U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/91011(DRP)

Docket No. 50-331 License 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

Inspection At: Palo, Iowa

Inspection Conducted: May 25 through July 5, 1991

Inspectors: M. Parker
C. Miller
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Approved: _____ 7/17/91
R. L. Hague, Chief Date
Reactor Projects
Section 3C

Inspection Summary

Inspection on May 25 through July 5, 1991 (Report No. 50-331/91011(DRP))
Areas Inspected: Routine, unannounced inspection by the resident inspectors and a regional based inspector of licensee event reports followup; followup of events; operational safety; maintenance; surveillance; plant trips; 10 CFR Part 21 inspections; regional requests; management meetings; and report review.
Results: An executive summary follows:

Operations

Operator performance was good this period. During the reactor scram caused by an MSIV closure, operator response was timely and appropriate in bringing the plant to a safe shutdown condition.

The reactor operated at about 100% power throughout most of the period. The licensee reduced reactor power for routine surveillances, load following, and due to condenser vacuum limitations. The reactor automatically scrammed on high flux due to an MSIV closure on June 22, 1991, and the reactor remained shutdown for repairs until June 30, 1991. See Section 7.

Plant efficiency and condenser vacuum problems were a concern and distraction to operators this period. The primary cause for these problems was debris in the main condenser water boxes. The licensee decided not to shut down in May to clean condenser water boxes, but instead decided to wait for a forced outage. That opportunity came on June 22, 1991, and the licensee cleaned the condenser water boxes and cooling tower basins.

Maintenance/Surveillance

Extensive planning and coordination efforts by outage management and maintenance organizations were evident in a well run forced outage period. MSIV repairs, recirculation suction valve operator repairs, feedwater check valve repairs, condenser water box cleaning, and recirculation M/G set brush replacements were successfully completed. Some problems were noted with maintenance activities, including control building chiller delays and soldering practices. See Section 5a. Maintenance on numerous air lock doors helped yield good secondary containment integrity results. This points to the need for timely identification and repair of air lock door seals. See Section 6a.

Problems with implementing surveillance procedure changes were noted, and appeared to be related to interpretation of licensee procedures governing procedure changes. NRC and licensee review is continuing in order to clarify the issue. See Section 6b.

Engineering and Tech Support

The licensee's 10 CFR Part 21 reporting program was found to reflect the requirements specified in the regulations. Procedures, records, and posting requirements were generally acceptable. A review of one 10 CFR Part 21 record raised questions concerning the adequacy of the engineering evaluation and the licensee's reportability conclusion. These issues will be reviewed during a future inspection. See Section 8.

Safety Assessment/Quality Verification

Performance in this area included a weakness in that the scope of the corrective action for a previous reactor scram due to a solder joint failure was not expanded sufficiently to identify other areas of potential vulnerabilities. This omission allowed the bad solder joint, which was the cause for the MSIV closure scram, to remain undetected.

DETAILS

1. Persons Contacted

R. Anderson, Assistant Operations Supervisor
R. Anderson, Senior Outage Project Manager
J. Bjorseth, Assistant Operations Supervisor
*D. Blair, Group Leader, Internal Audits, Quality Assurance
*C. Bleau, Systems Engineering Supervisor
C. Bock, Systems Engineer
A. Browning, Supervising Engineer, Licensing
*S. Catron, Licensing Engineer
*V. Crew, Technical Support Engineer
J. Edom, Reactor and Computer Performance Supervisor
H. Giorgio, Radiological Engineering Supervisor
R. Hannen, Outage Manager
*D. Jantosik, Group Leader, Materials Supplier Quality
B. Lacy, Manager, Design Engineering
M. McDermott, Maintenance Superintendent
*R. McGee, Technical Support Specialist
*C. Mick, Operations Supervisor
W. Miller, Supervising Engineer, Analysis Engineering
*J. Nugen, Reactor and Computer Performance Engineer
T. Olson, Maintenance I&C
*K. Peveler, Corporate Quality Assurance Manager
J. Probst, Technical Support Engineer
K. Putnam, Technical Support Supervisor
B. Schenkelberg, Fire Protection
A. Steen, Operations Shift Supervisor
*J. Thorsteinson, Assistant Plant Superintendent, Operations Support
*G. Van Middlesworth, Assistant Plant Superintendent, Operations
J. West, Acting Supervisor, Engineering Evaluation and Practices
D. Wilson, Plant Superintendent, Nuclear
K. Young, Assistant Plant Superintendent, Radiation Protection

