U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-331
License No:	DPR-49
Report No:	50-331/96004
Licensee:	IES Utilities Incorporated IE Towers, P. O. Box 351 Cedar Rapids, IA 52406
Facility:	Duane Arnold Energy Center
Dates:	April 20 - June 5, 1996
Inspectors:	K. Riemer, Senior Resident Inspector C. Lipa, Resident Inspector M. Kurth, Reactor Engineer G. Kelly, NRR Project Manager
Approved by:	R. D. Lanksbury, Chief Reactor Projects Branch 2

EXECUTIVE SUMMARY

Duane Arnold Energy Center
NRC Inspection Report 50-331/96004

This integrated inspection report included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection; in addition, it includes the results of announced inspections by the NRR project manager and a regional reactor inspector.

Operations

- The inspectors identified that Operation's had not recognized, prior to authorizing a maintenance activity, a required entry into a limiting condition for operation. This was a violation (Section M1.3).

- The inspectors identified an increasing trend in offgas pretreat radiation release rate that had not been identified by the operators. (Sections O1.3 and R1.1)

- Operator response to materiel condition problems encountered during the period, such as a reactor recirculation motor generator trip and scoop tube lockups, continued to be appropriate (Section M2).

Maintenance

- One station activity undertaken in response to the May 16, 1996, unexpected trip of the "B" reactor recirculation motor generator (RRMG) set and control of monitoring equipment installed because of earlier trips, were weak. This resulted in the loss of potentially important data necessary to determine the root cause of the trip (Section M1.4).

- Chronic problems with the well water chlorination system continued to challenge plant staff because of resultant higher than normal drywell temperatures due to fouling (Section M2).

Engineering

- Engineering support to plant operations during this inspection period was mixed. Short term resolution of materiel condition issues was appropriate. However, actions taken to date in response to long term concerns such as the RRMG trips and well water chlorination issues have not resolved the items, nor have they prevented further challenges to plant staff. Engineering participation in the activities associated with the "B" reactor recirculation motor generator set was weak and contributed to the loss of potentially important data (Section M1.4 and M2.1).

- The inspector's review of the containment hardened vent modification identified only minor discrepancies, which the licensee properly resolved (Section E1.1).

- Several UFSAR discrepancies were identified during the Spent Fuel Pool Licensing Basis Review (Section E2.1).

Plant Support

- A potentially negative trend in the off-gas radiation release rate was not effectively communicated by Chemistry through the site organization until the inspectors brought the matter to the licensee's attention (Section R1).

Self Assessment and Quality Verification

- Self-assessment activities, such as Operations Committee and Action Request screening meetings were considered effective (Section O7).

- The QA surveillance of the containment hardened pipe vent modification was considered thorough and detailed (Section E1.1).

Report Details

Summary of Plant Status

The plant began this inspection period at 100 percent power. There was a routine downpower for turbine valve testing on May 11. From May 16 until May 23, the plant was in single loop operations and reactor power was approximately 45 percent following the trip of the "B" reactor recirculation motor generator (RRMG) set. Following recovery of "B" RRMG on May 24, 1996, the plant operated near 100 percent power for the remainder of the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments

a. Inspection Scope (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. This included control room observations and plant tours. The inspectors noted that the conduct of operations was professional and safety conscious. Observations indicated that the operations staff was knowledgeable of plant conditions, responded promptly and properly to alarms, adhered to procedures and applicable administrative controls, performed through turnovers, and that proper control room staffing levels existed.

O1.2 Failure To Recognize LCO Entry

b. Observations and Findings

As discussed in Section M1.3, the inspectors identified during independent verification of operator actions for an ongoing maintenance activity that the operators had failed to recognize, prior to authorizing maintenance on a drywell pressure instrument, that entry into a limiting condition for operation (LCO) was necessary. The inspectors were concerned that operation's involvement in planning and review of this maintenance activity was weak.

