

October 29, 2002

EA-02-197

Mr. Mark Peifer  
Site Vice-President  
Duane Arnold Energy Center  
Nuclear Management Company, LLC  
3277 DAEC Road  
Palo, IA 52324

SUBJECT: DUANE ARNOLD ENERGY CENTER  
USNRC INTEGRATED INSPECTION REPORT 50-331/02-06

Dear Mr. Peifer:

On September 28, 2002, the U.S. Nuclear Regulatory Commission (USNRC) completed an inspection at your Duane Arnold Energy Center. The enclosed report documents the inspection findings which were discussed on October 1, 2002, with Mr. R. Anderson and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. Specifically, this inspection focused on reactor safety.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green) that were determined to involve violations of USNRC requirements. However, because of their very low safety significance and because these issues were entered into your corrective action program, the USNRC is treating these issues as Non-Cited Violations in accordance with Section VI.A.1 of the USNRC's Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response within 30 days of the date of this inspection report, with a basis for your denial, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U. S. Nuclear Regulatory Commission - Region III, 801 Warrenton Road, Lisle, IL 60532-4351; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Duane Arnold Energy Center.

In response to the terrorist attacks on September 11, 2001, the USNRC issued an Order and several threat advisories to commercial power reactors to strengthen licensees' capabilities and readiness to respond to a potential attack. The USNRC established a deadline of September 1, 2002, for licensees to complete modifications and process upgrades required by the order. In order to confirm compliance with this order, the USNRC issued Temporary Instruction 2515/148 and over the next year, the USNRC will inspect each licensee in accordance with this Temporary

M. Peifer

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Instruction. The USNRC continues to monitor overall security control and may issue additional temporary instructions or require additional inspections should conditions warrant.

In accordance with 10 CFR 2.790 of the USNRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the USNRC Public Document Room or from the Publicly Available Records (PARS) component of USNRC's document system (ADAMS). ADAMS is accessible from the USNRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Bruce L. Burgess, Chief  
Branch 2  
Division of Reactor Projects

Docket No. 50-331  
License No. DPR-49

Enclosure: Inspection Report 50-331/02-06

cc w/encl: E. Protsch, Executive Vice President -  
Energy Delivery, Alliant;  
President, IES Utilities, Inc.  
Robert G. Anderson, Plant Manager  
State Liaison Officer  
Chairperson, Iowa Utilities Board  
The Honorable Charles W. Larson, Jr.  
Iowa State Representative

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-331  
License No: DPR-49

Report No: 50-331/02-06

Licensee: Alliant, IES Utilities Inc.

Facility: Duane Arnold Energy Center

Location: 3277 DAEC Road  
Palo, Iowa 52324-9785

Dates: June 30 through September 28, 2002

Inspectors: P. Prescott, Senior Resident Inspector  
G. Wilson, Senior Resident Inspector  
S. Caudill, Resident Inspector  
R. Daley, Reactor Inspector  
G. Pirtle, Physical Security Inspector  
R. Schmitt, Radiation Specialist

Approved by: Bruce L. Burgess, Chief  
Branch 2  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000331-02-06, IES Utilities, Inc.; on 06/30-09/28/2002, Duane Arnold Energy Center; Maintenance Risk Assessments and Emergent Work Control, and Personnel Performance During Nonroutine Plant Evolutions and Events.

This report covers a 3-month period of baseline resident inspection and announced baseline inspections in radiation protection and security. The inspection was conducted by Region III inspectors and the resident inspectors. Two Non-Cited Violations (NCV), and associated Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green," or be assigned a severity level after USNRC management review. The USNRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. Inspection Findings

#### **Cornerstone: Mitigating Systems**

- Green. A finding of very low safety significance was identified by the inspectors when the licensee failed to perform an adequate risk assessment when the reactor core isolation cooling (RCIC) system was unavailable. The overall plant risk was actually yellow when identified as green by the licensee.

The finding was more than minor since it involved a change in risk level from green to yellow and, if left uncorrected, would become a more significant safety concern. The finding was of very low safety significance since the high pressure core injection (HPCI) system was working as designed and the incremental core damage probability (ICDP) of having RCIC system unavailable for 12 days was  $3E-7$ . An NCV of 10 CFR 50.65 (a)(4) was identified for the failure to properly perform an adequate risk assessment. (Section 1R13)

#### **Cornerstone: Mitigating Systems**

- Green. A finding of very low safety significance was identified by the inspectors when inadequate corrective actions resulted in a repeat event where algae growth was plugging the residual heat removal service water (RHRSW) strainers.

The finding was more than minor since it impacted the operability of the RHRSW system. The finding was of very low safety significance because this event did not result in the flow of any of the RHRSW pumps to decrease below the Technical Specification (TS) 3.7.1 allowable minimum flow rate of 2040 gallons per minute (GPM). An NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for the failure to properly correct the algae buildup condition. (Section 1R14)

**B. Licensee-Identified Findings**

Violations of very low safety significance, which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 40A7 of this report.

## REPORT DETAILS

### Summary of Plant Status

The plant operated at full power until power was reduced to approximately 60 percent on July 13, 2002, to permit rod sequence exchange. The plant returned to full power operation upon successful completion of the rod sequence on July 14, 2002. The plant was subsequently shut down due to residual heat removal service water (RHRSW) strainer clogging on August 6, 2002. The plant returned to full power operation upon restoration of the RHRSW system on August 14, 2002. The plant was subsequently shut down to investigate drywell leakage on August 29, 2002. The plant was returned to power operations following repairs on the drywell coolers and RCIC pump on September 9, 2002; however, power was limited to 60 percent due to the "B" cooling tower being out of service. The plant returned to full power upon restoration of the "B" cooling tower on September 15, 2002, and remained at or near full power for the remainder of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating events, Mitigating Systems, Barrier Integrity**

#### 1R04 Equipment Alignment (71111.04)

##### .1 Partial Walkdowns

##### a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of trains of risk-significant mitigating systems equipment during times when the trains were of increased importance due to the redundant trains or other related equipment being unavailable. The inspectors utilized the valve and electric breaker checklists listed at the end of this report to verify components were properly positioned and that support systems were lined up as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors reviewed outstanding work orders and action requests (ARs) associated with the trains to verify that those documents did not reveal issues that could affect train function. The inspectors used the information in the appropriate sections of the Updated Final Safety Analysis Report (UFSAR) to determine the functional requirements of the system.