U. S. Nuclear Regulatory Commission (NRC)

J. McCormick-Barger, Project Engineer
*C. Miller, Resident Inspector
*M. Parker, Senior Resident Inspector

In addition, the inspectors interviewed other licensee personnel including operations shift supervisors, control room operators, engineering personnel, and contractor personnel (representing the licensee).

*Denotes those present at the exit interview on July 5, 1991.

2. Licensee Event Reports Followup (92700) (90712)

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 actions were accomplished, and corrective actions to prevent recurrence had been accomplished in accordance with technical specifications.

a. (Closed) Licensee Event Report (LER) 90-001 (331/90001-LL): Auto Start of Standby Emergency Diesel Generators Due to Switchyard Component Failure. On March 15, 1990, a coupling capacitor potential device (CCPD) on the 161KV Vinton line failed, causing a short lived fire and opening of breaker 7510 on the 161KV line and breaker 3110 on the 345KV line. The resulting voltage transient caused both emergency diesel generators (EDGs) to start. Neither EDG supplied power to its respective bus since the two breakers isolated the fault within 200 milliseconds, allowing normal and alternate power to remain available. The Palo Fire Department was called to respond to the fire, but the fire extinguished itself before any fire fighting efforts were needed. The CCPD is suspected to have failed due to cracks caused by age that resulted in loss of insulating oil and subsequent internal arcing. On March 21, 1990, the licensee used thermography equipment to look for cracks in other CCPDs and found no other problems.

From discussions with the CCPD vendor, the licensee determined that the failure was rare and random. However, in addition to replacing the failed CCPD and another one found to be leaking oil, the licensee implemented several corrective actions. These actions included implementing a periodic thermographic inspection (every six months) of switchyard components and developing a formal plan for improving overall switchyard maintenance.

The inspectors reviewed the periodic thermographic inspection preventive maintenance action request (PMAR No. 1048526) and the draft procedure for the substation inspections (GMP-ELEC-015). These activities appear to adequately address corrective actions to prevent recurrence. This LER is closed.

b. (Closed) Licensee Event Report LER) 90-017 (331/90017-LL): Reactor Water Cleanup System Isolation and Standby Filter Unit Initiation Due to Inadvertent Loss of the "B" Instrument AC System Bus. On September 20, 1990, a loss of the "B" instrument AC Bus (1Y21) resulted in a Group V (RWCU) isolation and "B" standby filter unit initiation. The power loss occurred after a fuse blew in instrument AC inverter 1D25. The inverter should have switched to the alternate power source, but a transfer override switch on a circuit board inside the inverter cabinet was in the override position. This prevented the static switch of the inverter from transferring automatically and left 1Y21 on a dead bus. Power was restored to the bus by manually transferring 1Y21 to its alternate supply.

The transfer override switch was initially intended for testing purposes. The licensee decided to eliminate this switch since it could not determine how or when the switch was mispositioned. On September 21, 1990, the switch was replaced with test pins. The test pins will prevent inadvertent mispositioning of the switch and may be jumped to allow override when necessary. Similar action was taken for the "A" instrument AC inverter. These two inverters appear to be the only inverters at DAEC with a transfer override switch internal to the cabinet.

The licensee was unable to determine the root cause of the blown fuse. However, they believe that the fuse failed when a voltage transient exceeded the specified capacity of the inverter and the inverter was unable to auto-transfer the bus load to the regulating transformer. Had an auto-transfer occurred, the fuse may not have blown and the event may not have occurred. This LER is closed.

No violations or deviations were identified in this area.