O1.3 Operators Unaware of Increasing Trend in Offgas Pretreat Radiation Release Rate

b. Observations and Findings

As discussed in Section R1.1, control room operators were not aware of an increasing trend in the offgas pretreat radiation release rate until the inspectors brought it to their attention. The increasing trend was potentially an early indicator of fuel leakage problems. The operator's

immediate response was to contact the chemistry department to assist in resolution of this issue. The inspectors were concerned that a potential early indication of a fuel problem was not noted by the operators in a timely manner.

01.4 Appropriate Operator Response to Reactor Recirculation Pump Trip

a. Inspection Scope (71707)

On May 16, 1996, the "B" reactor recirculation motor generator (RRMG) set unexpectedly tripped as discussed in Sections M1.4 and M2.1b. The inspectors independently verified that appropriate actions were taken by reviewing strip charts, surveillance requirements, and technical specification requirements.

b. Observations and Findings

The operators responded appropriately to the event and successfully maintained the plant in single loop operations. The operators also correctly implemented the increased surveillance requirements and administrative controls necessary to maintain the plant in single-loop operation while trouble-shooting and maintenance activities were performed on the "B" RRMG set. On May 23, 1996, the inspectors observed the operators place the "B" loop of RR back in service and return the unit to full power.

01.5. Conclusions on Conduct of Operations

The inspectors determined that, with the exception of the maintenance activity on a drywell pressure instrument, operator cognizance and oversight of maintenance activities were appropriate for the tasks performed. The inspectors also concluded that operators performed well in response to the RRMG set trip and during associated troubleshooting and maintenance activities, and during recovery of the idle loop and return of the unit to full power. With the exception of the increasing trend in offgas pre-treat radiation release rate levels, operator panel awareness was thorough.

07 Quality Assurance in Operations

07.1 Licensee Self-Assessment Activities (40500)

b. Observations and Findings

During the inspection period, the inspectors reviewed multiple licensee self-assessment activities, including:

- Routine Operations Committee Meeting
- Routine Action Request Screening Meetings
- Special Operations Committee meeting on May 17 to review recommendation to operate at higher power level in single loop operations, as allowed by TS.
- Special Operations Committee meeting on May 22 to discuss restoration of the "B" RRMG set and return to full power operations.

The inspectors observed that there was active participation at the meetings.

c. Conclusions on License Self-Assessment Activities

The inspectors concluded that the self-assessment activities observed were effective.

08 Miscellaneous Operations Issues (92700)

08.1 (Closed) Licensee Event Report (LER) 50-331/94003, Revision 0: Failure to Establish Secondary Containment During Routine Maintenance. The licensee identified the cause to be incomplete implementation of a TS amendment. The issue was determined to be a non-cited-violation as discussed in inspection report (IR) 50-331/94002. The inspectors reviewed the completion of corrective actions listed in the LER and had no concerns. This item is closed.

08.2 (Closed) LER 50-331/94006, Revisions 0 and 1: Reactor Water Cleanup Isolation Due to Incomplete Valve Closure Caused by Position Indicator Obstruction. This issue was originally discussed in IR 50-331/94008. The inspectors reviewed the completion of the four corrective actions discussed in the LER. The corrective actions were considered appropriate to prevent recurrence. This item is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62703) (61726)

The inspectors observed and/or reviewed portions of the following work and testing activities:

- Drywell pressure recorder maintenance
- Deluge system for standby transformer
- Turbine control valve EOC RPT logic and RPS instrument functional test
- Daily instrument checks
- Functional/calibration of reactor water level instrumentation
- Standby liquid control system boron concentration test
- Standby diesel generators monthly operability test
- "D" river water supply pump motor replacement
- Reactor recirculation motor generator set troubleshooting

M1.2 Instrument Used for TS Reading not in Calibration Program

b. Observations and Findings

On April 25, 1996, the inspectors identified that level instrument LI 3413, used to verify fuel pool level as required by TS 4.9.C was not in a calibration program. Surveillance Test Procedure STP42A001, "Daily

Instrument Checks," Revision 113, required that fuel pool level be documented daily using LI 3413, however, the instrument had not been calibrated since it was installed in 1990. The licensee was able to show that the design of the instrument was such that periodic calibration was not necessary. Upon further review, the inspectors considered this to be an isolated case; however, the inspectors were concerned that nothing in the modification process specifically required assigning a calibration frequency to new instruments that would be used for TS surveillances.