The inspectors verified the alignment of the following trains:

- All the warning tags hung on all equipment in the control room and pump-house during the week of August 5, 2002;
- High pressure core injection (HPCI) system, when the RCIC system was out for maintenance, during the week of August 31, 2002; and

- “B” loop residual heat removal (RHR) and “B” core spray (CS), when “A” loop was out for maintenance, during the week of September 21, 2002

The inspectors verified the position of critical redundant equipment and looked for any discrepancies between the existing equipment lineup and the required lineup.

b. Findings

No findings of significance were identified.

.2 Complete Walkdowns

a. Inspection Scope

During the week of July 27, 2002, the inspectors performed a complete system alignment inspection of the control rod drive (CRD) system. This system was selected because it was considered both safety-significant and risk-significant in the licensee’s probabilistic risk assessment. The inspection consisted of the following activities:

- a review of plant procedures (including selected abnormal and emergency procedures), drawings, and the UFSAR to identify proper system alignment;
- a review of outstanding or completed temporary and permanent modifications to the system; and
- an electrical and mechanical walkdown of the system to verify proper alignment, component accessibility, availability, and current condition.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors walked down the following risk significant areas looking for any fire protection issues. The inspectors selected areas containing systems, structures, or components that the licensee identified as important to reactor safety. The following walkdowns were performed:

During the week of July 13, 2002

- Area Fire Plan (AFP) 10, “Reactor Building Main Exhaust Fan Room, Heating Hot Water Pump Room and the Plant Air Supply Fan Room”
- AFP 11, “Reactor Building Laydown Area”



- AFP 12, “Reactor Building Decay Tank and Condensate Phase Separator Rooms”

During the week of August 24, 2002

- AFP 3, “Reactor Building HPCI, RCIC & Radwaste Tank Rooms”
- AFP 20, “Turbine Building Aux Boiler Room, Emergency Diesel Generator Rooms, and Generator Day Tank Rooms”
- AFP 24, “Control Building 1-A4, 1A-3 Essential Switchgear Rooms”

The inspectors reviewed the control of transient combustibles and ignition sources, fire detection equipment, manual suppression capabilities, passive suppression capabilities, automatic suppression capabilities, and barriers to fire propagation.

Also, the inspectors performed the annual observation of a plant fire drill during the week of August 17, 2002. The inspectors observed the plant fire brigade respond to a simulated fire at the “B” cooling tower motor control center building. The simulated fire scenario was initiated by a portable space heater that ignited building insulation and spread to the cable tray. The fire then propagated to the “B” cooling tower structure. The inspectors also attended the post fire drill critique.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed the licensee’s testing of the “A” and “B” emergency diesel generator (EDG)/emergency service water (ESW) heat exchangers (1E053A and 1E053B) during the week of August 31, 2002, to verify that any potential deficiencies did not mask the licensee’s ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee’s observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also assessed whether test acceptance criteria considered differences between test conditions, design conditions, and testing criteria.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On September 10, 2002, the inspectors observed a training crew during an evaluated simulator scenario of Evaluated Scenario Guide (ESG) 18, and reviewed licensed operator performance in mitigating the consequences of events.

The inspector evaluated crew performance in the areas of:

- clarity and formality of communications;
- timeliness of actions, prioritization of activities;
- procedural adequacy and implementation;
- control board manipulations;
- managerial oversight, emergency plan execution; and
- group dynamics.

The crew performance was compared to licensee management expectations and guidelines as presented in the following documents:

- Administrative Control Procedure (ACP) 110.1, "Conduct of Operations";
- ACP 101.01, "Procedure Use and Adherence"; and
- ACP 101.2, "Verification Process and SELF/PEER Checking Practices."

The inspectors assessed whether the crew completed the critical tasks listed in the above guidelines. The inspectors also compared simulator configurations with actual control board configurations. For any weaknesses identified, the inspectors observed licensee evaluators to verify that they also noted the issues and discussed them in the end of the session critique.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the Maintenance Rule (10 CFR 50.65) to ensure rule requirements were met for the selected systems. The following systems were selected based on being designated as risk significant under the Maintenance Rule, or being in the increased monitoring of Maintenance Rule category a(1):

- EDG during the week of July 13, 2002; and
- 125 volts direct current (VDC) battery during the week of September 7, 2002

The inspectors evaluated whether the licensee's categorization of specific issues was accurate, including evaluation of the performance criteria. The inspectors reviewed the licensee's implementation of the maintenance rule requirements, including a review of scoping, goal-setting, and performance monitoring; short-term and long-term corrective actions; functional failure determinations associated with the condition reports reviewed; and current equipment performance status.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's evaluation of plant risk, scheduling, configuration control, and performance of maintenance associated with planned and emergent work activities to verify that scheduled and emergent work activities were adequately managed. In particular, the inspectors reviewed the licensee's program for conducting maintenance risk safety assessments to verify that the licensee's planning, risk management tools, and the assessment and management of on-line risk was adequate. The inspectors also reviewed the licensee actions to address increased online risk during these periods, such as establishing compensatory actions, minimizing the duration of the activity, obtaining appropriate management approval, and informing appropriate plant staff, to verify the activities were accomplished when online risk was increased due to maintenance on risk-significant structures, systems, and components (SSCs).

The following specific activities were reviewed:

- maintenance risk assessment for work planned during the week of July 20, 2002;
- maintenance risk assessment for work planned during the week of August 10, 2002;
- maintenance risk assessment for work planned during the week of August 17, 2002;
- maintenance risk assessment for work planned during the week of August 31, 2002;
- maintenance risk assessment for work planned during the week of September 14, 2002; and
- the maintenance risk assessment for work planned during the week of September 28, 2002.

b. Findings

Introduction

A finding of very low safety significance (Green) and an associated NCV of 10 CFR 50.65(a)(4), related to inadequate assessment and management of risk during maintenance on the RCIC system were identified by the inspectors.

Description

On August 29, 2002, the inspectors questioned the overall risk assessment of the plant based on actual plant conditions. The plant had publicized the overall ORAM/SENTINEL (Risk Analysis Program) plant risk as green with the RCIC system unavailable for accident mitigation purposes for 12 days. The ORAM/SENTINEL program uses four levels of risk assessment ranging from lowest to highest risk with an associated color of green (lowest), yellow, orange, and red (highest). The inspectors asked the licensee to perform the ORAM/SENTINEL overall risk assessment with the RCIC system unavailable since that was the present plant condition. When the licensee made the RCIC system unavailable in the ORAM/SENTINEL program, the overall risk changed to yellow with a Core Damage Frequency of 2.36E-05 based on Plant Transient Assessment Tree (PTAT). The inspectors determined that although the licensee's risk assessment was not adequate, the other steam driven mitigation system, HPCI, was still available and working as designed; therefore, this finding was determined to be of very low safety significance.