3. Followup of Events (93702)

During the inspection period, the licensee experienced several events, some of which required prompt notification of the NRC pursuant to 10 CFR 50.72. The inspectors pursued the events onsite with licensee and/or other NRC officials. In each case, the inspectors verified that the notification was correct and timely, if appropriate, that the licensee was taking prompt and appropriate actions, that activities were conducted within regulatory requirements, and that corrective actions would prevent future recurrence. The specific events are as follows:

- June 22, 1991 - Automatic reactor scram on high flux due to "B" outboard MSIV closing after a 2 inch solder joint failed on the MSIV nitrogen header. (See Section 7 for further details)

- June 23, 1991 - PCIS Group IV (shutdown cooling) isolation due to pressure spike while starting "D" RHR pump.

No violations or deviations were identified in this area.

4. Operational Safety Verification (71707) (71710)

The inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators during the inspection. The inspectors 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. It was observed that the Plant Superintendent, Assistant Plant Superintendent of Operations, and the Operations Supervisor were well informed of the overall status of the plant and that they made frequent visits to the control room and regularly toured the plant. The inspectors, by observation and direct interview, verified

that the physical security plan was being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the inspection, the inspectors walked down the accessible portions of the MSIV Nitrogen Supply system to verify operability by comparing system lineup with plant drawings, as-built configuration, or present valve lineup lists; observing equipment conditions that could degrade performance; and verifying that instrumentation was properly valved, functioning, and calibrated.

Fire Stop Penetration

On June 19, 1991, the inspectors discovered an uncapped penetration in an effective fire stop wall on the west side of the intake structure. An extension cord had been run through the penetration without implementing the proper compensatory measures as required by ACP-1412.4, "Fire Impairments to Fire Protection Systems."

The inspectors discussed the discrepancy with the fire protection supervisor. The licensee then stuffed the penetration with fire pillows and generated a fire protection impairment request for the penetration.

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 violations or deviations were identified in this area.

5. Monthly Maintenance Observation (62703)

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 was assigned to safety related equipment maintenance which may affect system performance.

The following maintenance activities were observed/reviewed:

Electric Fire Pump repacking

MSIV repairs

MSIV Nitrogen Header repairs

"B" Control Building Chiller repairs

LIS-4592 "D" replacement and calibration

River Water Intake Structure

a. Forced Outage Activities

The inspectors observed numerous maintenance activities during the forced outage period following the June 22, 1991, reactor scram. Outage activities were well planned and implemented in most cases. Significant repairs included condenser water box cleaning, feedwater check valve leak repairs, neutron monitoring system work, recirculation system suction valve motor operator replacement, stem and seat repairs on two MSIVs, recirculation M/G set brush replacements, and MSIV nitrogen line repairs.

After determining that a failed solder joint in the MSIV nitrogen header was a cause of the June 22, 1991, reactor scram, the licensee replaced a two inch elbow in the header. The inspectors observed repair activities on the two inch MSIV nitrogen header. The inspectors noted that the workers soldering the two inch joint did not have the general procedure for soldering and brazing (NGD-1507.1) at the job site. Although this was not an absolute requirement because of the experience of the individuals involved, the inspectors noted some problems with the work and the work package. Reviewing the work package, the inspectors noted that the copy of NGD-1507.1 included in the package was a 1988 version, and not the most recent edition. The inspector also noted that scribe lines required by the procedure were not marked on the joints which were installed. These scribe lines are used to verify proper fit up of the joints. Improper fit up was listed as a root cause of the joint failure which caused the MSIV closure. The inspectors also noted that these joints were not required to be examined by ultrasonic testing, which was a recommended corrective action for copper piping of two inch and above diameter following the September 13, 1990, reactor scram that was caused by instrument air header solder joint failure. The inspectors reviewed these findings with the mechanical maintenance supervisor and the quality control supervisor. The piping which was installed was replaced several days later with stainless steel tubing in conjunction with a modification on the MSIV nitrogen header. The quality control group generated a nonconformance report to address and resolve these work control issues (NCR-91052).

The licensee has now increased the initial scope of the corrective action for the September 13, 1990, scram in order to include inspection and repair of two inch and above joints in all systems

capable of tripping the reactor upon failure. Had the scope and timing of the previous corrective actions been adequate, the June 22, 1991, scram may well have been prevented.