The licensee promptly documented the condition on AR 96-0759. Pending further review by the NRC and the results of the licensee's evaluation, this is considered an Unresolved Item (URI 50-331/96004-01).

M1.3 Failure to Enter LCO During Maintenance Activity

b. Observations and Findings

Prior to the removal of drywell pressure recorder instrument PR4398A for maintenance in accordance with CMAR A26453 on May 15, 1996, the Operations Shift Supervisor failed to realize that the channel would be inoperable, which required entry into a 30-day limiting condition for operation (LCO) in accordance with TS Table 3.2-H. The inspectors identified this discrepancy on May 17 and brought it to the OSS' attention.

Technical Specifications Table 3.2-H requires a minimum of two channels operable for the Drywell Pressure Monitor (0-250 psig). Technical Specification Action Statement 93 required that if the number of operable channels was reduced to one channel, then entry into a 30-day LCO was required provided a redundant channel, specified in Table 3.2-F, was operable. The redundant channel was operable at the time.

Technical Specification 6.8.1 specified that written procedures covering areas such as corrective maintenance be implemented. Maintenance Directive (MD) 020, "Maintenance Planning," Revision 25, specified that the OSS was responsible for determining the effect on the plant and any other requirements or special conditions that were required for the maintenance to occur. Failure of the OSS to identify that there was a TS LCO associated with the maintenance was a violation (50-331/96004-02) of TS 6.8.1. The inspectors were concerned that planning and review prior to maintenance were not adequate, which was due to personnel error and inadequate attention to detail.

M1.4 Poor Troubleshooting Activities Following Trip at "B" Reactor Recirculation Motor Generator (RRMG) Set

b. Observations and Findings

Following an earlier trip of the "B" RRMG set, the licensee installed monitoring equipment on the unit in order to obtain data necessary to determine the root cause for the repeat trips experienced on the machine. Subsequent to the May 16, 1996, trip of the "B" RRMG set, engineering and maintenance personnel attempted to retrieve data received after the event. Their attempts were unsuccessful; none of the

monitored parameters on the "B" RRMG set had any data available. The parameters measured on the "A" RRMG set were all available and indicated normal, expected values. Further investigation by the licensee determined that the data was unavailable on the "B" side because the trigger points had not been armed and turned on following the trip of the "B" RRMG set on January 17, 1996. Potentially important data necessary for root cause determination was lost because licensee personnel failed to correctly utilize the installed monitoring equipment.

Additional licensee troubleshooting efforts focused on a transformer in the voltage regulator circuit which was noted to have blown fuses. Engineering and maintenance personnel removed the component from the plant and attempted to bench test it in the shop. Improper electrical troubleshooting methods were applied and the transformer catastrophically failed. Because of human error, the only piece of hard physical evidence was destroyed; again, potentially important data necessary for root cause determination was lost.

The inspectors will continue to monitor the licensee's investigation of the above personnel errors and subsequent corrective actions. This will be tracked as URI 50-331/96004-03.

M1.5 Conclusions on Conduct of Maintenance

The inspectors noted that most maintenance activities during the period were completed thoroughly and professionally. However, the inspectors were concerned with personnel errors during troubleshooting of the trip of the "B" RRMG set and inadequate attention to detail in planning for the drywell pressure monitor maintenance, discussed above.