Analysis

The inspectors reviewed this issue against the guidance contained in Appendix B, "Issue Dispositioning Screening," of Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports." The inspectors concluded that the issue was more than minor since the finding involved a change in risk level from green to yellow and, if left uncorrected, could become a more significant safety concern. This conclusion was based on the fact that an adequate assessment of risk could have led to additional management strategies including establishment of protected pathways for redundant mitigating systems.

The inspectors reviewed this issue in accordance with Manual Chapter 0609, "Significance Determination Process (SDP)," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined that this Maintenance Rule (a)(4) finding was not addressed in the SDP worksheets and required a Phase 3 evaluation. The Regional Senior Reactor Analyst (SRA) performed a Phase 3 risk assessment and determined that the ICDP for having the RCIC system unavailable for 12 days was 3E-7, which was below the 1E-6 ICDP threshold referenced in NUMARC 93-01, Section 11 (endorsed in NRC Regulatory Guide 1.182). An ICDP of 5E-7 is considered of low risk significance (green) and requires no other risk management action other than normal work controls.

## Enforcement

10 CFR 50.65 (a)(4) requires, in part, that before performing maintenance activities (including but not limited to surveillances, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activity. Contrary to the above, the licensee failed to perform an adequate risk assessment when the RCIC system was unavailable on August 29, 2002. The failure to perform an adequate risk assessment resulted in the licensee inappropriately assigning an overall green risk condition for the plant when actual plant conditions (RCIC system unavailable) warranted a yellow risk assessment. The failure to properly perform an adequate risk assessment when the RCIC system was unavailable was an example where the requirements of 10 CFR 50.65 (a)(4), were not met and was a violation. However, because of its low safety significance and because it was entered into the corrective action program (AR 32344), the USNRC is treating this issue as a Non-Cited Violation (NCV 50-331/0206-01), in accordance with Section VI.A.1 of the USNRC's Enforcement Policy.

Corrective actions taken for this violation included changing the on line scheduling risk assessment process to include the shift technical advisor performing real time risk assessments as system equipment availability changes. Additionally, this risk assessment will be documented on a new worksheet that will provide appropriate risk assessment guidelines.

### 1R14 Personnel Performance During Nonroutine Plant Evolutions and Events (71111.14)

#### Technical Specification (TS) Shutdown Required Due to Plugging of the RHRSW System Strainers

##### a. Scope

On August 6, 2002, the licensee entered an unplanned TS shutdown limiting condition for operation (LCO) for both trains of RHRSW being inoperable due to plugging of the RHRSW strainers with algae. The inspectors evaluated control room activities and management decision-making related to the plugged strainers. Also, the inspectors reviewed the licensee's apparent cause evaluation, applicable procedures, and the ARs generated to understand and resolve the details of this event.

##### b. Findings

###### Introduction

A finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion XVI, related to inadequate corrective actions for the plugging of the RHRSW strainers due to algae growth control, were identified by the inspectors.

###### Description

On August 4, 2002, plant staff performed a surveillance test on the "B" RHRSW system, in preparation for a planned "A" RHRSW system LCO. During the test, the "B" RHRSW

strainer high differential pressure (DP) alarm annunciated and the DP gauge pegged high, which indicated > 15 pounds per square inch differential (PSID) across the strainer. The procedural limit for the maximum RHRSW strainer DP was 12 PSID at a 2400 GPM flow rate. Plant staff declared the "B" RHRSW system inoperable and entered TS LCO 3.7.1 Condition C, for one RHRSW system inoperable. However, the TS requirement for the availability of one RHRSW system pump with a flow rate of 2040 GPM was still met.

On August 5, 2002, the "B" strainer DP gauge lines were flushed, and a temporarily installed DP gauge (which had a range of up to 50 PSID) indicated 17 PSID with one RHRSW pump running. The stilling basin and "B" RHRSW pit were cleaned, and the "B" strainer was disassembled and cleaned. The cleaning revealed that the rate of silt buildup and algae growth was much greater than experienced in the past. Approximately four feet of silting with a layer of algae matting on top was found in the RHRSW/ESW stilling basin. Approximately six to eight inches of algae was growing on the walls of the intake structure.

After the algae was cleaned from the stilling basin, "B" pit, and "B" strainer, operators started one "A" RHRSW pump; the PSID on the "A" RHRSW strainer was 2.5 PSID at a flow rate of 2040 GPM. Operators then started the second "A" RHRSW pump, producing a total "A" RHRSW system flow rate of 4800 GPM with a high strainer DP of 12 PSID. Accordingly, the "A" RHRSW system was declared inoperable and plant staff entered the TS action statement for plant shutdown. The inspectors concluded that this issue was of very low safety significance since the flows of all RHRSW pumps were above TS 3.7.1 "RHRSW System" minimum flow rate of 2040 GPM. The operators performed a controlled shutdown of the plant and maintained cold shutdown conditions.

Upon further review of the event, the inspectors noted that the licensee had identified corrective actions from the September 2001 algae problem in AR 27459. This AR, which was categorized as a significant condition adverse to quality, was closed on May 23, 2002, with all actions being completed. The corrective actions performed during this AR were inadequate since they did not prevent the recurrence of excess algae growth from clogging the RHRSW strainers.

### Analysis

The safety function of the RHRSW system is to provide a means for the RHR system to reject decay heat which the RHR system removes from the reactor or primary containment system under both accident and normal conditions. Because of its potential safety significance, the inspectors reviewed this issue against the guidance contained in Appendix B, "Issue Dispositioning Screening," of IMC 0612, "Power Reactor Inspection Reports," to determine whether the finding was minor. The inspectors concluded that the finding had greater safety significance than similar corrective action deficiencies described in IMC 0612, Appendix E, Section 4.f. since it affected the operability of the RHRSW system. The safety significance was due to the fact that the amount of algae grass found in the river water intake pits and the pump house stilling basins could have plugged both divisions of RHRSW and ESW. The plugging of the RHRSW strainer had the potential to degrade system performance to the point where decay heat removal from the primary system could have been compromised.

Because the issue was greater than minor, the inspectors reviewed it in accordance with Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," regarding mitigating systems. Because the issued did not meet any of the criterial in Appendix A, the finding screened as Green and was of very low safety significance.

