

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/84-08(DRP)

Docket No. 50-331

License No. DPR-49

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

Facility Name: Duane Arnold Energy Center

Inspection At: Palo, IA

Inspection Conducted: June 1 - July 25, 1984

Inspector: L. S. Clardy

Approved By: *D.C. Boyd*
D. C. Boyd, Chief
Projects Section 2D

8/15/83
Date

Inspection Summary

Inspection on June 1 - July 25, 1984 (Report No. 50-331/84-08(DRP))

Areas Inspected: Routine, unannounced inspection by the resident inspector of licensee actions on operational safety; maintenance; surveillance; licensee Event Reports; TMI items; and independent inspection. The inspection involved a total of 147 inspector-hours onsite by one NRC inspector including 30 inspector-hours onsite during off-shifts.

Results: Of the areas inspected no items of noncompliance were identified.

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DETAILS

1. Persons Contacted

- *D. Mineck, Plant Superintendent-Nuclear
P. Ward, Director, Nuclear Division
- *J. Vinqvist, Assistant Plant Superintendent-Technical Support
- *R. Hannen, Assistant Plant Superintendent-Operations
K. Young, Assistant Plant Superintendent-Radiation Protection and Security
- C. Mick, Operations Supervisor
- A. Clason, Maintenance 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 personnel present at the exit interviews.

2. Operational Safety Verification

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 Diesel Generator and High Pressure Coolant Injection systems to verify operability. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments and handling.

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.

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 and reviewed:

"B" Diesel Generator (D/G) Supercharger Repair

Following completion of maintenance on the D/G, the inspector verified that the system had been returned to service properly.

No items of noncompliance or deviations were identified.

4. Monthly Surveillance Observation

The inspector observed technical specifications required surveillance testing on the High Pressure Coolant Injection, Reactor Core Isolation Cooling and Diesel Generators 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.

No items of noncompliance or deviations were identified.

5. 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.

- a. (Closed) LER 84-15: Reactor scram due to personnel error. During startup on April 30, 1984 the operator did not range up the IRMs in time to prevent an IRM off scale scram. The operator was placed on a performance improvement program. The incident will also be used in the operator requalification program.

- b. (Closed) LER 84-17: Inadvertent isolation of the High Pressure Coolant Injection (HPCI) system. The technician was disciplined, and the surveillance procedure was changed to use a voltmeter instead of an ohmmeter, and to clarify the terminal arrangement.
- c. (Closed) LER 84-18: Inadvertent isolation of Reactor Core Isolation (RCIC) system. The technicians were cautioned to be more careful in removing of relay covers and similar tasks. The licensee has a design study underway to determine the feasibility of permanent test switches.
- d. (Closed) LER's 84-19 and 24: Spurious Reactor Water Cleanup (RWCU) system isolation. The licensee will install a multi-channel recorder in the isolation logic to attempt to identify the isolation signal.
- e. (Closed) LER 84-20: Spurious initiation of the Standby Filter Unit.
- f. (Closed) LER 84-21: Diesel Generator Supercharger failure. The "B" Diesel Generator (D/G) failed when the supercharger seized. The cause of failure was thermal creep of the aluminum blower impeller lobes. The licensee installed a new supercharger and returned the unit to service. Further details are in paragraph 7a of this report.
- g. (Closed) LER 84-22: Spurious "B" Train Group III isolation.
- h. (Closed) LER 84-23: High pressure scram switches out of calibration. The switches were recalibrated and tested satisfactorily.

No items of noncompliance or deviations were identified.

6. Followup on Three Mile Island (TMI) Items

(Open) Item II.K.3.18, Automatic Depressurization System (ADS) Logic Modifications. This item was closed by NRR on June 6, 1984 by letter from D. Vassallo to L. Liu. Region III will inspect this item when modifications are completed in the licensee's next refueling outage.

No items of noncompliance or deviations were identified.

7. Independent Inspection

a. "B" Diesel Generator Inoperability

On June 17, 1984 the licensee experienced a failure of the "B" Diesel Generator (D/G). The D/G was undergoing a monthly operability test when the unit stopped. Subsequent inspection revealed the scavenging air blower (supercharger) to have rubbed its housing and destructed.

The licensee disassembled and inspected the D/G for further damage. Pieces of the lobes and shavings were found in the air receiver and turbo charger unit. Some aluminum dust was found around the fuel injectors. The D/G was repaired and returned to service on June 30, 1984.

The cause of the failure may have been plastic deformation of the blower lobes and subsequent rubbing of the lobes against the housing. The main corrective actions are to take initial lobe to lobe and lobe to housing clearance measurements and continue over D/G life. At a predetermined measurement the blower would be replaced.

The inspector observed and reviewed the disassembly, inspection, cleaning and reassembly and testing of the D/G. The licensee took prompt and effective action to determine and correct the problem.

b. Licensee Vendor Audit

The inspector reviewed a licensee audit of the Crosby Valve and Gage Company. The licensee identified that Crosby Gage supplied gages that were not manufactured to an acceptable QA program. The licensee identified this before any gages were installed in the plant.

A copy of the audit was forwarded to the Region III office to identify if further NRC action is needed.

c. Plant Trips

The inspector reviewed the events up to and following plant trips on July 13 and 14, 1984. The licensee took appropriate actions in each case and all systems responded as expected.

The trip on July 13 was a result of scaffolding equipment jarring an instrument rack. Sensitive instrument racks have since been marked accordingly by signs or painted caution zones.

The plant trip on July 14 was due to the undervoltage grid relays picking up when a fossil unit on the grid experienced control problems. The licensee's unit was subcritical and not on line at the time. If the unit had been on line the transient would not have resulted in a scram.

The Power Systems Branch of the NRC may request an evaluation of the event from the licensee.

d. River Water Level

Due to the heavy rainfall during the month of June the inspector monitored river water level daily to ensure no high level conditions existed and to ensure licensee actions were adequate if high level conditions existed. No abnormalities were noted in river level.

No items of noncompliance or deviations were identified.

8. Exit Interview

Due to the length of the inspection and the diversity of areas inspected, 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.