M2 Maintenance and Materiel Condition of Facilities and Equipment

M2.1 Plant Material Condition

b. Observations and Findings

Plant materiel condition was acceptable. The inspectors noted that a number of materiel condition issues arose during the inspection period that required the plant personnel to take prompt action and/or resulted in TS LCO entries. The inspectors considered the licensee's response to these materiel condition issues to be appropriate. While each individual occurrence was of minor consequence, collectively the issues represented distractions for operators and other plant staff. In each case, the issue was entered into the plant's maintenance process or corrective action process and corrected, as appropriate. The examples are listed below:

- From April 25, 1996, to May 14, 1996, the "D" well water chlorination system was out of service for maintenance due to system leaks on one train and a pump motor problem on the other train. Without chlorination of well water, drywell cooler fouling occurs over time. Between April 25 and May 14, drywell average temperature increased from approximately 118°F to 127°F. Although this was below the TS limit of 135°F, the inspectors were concerned that chronic problems with the "D"

well water chlorination system continued to challenge the plant. A similar concern with the well water chlorination system was discussed in inspection report 50-331/96002.

- On May 2, 1996, operators received a spurious 1/2 scram on Channel A1. This was only the second 1/2 scram this year; however, the January 1996 1/2 scram also occurred on Channel A1. The licensee was unable to determine the cause, and plans were being made to connect an event recorder to the channel for future monitoring.

- On May 16, 1996, the "B" reactor recirculation motor generator (RRMG) set tripped. This was the fifth trip of the unit in 2 years. Operators responded well to the event and successfully maintained the plant in single-loop operations. The licensee was unable to determine the root cause of the trip. Reference Section M1.4 for inspector concerns associated with troubleshooting of the event. The inspectors will continue to track and monitor this issue under previously opened IFI 50-331/96002-01.

- On May 23, 1996, while restoring the "B" RRMG set to service, control room operators experienced several lock-ups of the "B" RRMG set scoop tubes. Operators were able to manually control the unit and returned the plant to full power. Upon replacement of faulty deviation meters in the circuitry, the RRMG set functioned properly.

- On May 30, 1996, operators declared the rod worth minimizer inoperable for the third time in the past few months. The licensee initiated an AR to document evaluation and resolution and was working with General Electric to understand the cause.

c. Conclusions

The inspectors noted appropriate operator response to the "B" RRMG set trip and to the scoop tube lock-ups during restorations. Engineering support for short-term resolution of identified materiel condition items was appropriate. Engineering and maintenance activities for long-term resolution of the RRMG set trips and well water chlorination problems were not effective in resolving the issues.

M8 Miscellaneous Maintenance Issues (92902, 92700)

M8.1 (Closed) LER 50-331/96002, Revision 0: Primary Containment Isolation System (PCIS) Half Group III Isolation Due to Blown Fuse During Maintenance. The licensee determined that the PCIS isolation was a normal response to the blown fuse in radiation monitor RM4116B. The fuse was blown during a maintenance activity in the RM4104 cabinet (located directly above RM4116B) when a cable fell into the RM4116B cabinet. Corrective actions, which included inspection and fuse

replacement in RM4116B, reinforcing expectations that loose cables shall be secured, and a review for applicable training, were considered appropriate. This item is closed.

III Engineering

E1 Conduct of Engineering

a. Inspection Scope (37551)

Selected engineering problems or events were evaluated to determine their root cause(s). The effectiveness of the licensee's controls for the identification, resolution, and prevention of problems was also examined. The inspection included review of areas such as corrective action systems, root cause analysis, safety committees, and self assessment.

E1.1 Verification of Mark I Hardened Vent Modification

a. Inspection Scope (TI 2515/121)

The inspectors used the guidance in Temporary Instruction (TI) 2515/121 to review the licensee's adherence to commitments made in response to Generic Letter (GL) 89-16, "Installation of Hardened Wetwell Vent." The inspectors reviewed system diagrams, Operating Instruction (OI), UFSAR description, Emergency Operating Procedures, maintenance history, and the Design Change Package (DCP 1524), and performed a walkdown of accessible portions of the system.

b. Observations and Findings

The inspectors verified that the as-built installation conformed to the design criteria listed in TI 2515/121, Appendix A, and that appropriate plant procedures and training were implemented.

The inspectors identified minor discrepancies between the system valve line-up in OI 573, "Containment Atmosphere Control System," the system diagram, and valve labeling. The discrepancies were promptly corrected when discussed with the licensee.