### Enforcement

Appendix B of 10 CFR 50, Criterion XVI, states, in part, that measures shall be established to assure that conditions adverse to quality, are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the condition is determined and corrective action taken to preclude repetition. Contrary to the above, the licensee failed to take corrective action to prevent repetition of the plugging of the RHRSW strainers, a significant condition adverse to quality. Specifically, on September 4, 2001, algae was found to have clogged the RHRSW strainer resulting in the "B" RHRSW system being declared inoperable. On August 6, 2002, algae was again found to have clogged the strainers resulting in both trains of RHRSW being inoperable. The failure to properly correct the RHRSW strainer clogging was an example where the requirements of 10 CFR 50, Appendix B, Criterion XVI, were not met and was a violation. However, because of its low safety significance and because it was entered into the corrective action program (AR 32344), the USNRC is treating this issue as a Non-Cited Violation (NCV 50-331/0206-02), in accordance with Section VI.A.1 of the USNRC's Enforcement Policy.

The licensee implemented several short- and long-term corrective actions. The major short-term corrective actions included adding algicide on a twice per week frequency; performing intake structure and RHRSW/ESW stilling basin inspection and cleaning on a monthly basis from June to October; and chlorinating at the intake structure. The major long-term corrective actions include creating a staff position for overall river management; evaluating the need to add sodium hypochlorite and bromide at the river water system pumps to keep the circulating water systems clean; and evaluating the use of alternate circulating water system water sources such as arterial wells drilled under the Cedar River riverbed, which would provide sediment-free water due to the natural filtration process of the river bottom.

### 1R15 Operability Evaluations (71111.15)

#### a. Inspection Scope

The inspectors assessed the following operability evaluations:

- AR 31075, "10 CFR 21 Notification Regarding K-Line Circuit Breakers' Failure to Charge and Close", during week of July 6, 2002;
- AR 31776, "Silt Buildup in the Riverbed in Front of the Intake Structure has Reduced Water Depth in Front of the Intake to Approximately One Foot, Where Eight Feet of Depth was Expected", during week of July 27, 2002;

- AR 31715, “Control Building Envelope”, during week of September 7, 2002; and
- AR 32234, “RCIC Pump” , during week of September 7, 2002

The inspectors reviewed the technical adequacy of the evaluation against the Technical Specification, UFSAR, and other design information; determined whether compensatory measures, if needed, were taken; and determined whether the evaluations were consistent with the requirements of the licensees administrative control procedure ACP - 114.5 Action Request System Rev. 32.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (OWAs) (71111.16)

a. Inspection Scope

The inspectors reviewed the following operator workarounds:

- OWA 31743, “Work Around on Diesel Fire Pump Basket Strainer BS3300”, during the week of July 27, 2002; and
- OWA 29673, “Bridge Reliability Preventive Maintenance Program” during the week of August 24, 2002.

OWA 31743 was evaluated for its potential to impact the operators’ ability to maintain the diesel fire pump operable and OWA 29673 was evaluated for its potential to impact safe handling of fuel bundles during fuel moves.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed the following modification to verify that the design basis, licensing basis, and performance capability of risk significant systems were not degraded by the installation of the modification. The inspectors also verified that the modification did not place the plant in an unsafe configuration.

- Engineering Change Package (ECP) 1616, “PDIC 1947 and Pressure Differential Input Controller (PDIC) 2046 Replacement,” during the week of August 3, 2002. This modification removed an obsolete controller used to control the DP maintained between the RHR and RHRSW systems. The controller was replaced with a hand-switch.



The inspectors considered the design adequacy of the modification by performing a review, or partial review, of the modification's impact on plant electrical requirements, material requirements and replacement components, response time, control signals, equipment protection, operation, failure modes, and other related process requirements.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities. Activities were selected based upon the structure, system, or component's ability to impact risk.

- Corrective Work Order (CWO) A58795, "Unable to Pass STP 3.7.4-03 for 1A4 Switchgear Room. Supply Damper to 1A4 Needs Adjusting to Point that Steps of STP can be Completed Sat for Doors 402 and 401," during the week of July 20, 2002;
- CWO A59292, "Inspect Backwash Assembly (1P22B/D RHRSW Pump Strainer, 1S090B) and Replace Parts as Required. Inspect Strainer Assembly," during the week of August 10, 2002;
- CWO A59282, "Scoop Tube Locked Up and High Setpoint is Cycling On and Off. Deviation Meter Shows no Indication of Change," during the week of August 24, 2002;
- Preventive Work Order (PWO) 1121296, " Valve Operation Test and Evaluation System (VOTES) Diagnostic Test - MO2517," during the week of August 24, 2002;
- CWO A60308, "Oil is Backing Up in System [RCIC] and Misting Out of the Outboard Bearing Pedestal," during the week of August 24, 2002;
- CWO A50919, "Torus Exhaust Isolation, Standby Gas Treatment Switch, HS4301," during the week of September 7, 2002; and
- PWO 1121102, "Remove and Replace Air Start Check Valves," during the week of September 28, 2002

The inspectors, by witnessing the test or reviewing the test data, evaluated whether post-maintenance testing activities were appropriate for the applicable maintenance activity. The reviews included, but were not limited to, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use and compliance, control of temporary modifications or jumpers required for test performance, documentation of test data, TS applicability, system restoration, and evaluation of test data. The inspectors also evaluated whether maintenance and

post-maintenance testing activities adequately ensured that the equipment met the licensing basis, TS, and UFSAR design requirements.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors observed shutdown activities for the forced outage, to investigate the increasing drywell leakage, which began on August 29, 2002. The inspectors monitored the licensee's cooldown process and ensured that TS were followed during the transition into Modes 3 and 4. The licensee, as part of the 9-day outage, corrected the drywell leakage by repairing the 3B and 6B drywell coolers and isolating the 3A drywell cooler. Additionally, the licensee repaired the lube oil system on the RCIC pump. The inspectors monitored outage configuration management on a daily basis by verifying that the licensee maintained appropriate defense in depth to address all shutdown safety functions and satisfy TS requirements. Proper operation of the decay heat removal system was verified during multiple control room tours and observations. The licensee restarted the reactor on September 9, 2002.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors selected the following surveillance test activities for review. Activities were selected based upon risk significance and the potential risk impact from an unidentified deficiency or performance degradation that a system, structure, or component could impose on the unit if the condition were left unresolved.