At the end of the period some long standing maintenance requests had not been completed, including control building chiller repairs and instrument air dryer solder joint repairs. The inspectors will continue to follow these activities in future inspections.

b. River Water Intake Structure

Due to the increased sediment buildup in the Residual Heat Removal Service Water and Emergency Service Water pit structure, the licensee initiated plans to pump out the river water intake structure to prevent potential carry over of sediment from the intake structure. On July 1, 1991, water level dropped to an acceptable level to accommodate inspection and pump out of the intake structure. Inspection of the pit identified that the sediment level was between three to six feet deep in the pump pit area and six to nine feet deep in the fore-bay area of the intake structure. Also, the riverbed level was noted to have built up to the top of the sand gates, allowing carryover of sediment into the intake structure. Upon completion of the inspection, divers removed the buildup of sediment present in the intake structure.

Plans are presently being made to pump out the pump house pit structure, which has been previously measured at two to three feet of sediment. Also, river water level had decreased significantly from heavy rainfalls in May 1991, which should allow resumption of installation of the sediment management control devices (Iowa Vanes).

c. MSIV Repairs

During the forced outage, the licensee repaired a steam leak, caused by stem galling, on the "C" outboard MSIV. The galling appeared to be caused by stellite surfaces on the valve's backseat. The licensee removed the raised edges on the galled stem and repacked the valve. For a long term fix, the licensee is communicating with the vendor (Edwards Valve) and General Electric on ways to eliminate the cause of the stem galling. A local leak rate test performed between "C" inboard and outboard MSIVs indicated unacceptable leakage. A second local leak rate test of "C" outboard MSIV indicated acceptable leakage. The licensee, therefore, decided to disassemble the "C" inboard MSIV to investigate the cause of unacceptable leakage. The licensee found some scratches on the nonseating portion of the valve's disc caused by guide pads which were installed during the 1990 refueling outage without rounding off the edges. "C" and "B" inboard MSIVs are the only MSIVs which are canted from the vertical plane, and this canted position makes these valves more susceptible to problems with the guide pads. Although the licensee smoothed the pads, replaced the disc, and used the opportunity to grind the "C" inboard valve's seat smooth, they estimate that the initial leak rate failure was due more to the

method of cold testing the valve than actual seating problems with the valve. Therefore, after completing a successful leak rate test of "C" inboard MSIV, the licensee decided not to test the "B" inboard MSIV. The MSIVs (especially the canted valves) have shown a history of failing leak rate tests prior to the 1990 refueling outage, when improved operating mechanisms were installed and internals were replaced or modified. These local leak rate failures were the first leak rate tests and failures since that refueling outage. The inspectors will continue to follow the licensee's plans to resolve problems with the MSIV in future inspections.

Following completion of maintenance on the electric fire pump, the inspectors verified that this system had been returned to service properly.

No violations or deviations were identified in this area.

6. Monthly Surveillance Observation (61726)

The inspectors observed technical specifications required surveillance testing 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 inspectors also witnessed portions of the following test activities:

STP-42A004-Q - Main Steam Line High Flow Quarterly Instrument Calibration

STP-47C001-CY - Secondary Containment Integrity

STP-48A001-SA - Standby Diesel Generators Monthly Operability Test

STP-413D001-A - CO_2 Cardox System Operability Test

a. Secondary Containment

During the forced outage, the licensee initiated several Preventative Maintenance Action Request (PMARs) to repair secondary containment air lock doors and seals. Over the past several months, the licensee has been unable to maintain secondary containment integrity high enough to allow opening of secondary containment cable penetrations. Therefore, the licensee has placed additional controls on cable penetrations to ensure that secondary containment integrity is maintained.