The licensee completed a Quality Assurance (QA) Surveillance of the modification in September 1994 and identified one deficiency regarding seismic qualification in the safety evaluation. The inspectors verified that the deficiency was promptly resolved. The QA Surveillance was considered thorough and detailed, with appropriate resources assigned to the review.

c. Conclusions

The inspectors concluded that the licensee met the commitments to GL 89-16 and that the hardened vent was installed as designed. This review closes TI 2515/121.

E1.2 Engineering Support to RRMG Troubleshooting Efforts

b. Observations and Findings

As documented in Section M1.4b, potentially valuable data was lost during troubleshooting efforts initiated in response to the trip of the "B" RRMG set. Engineering support to data recovery and trouble-shooting efforts was weak.

c. Conclusions

Engineering efforts to date have been ineffective with respect to long-term resolution of the RRMG set trips.

E2 Engineering Support of Facilities and Equipment

E2.1 Spent Fuel Pool (SFP) Licensing Basis Review

a. Inspection Scope

The staff identified in April 1996, that the Updated Final Safety Analysis Report (UFSAR) write up on spent fuel pool cooling did not reflect the practices at DAEC as described in a spent fuel pool rerack submittal to the staff (Amendment 195 to the license). There appeared to be areas of the UFSAR description that should be amplified to provide design bases information to facilitate review of the current procedures that assure cooling for the spent fuel pool. There also were areas where the spent fuel pool rerack submittal and the UFSAR differed and needed to be reconciled.

b. Observations and Findings

E2.1.1 In reviewing the licensing bases of the spent fuel pool, the staff determined that DAEC had stated that under certain circumstances it would use the RHR system in the spent fuel pool cooling mode if heat loads were high enough to warrant it. However, DAEC did not provide the equilibrium (i.e., bulk) temperature for when RHR was used to independently provide cooling in lieu of the spent fuel pool cooling (SFPC) system. Based on the rerack submittal, the temperature should be for the maximum heat load with one RHR pump and heat exchanger operating. This inconsistency will be reviewed further by the Office of Nuclear Reactor Regulation (NRR) as part of the Spent Fuel Pool Licensing Basis Review and is tracked as Inspection Followup Item (IFI) 50-331/96004-04.

E2.1.2 In reviewing the licensing bases, the staff noted that there are a number of values given for the "maximum" temperature of the spent fuel pool. Section 5.4 (iii) of the rerack submittal states that peak spent fuel pool temperature is intended to be limited to 180°F assuming two cooling trains, which in turn is below the 212°F regulatory limit. However in the UFSAR, it appears that the SFP structural design limit under normal heat load conditions (i.e., a temperature to which it would be acceptable to cycle a large number of times) is analyzed to not exceed 150°F (the temperature found in the American Concrete Institute Code). In addition, the calculated maximum temperature for the full core offload case was 164.4°F, which is above the 150°F in the UFSAR, but below the 180°F limit. These inconsistencies will be reviewed further by NRR as part of the SFP Licensing Basis Review and are tracked as IFI 50-331/96004-05.

E2.1.3 In reviewing the licensing bases, the staff found that the heat load stated by DAEC in the rerack submittal for the Case 3[1] full core offload (18.87 x 10^6 Btu/hr) is not consistent with Supplement 1 of the rerack submittal (18.73 x 10^6 Btu/hr). This inconsistency will be reviewed further by NRR as part of the SFP Licensing Basis Review and is tracked as IFI 50-331/96004-06.

E2.1.4 The UFSAR states that a fuel shuffle will not begin prior to 160 hours after shutdown or that a full core offload will not begin prior to 120 hours after shutdown. However, the rerack submittal states that fuel would not be moved prior to 120 hours after shutdown. In addition, the Operating Instructions (OIs) at DAEC do not mention specific delay times that need to be honored prior to moving fuel. These inconsistencies will be reviewed further by NRR as part of the SFP Licensing Basis Review and are tracked as IFI 05-331/96004-07.