- NS540002, "Emergency Service Water Operability Test," Revision 8, during the week of July 6, 2002;
- STP 3.3.3.1-04, "Containment H2-O2 Analyzer Channel Check," Revision 2, during the week of August 10, 2002;
- STP 3.3.6.1-03, "Main Steam Line High Flow Channel Calibration," Revision 6, during the week of August 17, 2002;
- Work Order A58581, "Perform 3 Pin Reconstitution on Bundles YJF 372/343 and Ship per G.E. Procedures and Cask Licensing in Progress," Revision 0, during the week of August 24, 2002;

- STP 3.5.3-02, "RCIC System Operability Test," Revision 11, during the week of September 7, 2002; and
- STP 3.6.1.3-01, "Containment Purge and Vent Valve Leakage Integrity Test," Revision 1, during the week of September 7, 2002

The inspectors observed the performance of surveillance testing activities, including reviews for preconditioning, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use, control of temporary modifications or jumpers required for test performance, documentation of test data, TS applicability, impact of testing relative to performance indicator reporting, and evaluation of test data.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors evaluated the following temporary modifications:

- Temporary modification permit (TMP) 02-032, "Obtain Pressure Reading and Vent "A" and "B" LPCI Inject Lines," during the week of July 27, 2002. The modification was to vent the LPCI headers in order to repair a body to bonnet leak on the LPCI cross-tie equalizing line isolation valve; and
- TMP 02-043, "Obtain Differential Pressure Indication Across RHR Heat Exchanger 1E-201A," during the week of September 27, 2002. The modification was to evaluate the RHR heat exchanger pressure drop while the RHRSW heat exchanger is bypassed.

The inspectors reviewed the safety screening, design documents, UFSAR, and applicable TS to evaluate whether the selected temporary modifications were consistent with modification documents, drawings and procedures. The inspectors also reviewed the post-installation test results to confirm that tests were satisfactory and the actual impact of the temporary modification on the permanent system and interfacing systems were adequately verified.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The resident inspectors observed a simulator-based training evolution to evaluate drill conduct and the adequacy of the licensee's critique of performance to identify weaknesses and deficiencies. The September 18, 2002 training drill included a resin slurry spill due to a weld failure; a leak in the reactor water cleanup piping with a failure of the two isolation valves to close; a main steam line break that lead to fuel damage; and a site release of radioactive inventory through the off-gas stack. The inspectors evaluated whether the drill evolution was of appropriate scope and was to be included in the performance indicator statistics. The inspectors observed implementation of the emergency operating procedures, event classification, and reporting actions. The inspectors also evaluated whether there were any discrepancies between observed performance and performance indicator reported statistics. The observed simulator scenario resulted in an Alert, Site Area Emergency, and a General Emergency classification.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety (OS)**

2OS3 Radiation Monitoring Instrumentation (71121.03)

.1 Walkdowns of Radiation Monitoring Instrumentation

a. Inspection Scope

The regional radiation protection inspector reviewed the UFSAR and performed walkdowns of selected area radiation monitors (ARMs), and continuous air monitors (CAMs), at the spent fuel pool, reactor building, low-level radioactive material storage facility, and transportation bay areas. Additionally, the inspector examined a representative number of portable instruments staged in the licensee's facility to verify that those instruments had current calibrations, were operable, and in good physical condition. The inspector also reviewed the status of repair or troubleshooting activities associated with selected radiation monitoring instruments (i.e., ARMs and portal monitors that had work request tags) to verify that instrumentation problems were being addressed in an appropriate and timely manner. The inspector performed these walkdowns to verify the instrumentation was: (1) optimally positioned (i.e., relative to the potential source(s) of radiation they were intended to monitor); (2) in a good material condition; and (3) properly indicating area radiation levels, which ensures the protection of occupational workers.

b. Findings

No findings of significance were identified.

.2 Calibration, Operability, and Alarm Set Points of Radiation Monitoring Instrumentation

a. Inspection Scope

The regional radiation protection inspector examined calibration and surveillance records for radiological instrumentation associated with monitoring transient high and/or very high radiation areas and instruments used for remote emergency assessment to verify that the calibrations were conducted consistent with industry standards and in accordance with station procedures.

Specifically, the inspector reviewed calibration procedures and CY 2001 - 2002 calibration records and/or source characterization/verification documents for the following radiation monitoring instrumentation and instrument calibration equipment:

- Post Accident Sampling Station Room ARM (RE-8771);
- Reactor Building South ARM (RE-9169);
- Truck Loading Bay ARM (RE-9186);
- South Refuel floor ARM (RE-9164);
- North Turbine Building ARM (RE-9179);
- Drywell Area, High Range ARM (RIM- 9184B);
- Merlin Gerin Probenca (MGP) Instruments, ED [Electronic Dosimeter] Calibrator, Source SN #930519; and
- J. L. Shepherd Model M89 Instrument Calibrator

The inspector reviewed the licensee's alarm set points for selected ARMs to verify that the set points were established consistent with the UFSAR, Technical Specifications, and the station's Emergency Plan.

The inspector discussed surveillance practices with licensee personnel and reviewed CY 2001 - 2002 calibration records and procedures for selected radiation monitors used for assessment of internal exposure. The inspector also reviewed calibration records and procedures for those instruments utilized for surveys of personnel and equipment prior to egress from the radiologically controlled area (RCA). These instruments included:

- AMS-3 Air Monitoring System;
- PORTACOUNT PLUS, Whole Body Counter;

- Gamma 10 Portal Monitor; and
- Whole Body Personnel Contamination Monitor (PCM-1B)

Additionally, the alarm set-points for these instruments were reviewed to verify that they were established at levels consistent with industry standards and regulatory guidance provided in Health Physics Positions No. 72 and No. 250 of NUREG/CR-5569.

The inspector also evaluated the calibration procedures and selected CY 2001 - 2002 calibration records for selected portable radiation survey instruments to verify that they had been properly calibrated consistent with the licensee's procedures. Specifically, the inspector observed the calibrations of the following instruments:

- RM-14, Count rate meter;
- RO-20 ion chamber; and
- TELEPOLE dose rate meter

b. Findings

No findings of significance were identified.

.3 Radiation Protection Technician Instrument Use

a. Inspection Scope

The regional radiation protection inspector observed radiation protection technicians (RPTs) performing in-field source checks of portable radiation survey instruments to verify that those source checks were adequately completed using appropriate radiation sources and station procedures.

The inspector assessed the RPTs use of radiation/contamination detection instruments as they provided radiological job coverage for risk significant work (e.g., the spent fuel pin packaging and shipment preparations), as well as routine work, to ensure that the RPTs were utilizing the appropriate instruments.

The inspector examined (and observed RPTs completing functional tests of) selected CAMs to verify that these instruments were source checked and calibrated properly. The inspector monitored RPTs performing functional tests of selected contamination monitors, portal monitors, and small article monitors (i.e., for surveys of personnel and equipment prior to unconditional release from the RCA) to verify that they were source tested and calibrated as required by station procedures and industry standards.