Following repairs to the secondary containment air lock doors, a secondary containment integrity test was performed on June 29, 1991, which yielded the following results; 0.425 inches vacuum of water at 3960 cfm of standby gas treatment (SBGT) flow and 0.258 inches vacuum at reduced (3100 cfm) SBGT system flow. Upon opening the 13 square inch cable penetration, vacuum lowered to 0.398 inches of water at 3980 cfm flow. While these results were acceptable (acceptance criteria is 0.25 inches vacuum at less than or equal to 4000 cfm) and the best results in recent periods, the testing also identified that the door seals are a major contributor to secondary containment integrity. The licensee needs to maintain a continual vigilance on these doors, and initiate timely repairs upon identification of any deficiencies.

b. Surveillance Procedure Changes

While observing performance of portions of STP-413D001, "CO_2 Cardox System Operability Test", an operator informed the inspectors that certain portions of the surveillance procedure needed to be changed, and these changes would be processed while performance of the procedure continued. The inspectors discussed this practice with the operations shift supervisor (OSS) as it appeared to conflict with licensee's procedure 1406.1, "Procedure Use and Adherence", which implement technical specification requirements for procedural compliance. The OSS temporarily stopped the procedure to clarify the DAEC position on procedure changes. Members of plant management noted that some of the proposed changes to the procedure steps did require approval before continuing, but made the decision that a deletion of the STP Section 7.2 could be accomplished with verbal approval, allowing the performance of the procedure to continue prior to formal completion of the procedure change required by licensee procedure 1406.3, "Revisions of Procedures and Instructions."

The inspectors conversed with the Operations Supervisor, Surveillance and Testing Supervisor, Assistant Plant Superintendent for Operations Support, and Assistant Plant Superintendent for Operations and Maintenance to clarify their position as to what level of review and sign off is required. The inspectors explained their concern that informal, verbal approvals of procedure changes may not receive the level of review intended by technical specifications, industry standards, or licensee procedures. The concern is generic to most DAEC procedures in that a changed procedure could be performed without receiving an adequate review and documentation until some time following the performance of the affected addition, deletion, or change. The inspectors have asked the licensee to review and clarify their procedure change policies, and will continue to review these written and implied policies in future inspections.

No violations or deviations were identified in this area.

7. Plant Trips (93702)

Following the plant trip on June 22, 1991, the inspectors 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 inspectors verified the establishment of proper communications and reviewed the corrective actions taken by the licensee.

On June 22, 1991, the reactor automatically scrammed on APRM high flux. The reactor scram was caused by the closure of the "B" outboard MSIV. The closure of the MSIV caused reactor pressure to increase and a resultant increase in reactor flux. The reactor ultimately tripped on APRM high flux. All engineered safety features responded as expected following the reactor scram, including PCIS Groups II through V isolations, resulting from the reactor vessel level shrink.

The licensee determined that the MSIV closed due to a failed solder joint on a two inch copper fitting on the nitrogen system in conjunction with a loose swage lock fitting on the two way exhaust valve on the MSIV operating cylinder. Thus, with a fitting leak bleeding operating pressure from the underside of the piston and insufficient nitrogen makeup, the "B" outboard MSIV went closed. No other MSIVs were noted to have exhibited movement.

The licensee proceeded to cold shutdown to accomplish necessary repairs and to perform additional forced outage activities. Major activities included circulating water box cleaning, feedwater check valve repairs, reactor recirculation MG set brush replacement, and MSIV repairs to both the "B" outboard MSIV and the "C" outboard MSIV which had exhibited minor stem galling and a packing leak.

The licensee repaired the failed solder joint and hydrostatically tested the nitrogen supply system for the outboard MSIVs and identified six additional solder joints which exhibited leakage. Due to previous problems with large diameter (greater than two inch) solder joints, the licensee has replaced all two inch copper piping in the steam tunnel for the MSIV nitrogen supply. The copper piping was replaced with stainless steel tubing. Additional inspections performed on the nitrogen system (specifically the MSIV supply) did not identify any other leakage. The licensee had previously experienced a reactor scram on September 13, 1990, due to a failed three inch solder joint on the instrument air system.

The licensee commenced a reactor startup on June 30, 1991. The reactor was declared critical on June 30, 1991, with a 192 second period. This concluded a nine day forced outage following the reactor scram.

No violations or deviations were identified in this area.