E2.1.5 The DAEC spent fuel pool rerack submittal specifies the maximum number of fuel assemblies moved out of the core, put back in the core, left in the spent fuel pool (SFP), and the number of new assemblies placed in the core during a core reload. However, the applicable procedures do not specify maximum or minimum values of assemblies to be moved. This inconsistency will be reviewed further by NRR as part of the SFP Licensing Basis Review and is tracked as IFI 50-331/96004-08.

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[1] Case 3: This scenario corresponds to the actual discharge practice at DAEC. The calculations consider a total of 3152 locations for the fuel storage in the pool and are carried out at the point in time when the stored fuel inventory is such that the addition of a normal batch to the pool will leave it with insufficient capacity to accept another batch while maintaining the full core discharge reserve capability. The transfer to the pool begins after 120 hours of in-core decay and is conducted at 144 assemblies per 24 hours. Two spent fuel pool cooling trains are assumed to be in operation.

E2.1.6 In Section 9.1.3 of the UFSAR, DAEC uses the terms "maximum normal heat load" and "maximum possible heat load." "Maximum normal heat load" appears to refer to fuel shuffling with approximately 1/3 of the core being unloaded into the SFP. The "maximum possible heat load" appears to refer to a full core offload. Both terms appear to involve some conservative assumptions, but the UFSAR contains few details of the underlying analyses. The assumptions in the terms "maximum normal heat load" and "maximum possible heat load" do not correspond to any of the four scenarios detailed in the 1993 rerack submittal. In OI 149 (RHR system), pg. 54, the definition of maximum normal heat load disagrees with the current practice at DAEC (i.e., full core offloads). These inconsistencies will be reviewed further by NRR as part of the SFP Licensing Basis Review and are tracked as IFI 50-331/96004-09.

E2.1.7 The UFSAR defines the RHR system in the Spent Fuel Pool Cooling mode as the alternate cooling path for the spent fuel pool. This path has a very complicated and potentially time consuming procedure. Use of the RHR system in the Spent Fuel Pool Cooling mode has not been tested since plant pre-operational testing in the early 1970s. This inconsistency will be reviewed further by NRR as part of the SFP Licensing Basis Review and is tracked as IFI 50-331/96004-10.

E2.1.8 In Section 1.8.13 of the UFSAR, DAEC states that "The RHR system is used as the source of makeup water [for the spent fuel pool] and is classified as Seismic Category I. The Seismic Category I piping is extended into the fuel pool cooling system as far as necessary to ensure the makeup water will get into the pool." This statement is incorrect and does not reflect other portions of the UFSAR (such as Section 9.1). No plant procedures existed for transferring water from RHR to the spent fuel pool. These inconsistencies will be reviewed further by NRR as part of the SFP Licensing Basis Review and are tracked as IFI 50-331/96004-11.

E2.2 Standby Liquid Control Boron Solution Operating Concentration

b. Observations and Findings

On November 7, 1995, the licensee identified a discrepancy between the UFSAR and plant procedures for the standby liquid control (SLC) system. Section 9.3.4.2 of the UFSAR specifies that maximum boron solution operating concentration is 14.6 weight percent, however, this upper concentration limit was not in plant procedures. For example, monthly surveillance procedure STP 44C001, "SLC System Boron Concentration Test," Revision 3, which specified a lower concentration limit, but not an upper limit.

The inspectors and licensee reviewed past performance of STP 44C001 and found only one instance where the UFSAR 14.6 weight percent requirement was exceeded. On January 10, 1992, test results showed that the boron solution concentration was 14.93 weight percent; however, there were no

consequences because the temperature at the time was above the minimum solution temperature curve in TS. The inspectors were concerned that there were no controls to prevent exceeding the maximum concentration value because the SLC tank low temperature alarm setpoint was based on a maximum of 14.6 weight percent. The licensee revised the STP and other procedures to specify the maximum concentration value. The inspectors considered the corrective actions to be appropriate. This issue will be reviewed further as an IFI 50-331/96004-12.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) Violation 50-331/94017-01: Failure to Revise Procedures Following Changes to Radiation Monitor Setpoints. The cause was determined to be inadequate controls in the engineered maintenance action (EMA) process. The inspectors reviewed the licensee's corrective actions and commitments documented in a letter to the NRC dated December 5, 1994. The corrective actions were considered narrow in scope when an additional example of inadequate controls in the EMA process was identified on January 25, 1996. As discussed in inspection report 50-331/96002, this was a violation of 10 CFR Part 50, Appendix B, Criterion XVI. The inspectors will review the controls in the EMA process and the implementation of corrective actions specified in the licensee's response letter to the NRC dated May 9, 1996, during the closure of NOV 50-331/96002-07. This item is closed.