Additionally, the inspector observed an RPT performing field checks on an improperly functioning portal monitor (i.e., one located at the metrology laboratory/RCA boundary, to monitor personnel as they leave the plant's restricted area), to verify RPT adherence to the appropriate station procedure (i.e., for the discovery of an improperly functioning radiation monitoring instrument).

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The regional radiation protection inspector reviewed CY 2001 - 2002 ARs that addressed radiation monitoring instrument deficiencies to determine if any significant radiological incidents involving instrument deficiencies had occurred. The inspector examined the results of a self-assessment (i.e., the 2<sup>nd</sup> Quarter 2002 Nuclear Oversight Observation Report, "Radiation Monitoring Instrumentation Program") that focused on the licensee's AR database and several individual ARs related to radiation monitoring instrumentation generated during the current assessment period. The inspector also reviewed the 1<sup>st</sup> and 2<sup>nd</sup> Quarter 2002, Duane Arnold Energy Center (DAEC) Instrument Trending Program Report. Additionally, the inspector analyzed the results of two Radiological Engineering Calculations: (1) No. 02-001-A "Periodic Evaluation of the Internal Monitoring Program at DAEC;" and (2) No. 02-002-H, "PCM-1B Performance Verification." The inspector also interviewed plant staff, and examined closed ARs, to verify that previous radiological instrumentation-related issues were adequately addressed by the licensee. To summarize, the inspector performed these reviews to evaluate the effectiveness of the licensee's self-assessment process to identify, characterize, and prioritize problems and to develop appropriate corrective actions. The inspector also evaluated these documents to verify the licensee's ability to identify repetitive problems, contributing causes, extent of conditions, and the implementation of corrective actions to achieve lasting results.

b. Findings

No findings of significance were identified.

**Cornerstone: Public Radiation Safety (PS)**

2PS2 Radioactive Material Processing and Transportation (71122.02)

.1 Walk-Downs of Radioactive Waste Handling/Shipping Systems

a. Inspection Scope

The regional radiation protection inspector compared the operations of the solid radioactive waste systems to the descriptions in the UFSAR and the licensee's process control program. The inspector performed walkdowns of the solid radioactive waste handling and shipping systems (i.e., those related to the movement of spent fuel casks) to assess their material condition and operability and to verify that radiological hazards were adequately posted and controlled in accordance with 10 CFR 20 and the licensee's Technical Specifications. The inspector also discussed the current operation of the systems with a member of the radioactive waste shipping/operations crew, the contractor/vendor representative, and the independent shipping representative (i.e., for

the spent fuel shipment). Specifically, the inspector reviewed the condition of radioactive waste handling and shipping system components located in the following areas:

- Spent Fuel Pool/Re-Fueling floor;
- Reactor Building;
- Solid radioactive waste handling, storage, and processing areas; and
- Truck shipping bay area

b. Findings

No findings of significance were identified.

.2 Shipment Preparation and Observation of Radioactive Material Processing Activities

a. Inspection Scope

The regional radiation protection inspector observed ongoing activities for a Highway Route Controlled Quantity (HRCQ) shipment of spent fuel pins, to ensure that the shipping activities were performed in accordance with the requirements of 10 CFR Parts 20 and 71, as well the requirements of 49 CFR Parts 171-173 and 174-178. The inspector attended pre-job briefings and evaluated the preparations, including the operations department interface, associated with the movement/packaging of the spent fuel pin container and shipping cask. The inspector reviewed the station's plans/preparations for the performance of final radiological surveys, labeling, placarding, vehicle inspections, and the special instructions provided to the driver. The inspector interviewed all personnel who would be involved in the shipment processing/activities (i.e., licensee staff, contractors/vendors, and independent shipping contractor) regarding training and qualification records. Specifically, the inspector reviewed CY 2002 training documentation for the truck drivers involved with the spent fuel pin shipment (i.e., since it involved a HRCQ). In addition, the inspector evaluated licensee/contractor adherence to the requirements of Safeguards Advisory # 01-02 (December 17, 2001) which addressed additional, special concerns for the shipment of spent nuclear fuel. The inspector reviewed licensee/contractor shipment calculations and other shipping documentation. The inspector observed the spent fuel pin container loading operation (i.e., into the vendor's shipping cask) and the packaging of the shipment (i.e., into the overpack container) before final transfer to the carrier. The inspector also performed independent, confirmatory radiological surveys on the overpack shipping container and the transport trailer. The inspector evaluated licensee/contractor performance to verify the overall adequacy of work planning/preparations (and actual work), to ensure that the work was executed in accordance with station's/vendor's procedure, to assess the adequacy of the radiological controls for the work activity, and to determine if supervisory oversight was adequate. Additionally, the inspector observed these activities to verify that the licensee's program provided hazardous material training to those personnel responsible for radioactive material shipments and shipment preparation, as required by 49 CFR 172 Subpart H and licensee procedural requirements.



b. Findings

No findings of significance were identified.

.3 Shipping Records

a. Inspection Scope

The regional radiation protection inspector examined a radioactive material shipment manifest and associated records for a similar, non-excepted shipment of spent fuel pins (HRCQ, Type B package shipment) completed in September 1998. The review was performed to verify compliance with USNRC requirements contained in 10 CFR Parts 20 and 71, as well as the Department of Transportation (DOT) requirements of 49 CFR Parts 172-173 and 174-178. Specifically, these historical records were reviewed and those personnel involved in the current spent fuel pin shipment activities were interviewed to verify that the package was labeled and marked properly, that package and transport vehicle surveys satisfied DOT requirements, that cask certificate of compliance requirements were satisfied, and that shipment manifests were completed in accordance with the regulations and included appropriate, special emergency response information. The inspector examined all preliminary shipping documentation for the current shipment of spent fuel pins, which was provided by the vendor and independent shipping contractor, for all the previously noted transportation/shipping concerns. Additionally, the inspector interviewed a shift operations superintendent (i.e., who would be responsible for answering the licensee's emergency response 24-hour telephone number) to verify that the individual had adequate knowledge concerning the spent fuel shipment, special emergency precautions, and incident mitigation information or that the individual had immediate access to a person who possessed such knowledge.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The regional radiation protection inspector reviewed licensee generated ARs and pre-work self-assessments, which were recently generated, concerning the areas of radioactive material processing and shipping. The inspector reviewed these documents to assess the licensee's ability to identify repetitive problems, contributing causes, the extent of conditions, and corrective actions which will achieve lasting results.

b. Findings

No findings of significance were identified.

### 3. SAFEGUARDS

#### Cornerstone: Physical Protection

##### 3PP3 Response to Contingency Events (71130.03)

.1 The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

##### a. Inspection Scope

On September 10, 2002, the USNRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level "orange."

The inspector interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

##### b. Findings

No findings of significance were identified.

##### .2 Inspection Scope

The inspector reviewed the licensee's current protective strategy which included designated targets and target sets, and security response procedures. The inspector also reviewed security event reports, and the licensee's problem identification and resolution program to determine that issues related to the licensee's contingent event program were identified at the appropriate threshold and were entered into the licensee's corrective action program. Items reviewed included self-assessments, audits, a sample of training records, and the licensee's procedure for their corrective action process. In addition, the inspector conducted interviews with security officers and security management to evaluate their knowledge and use of the licensee's corrective action system.

The inspector reviewed 19 training records and interviewed eight members of the security force to evaluate and verify security training that related to alarm station operations, tactical "force-on-force" deployment, and weapon proficiency training. The inspector also toured the defensive positions established for plant protection purposes.

The inspector also reviewed performance indicator information related to alarm equipment performance to determine if isolated or system problems with the protected

area intrusion alarm system and/or assessment system had become predictable and potentially exploitable by an adversary.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

**Cornerstone: Initiating Events, Mitigating Systems, Barrier Integrity**

.1 Initiating Events, Mitigating Systems, Barrier Integrity Performance Indicator Verification

a. Inspection Scope

The inspectors reviewed the Licensee Event Reports (LERs), licensee memoranda, plant logs, and USNRC Inspection Reports to verify the following performance indicators through the 2<sup>nd</sup> quarter of 2002.

- Unplanned Transients per 7000 Critical Hours, during the week of July 13, 2002;
- Unplanned Scrams per 7000 Critical Hours, during the week of July 27, 2002;
- Safety System Functional Failure, during the week of September 14, 2002; and
- Reactor Coolant System Leakage, during the week of September 14, 2002.

The inspectors evaluated whether the licensee accurately reported performance as defined by the applicable revision of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline."

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

The inspectors selected the issues identified below for additional review.

In conducting the review, the inspectors considered the nature and significance of the issue with respect to safety, risk, and licensee corrective action procedural requirements. Attributes considered during the review of licensee actions included complete and accurate identification of the problem; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and

previous occurrences reviews were proper and adequate; and the classification, prioritization, focus, and timeliness of corrective actions.

### **Cornerstone: Mitigating Systems**

#### .1 AR 27497: Review the Effectiveness of the Corrective Actions for AR 27459, Unknown Foreign Material Found in Pump House Stilling Basin

##### a. Introduction

The inspectors selected the corrective actions associated with the September 4, 2001, plugging of the RHRSW strainer plugging event for a more in-depth review.

##### b. Effectiveness of Corrective Actions

###### (1) Inspection Scope

The inspectors reviewed multiple related ARs to determine if generic implications were addressed and that corrective actions were appropriately focused to correct the problem.

###### (2) Issues

As discussed in Section 1R14 of this report, the licensee determined that the event was caused by excessive algae growth due to inadequate cleaning frequency of the intake structure pits and stilling basin, and ineffective chlorine treatment process. The licensee had in place a preventive maintenance (PM) frequency of cleaning once every 3 months from 1990 to 1998, and once every 6 months from 1998 until the occurrence of the strainer plugging. The change in PM frequency did not consider algae buildup to be a concern.

The licensee initiated several corrective actions.

- The PM frequency was changed to require inspection and cleaning of the intake structure, stilling basin, and pits every 2 months from April through October each year.
- A new method of chlorination was developed to include the pits and stilling basin
- A procedure revision to permit operators to take manual control of stilling basin level. This avoided level transients noted when the system was in automatic.

As evidenced by the August 2002 recurrence of algae clogging the RHRSW strainers, the corrective actions implemented for AR 27459 were inadequate. In particular, the licensee based the success of the new procedure for chlorinating the stilling basin and RHRSW pits on only one test, in which the results of a May 6, 2002 pit inspection indicated no measurable algae growth. Based on this single inspection, licensee staff incorrectly assumed that the alternate method of chlorination was the correct solution for preventing algae growth in the stilling basin and RHRSW pits. As such, the licensee did

not pursue the use of bromide and algicide, in addition to chlorine, for the maximum effectiveness in preventing algae growth in the RHRSW/ESW pits. The addition of the algicide to the stilling basin, coupled with mechanically cleaning the pits, was largely credited by plant staff to remedy the August 2002 algae problem.

With regard to the frequency of cleaning the pits, the licensee assumed that a bi-monthly frequency was adequate. Given the potential adverse results of the problem, the pits should have been cleaned more frequently, particularly in the warmer months when algae blooms were more likely to occur. The September 19, 2002, stilling basin and RHRSW pit inspections determined that approximately 80 percent of the stilling basin wall was covered with one inch of algae, and a band between two feet to ten feet levels in the RHRSW pit was covered with 3/4 inch of algae. This amount of growth occurred in only one month after the previous cleaning, thus demonstrating the need for a shorter period between inspections. (See Section 1R14 for enforcement action)

.2 Action Request 29820: While Performing Surveillance Test Procedure (STP) 3.5.1-02 LPCI Quarterly, the "C" RHR Pump Tripped Immediately

a. Introduction

The inspectors selected the February 7, 2002, trip of the "C" RHR pump event for a more in-depth review.

b. Effectiveness of Problem Identification

(1) Inspection Scope

The inspectors evaluated whether the licensee's identification of the problems were complete, accurate, and timely, and that the consideration of extent of condition review, generic implications, common cause and previous occurrences was adequate.

(2) Issues

The valve operator for MO-2069, RHR loop "A" torus suction isolation, had been overhauled. The post maintenance testing requirement was to perform the system operability test. During the test, while attempting to start the "C" RHR pump, the pump tripped on "no suction path." The no suction trip relay was observed to be energized when it should have been deenergized. Further investigation identified that a limit switch (LS9-12) for MO-2069, which was tied to the no suction trip relay, was not properly monitoring valve position. Following limit switch adjustment, the surveillance test was performed satisfactorily.

The motor operated valve (MOV) overhaul procedure stated, "Set LS9-12 to operate just prior to LS1-4." However, the procedure did not state if the switch should be set to open or close. The criteria provided on the electrical schematics were included in the maintenance package; however, the procedure did not reference the proper set-up criteria. An AR was initiated to revise the overhaul procedures to include the specific limit switch drawing, which showed the proper position of the limit switch. All the affected overhaul procedures were reviewed to ensure the revisions were completed.