8. 10 CFR PART 21 Inspection (36100)

An inspection of the licensee's 10 CFR Part 21 reporting program was performed to determine if existing procedures and controls were adequate to ensure the reporting of applicable defects and noncompliances. In addition, an inspection of implementation of the procedures and controls were performed to ensure compliance to the licensee's 10 CFR Part 21 reporting program.

The inspectors reviewed licensee procedure number 114.2, Revision 3, dated May 24, 1988, "10 CFR Part 21 Reporting Requirements." The procedure contained requirements for; individual employees to report defects or compliance issues; an evaluation committee to evaluate each reported item; and the transmittal of the results of the evaluations to the responsible officer for action including reporting to NRC if required. The procedure also delineated the requirements for record keeping and the content of written reports to NRC. The procedure adequately specified the requirements contained in 10 CFR Part 21.

The inspectors verified that the licensee met the posting requirements for this regulation. Section 206 of the Energy Reorganization Act of 1974 was posted along with a notice describing the applicable regulations and procedures, including the individual to whom reports may be made or where existing reports may be viewed. The inspectors identified that the posted note referred individuals to their supervisor or to the DAEC project or technical engineer. The licensee was not able to identify who the project or technical engineer is and stated they would clarify the note to specify the name or position of the individuals rather than the unspecified title of project or technical engineer.

The inspectors reviewed plant procurement procedures and performed a sample review of several Quality Level I procurement documents to assure that 10 CFR Part 21 vendor notification requirements were specified on applicable purchase orders. Procedure No. 1204.11, Revision 1, dated October 12, 1988, "Procurement Engineering Group Review and Approval of Material Requisitions," and Procedure No. 1104.3, Revision 9, dated June 14, 1991, "Quality Engineering Review of Material Requests," required both procurement engineers and QA engineers to assure that Quality Level I procurement documents contained 10 CFR Part 21 vendor notification requirements. In addition, the inspectors randomly selected Quality Level I purchase orders S-54246, S-62348, S-59784, and B-02940 from the receipt inspection log and verified that they contained the applicable 10 CFR Part 21 vendor notification requirements.

The inspectors reviewed the licensees 10 CFR Part 21 meeting minute notebook which contained copies of all meeting minutes since the plant was originally licensed. The meeting minutes provided details of Part 21 committee meetings, including date of meetings, attendees, and a description of old and new items discussed. The inspectors reviewed the minutes of the last two meetings and determined that they provided sufficient information to describe the items being reviewed and the conclusions reached by the committee. The inspectors selected two 10 CFR Part 21 records, 89-07 and 89-11, for detailed examination.

Record 89-11 concerned failure of a T-Ring Seal (similar to an O-Ring seal only shaped like a "T") on Containment Isolation Valve CV4302 reported via a memo from maintenance dated December 13, 1989. The failure was due to separation of a glued joint on the T-Ring. Maintenance had reported that the T-Ring exhibited no additional damage and considered the glued joint failure to be due to defective bonding. They also stated that of the seven spare T-Rings located in the warehouse only two of seven appeared to have glued seams; the other five appeared to be continuous molded T-Rings. The 10 CFR Part 21 committee reviewed the initial report on January 4, 1990, and requested an engineering review of the case. On April 10, 1990, an engineering review was prepared to address specific committee questions concerning whether the existing condition (glued seams) complied with the purchase specification and if Environmental Qualification requirements per 10 CFR 50.49 were applicable to this issue.

The engineering report concluded that the T-Ring seals fall outside of the Environmental Qualification (EQ) program because 10 CFR 50.49 applies only to electrical components, and that the purchase specification does not specifically state how the T-Rings are to be constructed or what materials are to be used. Although, the engineering report stated that the T-Rings were in compliance with the purchase specification, it recommended that the committee consider the failure of the glued joint as a defect defined under 10 CFR Part 21.3(d).

The committee concluded in minutes dated May 10, 1990, that the T-Ring failure was not a reportable condition under 10 CFR Part 21. This conclusion was based on the engineering reports statement that the existing condition of the T-Ring (glued joint) complied with the purchase specification and that the T-Ring did not fall under 10 CFR 50.49 EQ requirements.