IV Plant Support

R1 Radiological Protection and Chemistry Controls

a. Inspection Scope

In accordance with procedure 71750, selected activities associated with radiological controls, radiological effluents, and waste treatment were reviewed to ensure conformance with facility procedures and regulatory requirements.

R1.1 Increased Trend in Offgas Pretreat Radiation Release Rate

b. Observations and Findings

Following restoration of the "B" RRMG set and return of the plant to full power, the inspectors identified that the off-gas pretreat radiation release rate had approximately doubled from earlier values (from approximately 4-5 mrem/hour before the trip to approximately 8-10 mrem/hour after). Control room operators were not aware of the trend and could not explain the reason for the increase. The lead chemist had noticed the change and was investigating the issue, but had not communicated his observations to others. The inspectors were concerned that a potential early indicator of a fuel problem was not effectively communicated to others in the organization. Subsequent to the exit meeting on June 5, 1996, the licensee demonstrated to the

inspectors, via coolant sample results, that the increase in the level was not attributable to a fuel leak problem.

R1.2 Conclusions in Radiological Protection and Chemistry Control

The inspectors had no substantive concerns with the licensee's subsequent efforts to resolve the increase in offgas pretreat release rate, as discussed above, once a fuel leak was ruled out. No other concerns were identified in this area.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 5, 1996. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Franz, Vice President Nuclear
G. Van Middlesworth, Plant Manager
R. Anderson, Manager, Outage and Support
P. Bessette, Manager, Nuclear Licensing
J. Bjorseth, Maintenance Superintendent
J. Cantrell, Manager, Nuclear Training
D. Curtland, Operations Supervisor
R. Hite, Manager, Radiation Protection
M. McDermott, Manager, Engineering
K. Peveler, Manager, Corporate Quality Assurance

INSPECTION PROCEDURES USED

IP 37551:	Engineering
IP 61726:	Surveillance Observation
IP 62703:	Maintenance Observation
IP 71707:	Plant Operations
IP 71750:	Plant Support
IP 92700:	Onsite Followup of Written Reports of Non-routine Events at Power Reactor Facilities
IP 92901:	Followup - Operations
IP 92902:	Followup - Engineering
IP 92903:	Followup - Maintenance
TI2515/121:	Verification of Mark I Hardened Vent Modifications (GL 89-16)

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-331/96004-01	URI
50-331/96004-02	NOV
50-331/96004-03	URI
50-331/96004-04	IFI
50-331/96004-05	IFI
50-331/96004-06	IFI
50-331/96004-07	IFI
50-331/96004-08	IFI
50-331/96004-09	IFI
50-331/96004-10	IFI
50-331/96004-11	IFI
50-331/96004-12	IFI

Closed

50-331/94003	LER
50-331/94006	LER
50-331/96002	LER
50-331/94017-01	VIO

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CMAR	Corrective maintenance action request
DAEC	Duane Arnold Energy Center
DCP	Design change package
EMA	Engineered maintenance action
EOC	End of cycle
GL	Generic Letter
IFI	Inspection followup item
IR	Inspection report
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MD	Maintenance Directive
NOV	Notice of Violation
NRR	Office of Nuclear Reactor Regulation
OI	Operating Instruction
OSS	Operations Shift Supervisor
QA	Quality Assurance
RHR	Residual heat removal
RPS	Reactor protection system
RPT	Recirculation pump trip
RRMG	Reactor recirculation motor generator
SFP	Spent fuel pool
SFPC	Spent fuel pool cooling
SLC	Standby liquid control
STP	Surveillance Test Procedure
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved item