedures to address and correct this problem.

(Closed) IE Circular 81-08: Foundation Materials. Recommended actions were for construction permit holders only.

(Closed) IE Circular 81-11: Decay Heat Removal in Pressurized Water Reactors.

(Closed) IE Circular 81-12: Periodic Testing of Protective System. DAEC utilizes no trip breakers in their protective system.

(Closed) IE Circular 81-13: Torque Switch Electrical Bypasses.

(Closed) IE Circular 81-14: Main Steam Isolation Valve Closure Failures. Failures were evaluated and compared to the system at DAEC, no actions were required.

No items of noncompliance or devations were identified.

11. Audit Program Implementation

The inspector verified by record review and direct observation that licensee audits were performed by qualified personnel and that activities were done in accordance with regulatory requirements and industry guides. The inspector also verified that; audit reports clearly defined scope of the audits and results; frequency of audits was in conformance with Technical Specifications and the QA program; appropriate follow-up actions were taken; and the audited organization's response was adequate and usually timely.

No items of noncompliance or deviations were identified.

12. TMI Action Items

(Closed) II.F.1.4: Containment Pressure Monitor. NRR considers this item closed for DAEC (June 27, 1983, letter, D. Vassallo to L. Liu). Region III also considers this item closed.

(Closed) II.F.1.5: Containment Water Level Monitor. NRR considers this item closed for DAEC (June 27, 1983, letter, D. Vassallo to L. Liu). Region III also considers this item closed.

(Closed) II.F.1.6: Containment Hydrogen Monitor. NRR considers this item closed for DAEC (June 27, 1983, letter, D. Vassallo to L. Liu). Region III closed this item in Inspection Report No. 331/82-19(DPRP).

No items of noncompliance or deviations were identified.

13. Headquarters Requests

IE Information Notice 83-37: Transformer Failures

The inspector was informed by the Office of Inspection and Enforcement that the subject transformers were installed at DAEC. The licensee inspected the transformers under a general inspection procedure during the 1983 outage and found no degradation. The licensee has committed to writing a specific inspection procedure directed to the concerns of the information notice and performing it during the next appropriate shutdown. The final inspection of the transformers is an Open Item (50-331/83-11-03(DPRP)).

No items of noncompliance or deviations were identified.

14. Regional Requests

a. TMI Action Item I.C.6 Performance Verification

The inspector relayed the concerns of the Regional office to the licensee. The licensee does not use personnel to mass check equipment/system alignments after all monthly surveillance testing. If a second check is required, it is performed immediately. Redundant checking is required on equipment worked on outside of normal "out of service" procedures, including leak rate testing. Redundant checks are also provided on valve alignments done inside instrument rootstops during testing. Administrative Control Procedures 1404.5 "Hold-Off Procedure" and 1404.6 "Jumper and Lifted Leads" adequately address the concerns of Item I.C.6. NRR closed this item on November 4, 1981 (letter, Ippolito to Arnold) and Region III closed it in Inspection Report Nos. 331/81-07(DFRP) and 81-09(DPRP).

b. Notification of Significant Events

The inspector presented the interpretation of 10 CFR 50.72(a)(5) to the licensee. That section of the regulation requires that each licensee notify the NRC Operations Center within one hour of "Any event requiring initiation of shutdown of the nuclear power plant in accordance with Technical Specification Limiting Conditions for Operation."

The interpretation is that those type of events where a shutdown is required, but not initiated, are not required to be reported under 10 CFR 50.72(a)(5). This conclusion does not exempt the licensee from reporting those type of events to the Region as specified in the prompt reporting requirements of the Technical Specifications.

No items of noncompliance or devations were identified.

15. Significant Events

a. On August 9, 1983, a secondary containment interlock malfunctioned. Secondary containment was broken momentarily, but immediately restored by personnel in the reactor building access door. The licensee declared an unusual event in accordance with their emergency procedures and complied with all notification requirements. A guard was stationed to monitor access and the doors until the interlock was repaired.

The cause of the evert was evaluated by the licensee to be accidental. The inspector concurs with is evaluation. The interlock electrical connections are slip on terminal lugs which can be easily removed inadvertently by persons or equipment moving through the door.

Prior to the event the licensee had initiated a study (still in progress) on ways to alarm the door or otherwise alleviate this type of occurrence.

The licensee will issue an LER on this event and the inspector will consider the corrective actions as an Open Item (50-331/83-11-04 (DPRP)).

b. On August 12, a contract laborer accidently knocked the IG-31 (B) D/G unit/parallel switch to parallel. The normal position is unit. This caused an annunciator in the control room to alarm and an auxiliary operator was dispatched to the D/G room to correct the problem. The condition existed for 3 minutes. The licensee will submit an LER on the event. Because of previous events the licensee has initiated a study of protective coverings for switchgear.

No items of noncompliance or deviations were identified.

16. Independent Inspection

Due to the many recent personnel changes on site, the inspector requested that: the licensee inform the NRC in writing of these changes; and, if required upgrade their Technical Specification organization chart to reflect current practices and structures.

No items of noncompliance or deviations were identified.

17. Licensee Meetings

On July 11, 1983, Commissioner Gilinsky, Mr. J. G. Keppler, and members of their staffs met with Mr. L. Liu and members of his staff to discuss current regulatory issues and the licensee's five year plan.

18. Exit Interview

Due to the length of the inspection and the diversity of areas inspected, the exit interviews were conducted on a weekly basis between the NRC inspector and the appropriate licensee personnel. In each case the scope and findings of the individual inspection areas were summarized.