The inspectors identified several concerns related to the engineering report, discussions with DAEC staff, and the committee's conclusion. From the information reviewed by the inspectors it appears that the engineering evaluation of the T-Ring failure was not adequate. There appears to have been a change in the way the T-Rings were manufactured that directly resulted in at least one failure. The T-Ring vendor was reported to have stated that it had always glued T-Ring joints. This statement appeared to conflict with statements made by the licensee that five of seven spare T-Rings appeared to have been made from a continuous molded ring. Engineering's evaluation did not include pursuing this apparent discrepancy. Other failures were identified by other utilities via the Nuclear Plant Reliability Data System (NPRDS) but not pursued by engineering to determine if the failures were related to glued joint failures. In addition, the engineering evaluation concerning the T-Ring purchase specification appeared to be nonconservative in that it did not take into account the vendor's responsibility to provide a T-Ring capable of performing its intended function. The licensee is reviewing these concerns and is gathering additional information, such as, failure information concerning other utilities T-Ring problems, copies of all T-Ring purchase requisitions and specifications, and a copy of the licensee's dedication evaluation of the T-Rings purchased as commercial

grade. This additional information will be reviewed during a later inspection. This concern will be followed as an unresolved item (331/91011-01(DRP)) pending further review by both the licensee and the NRC.

No violations or deviations were identified in this area.

9. Regional Requests (71707)

As a result of recent events at nuclear power plants that indicated that licensees are not adequately controlling plant risk during the conduct of outage activities, the resident inspectors were requested to review the licensee's outage and outage planning activities.

On June 22, 1991, the reactor automatically scrammed due to an MSIV closure. The licensee decided to proceed to cold shutdown to implement its forced outage schedule and work the backlog of corrective maintenance action request (CMARs).

During the outage and outage planning process, the inspectors met with the outage planning organization and attended outage planning meetings to determine if adequate attention was given to minimizing loss of redundancy in shutdown cooling systems and power sources. The inspectors also reviewed work activities to determine if high risk activities in the vicinity of systems having reduced redundancy were being controlled.

Prior to the forced outage, the inspectors reviewed the licensee's draft "Outage Risk Management Guidelines", OMG-7. This document was generated due to both NRC and industry concerns with outage activities. Although this document had not been formally approved at the time of the outage, licensee management utilized the guidelines in this document during the planning and scheduling of outage activities. Licensee management was noted to have taken extra precautions to ensure that forced circulation was maintained in the core at all times, either through shutdown cooling or the reactor recirculation system. Additional precautions were taken to assure the availability and distribution of electric power during the outage; including DC power and onsite and offsite AC power sources.

Although the scope of this forced outage was limited, the licensee maintained good coordination and communication between departments to ensure that high risk activities did not adversely impact plant safety.

10. Management Meetings (30702)

a. On June 10, 1991, a management meeting was held between the representative of Iowa Electric Light and Power Company and the NRC. The meeting was held at the NRC headquarters office to discuss the following subjects: licensee's business and prioritization plans, vendor manual program, and detailed initiatives and improvements in their maintenance program.

b. On June 26, 1991, a site visit was made by the Deputy Director and Section Chief of the Division of Reactor Projects and the Regional Administrator. The main purpose of the visit was to attend the Systematic Assessment of Licensee Performance (SALP) meeting. However, the visit also included a tour of the facility conducted by the plant manager and senior resident inspector.

11. Report Review (90713)

During the inspection period, the inspectors reviewed the licensee's Monthly Operating Report for May 1991. The inspectors confirmed that the information provided met the requirements of Technical Specifications 6.11.1.C and Regulatory Guide 1.16.

No violations or deviations were identified in this area.

12. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. An unresolved item disclosed during the inspection is discussed in Section 8.

13. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Section 1) on July 5, 1991, and informally throughout the inspection period and summarized the scope and findings of the inspection activities. The inspectors also discussed the likely information content of the inspection report with regard to documents or processes reviewed by the inspectors. The licensee did not identify any such documents or processes as proprietary. The licensee acknowledged the findings of the inspection.