.3 Action Request 32558: Evaluate DAEC Risk Assessment Process

a. Introduction

The inspectors selected the daily risk assessment process for a more in-depth review based on the recent problems displayed in this area.

b. Effectiveness of Corrective Actions

(1) Inspection Scope

The inspectors reviewed multiple related ARs to determine if generic implications were addressed and that corrective actions were appropriately focused to correct the problem.

(2) Issues

As discussed in Section 1R14 of this report, the licensee's risk assessment when RCIC was unavailable on August 29, 2002, was not adequate. The licensee had written AR 32344 to capture the issue in their corrective action program. On September 12, 2002, during the time period when the licensee was implementing corrective actions for AR 32344, the inspectors identified another inadequate risk assessment; the licensee had assigned an overall risk of green when the overall risk was actually yellow due to the "A" CRD pump being out of service. The licensee wrote AR 32529 to capture this issue in their corrective action program and, based on the previous occurrences of inadequate risk assessment, the licensee wrote AR 32558 to reevaluate the overall risk assessment process.

In response to AR 32558, a procedure change to the on line scheduling risk assessment process was initiated that included specific guidance for the shift technical advisors on risk assessment. The guidance gave directions to have the shift technical advisor perform real time risk assessments as system equipment availability changes. Additionally, this risk assessment will be documented on a new worksheet that will provide appropriate risk assessment guidelines. All the affected procedures were reviewed to ensure the revisions were completed and the new process implemented.

4OA3 Event Follow-up (71153)

**Cornerstones: Mitigating Systems**

.1 (Closed) Licensee Event Report (LER) 50-331/2002-001-00: "Unplanned Mode Change While Re-Aligning the RHR System from Shutdown Cooling (SDC) Mode to LPCI Standby Readiness During Reactor Startup."

a. Inspection Scope

During the week of August 26, 2002, inspectors evaluated LER 50-331/2002-001-00, "Unplanned Mode Change While Re-Aligning the RHR System from SDC Mode to LPCI Standby Readiness During Reactor Startup."

b. Findings

In preparing to transition from Mode 4 to Mode 3, the control room operators had secured SDC. The running reactor recirculation pump and decay heat were raising reactor coolant system temperature as expected. During the realignment of LPCI, the RHR cross-tie valve, V19-0048, could not be opened. The inability to open this valve prevented the restoration of LPCI to standby readiness. The technical specification requires that LPCI be operable prior to entering Mode 3. Operators were unable to restore SDC in time to prevent the transition to Mode 3 as RCS temperature momentarily (6 minutes) exceeded 212 degrees Fahrenheit. The cause of the valve failure was the failure of a setscrew in the manual operator of the RHR cross-tie valve V19-0048. The setscrew did not hold the yoke sleeve nut in place. The yoke sleeve nut had backed off its threads and fallen onto the valve stem, preventing normal operation of the valve. Recommended corrective actions included inspection of V19-0048 and similar manual valves to ensure that the setscrews are secure.

While shutdown cooling was not re-established in time to prevent the mode change, it was started in a deliberate, controlled manner in accordance with procedures. Since both core spray subsystems were operable, no loss of safety function occurred. The failure of V19-0048 at no time prevented the restart of shutdown cooling.

The inspectors determined that no findings of significance were associated with this event. The licensee had entered this issue into their corrective action program as AR 30105.

4OA6 Meeting

.1 Exit Meeting

The inspectors presented the inspection results to Mr. R. Anderson and other members of licensee management on October 01, 2002. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Safeguards Inspection with Mr. R. Anderson on July 12, 2002
- Radiation Monitoring Instrumentation and Radioactive Material Processing and Transportation Inspections with Mr. J. Bjorseth on and August 23, 2002

4OA7 Licensee-Identified Violation

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of USNRC requirements which meets the criteria of Section VI of the USNRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

**Cornerstone: Physical Protection**

10 CFR 73.21(h) states, "Safeguards Information may be processed or produced on an ADP system provided that the system is self-contained within the licensee's... facility and requires the use of an entry code for access to stored information." Between May and October 2001, Safeguards Information (SGI) (in the form of security event log indexes) was processed on a computer system that was not self-contained within the licensee's facility. The indexes described, among other things, deficiencies with security equipment and compensatory measures implemented for such deficiencies.



## KEY POINTS OF CONTACT

### Licensee

M. Peifer, Site Vice-President Nuclear  
R. Anderson, Plant Manager  
J. Bjorseth, Plant Manager  
T. Evans, Manager, Engineering  
R. Brown, Nuclear Oversight Manager  
P. Hansen, Operations Manager  
H. Giorgio, Manager, Radiation Protection  
L. Joens, Supervisor, Security Programs  
B. Kindred, Security Manager  
J. Lohman, Communications Manager  
J. Mahannah , System Engineer Supervisor  
K. Putnam, Licensing Manager  
B. Roland, Security Operations Supervisor  
W. Simmons, Maintenance Manager

### Nuclear Regulatory Commission

D. Hood, Senior Project Manger, NRR  
B. Burgess, Chief, Reactor Projects Branch 2  
G. Wilson, Senior Resident Inspector  
G. Pirtle, Physical Security Inspector  
R. Schmitt, Radiation Specialist

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

50-331/2002-006-01	NCV	Inadequate Risk Assessment due to RCIC
50-331/2002-006-02	NCV	Inadequate Corrective Actions RHR SW Strainer
50-331/2002-006-03	NCV	Safeguards Information was not Adequately Protected

### Closed

50-331/2002-006-01	NCV	Inadequate Risk Assessment due to RCIC
50-331/2002-006-02	NCV	Inadequate Corrective Actions RHR SW Strainer
50-331/2002-006-03	NCV	Safeguards Information was not Adequately Protected
50-331/2002-001-00	LER	Unplanned Mode Change While Re-Aligning the RHR System from Shutdown Cooling

### Discussed

None

## LIST OF ABBREVIATIONS USED

ACP	Administrative Control Procedures
ADAMS	NRC's Document System
AFP	Area Fire Plan
ALARA	As Low As Reasonably Achievable
AR	Action Request
ARM	Area Radiation Monitor
CAMS	Continuous Air Monitor
CRD	Control Rod Drive
CFR	Code of Federal Regulations
CS	Core Spray
CWO	Corrective Work Order
CY	Calender Year
DAEC	Duane Arnold Energy Center
DOT	Department of Transportation
DP	Differential Pressure
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
ECP	Engineering Change Package
EDG	Emergency Diesel Generator
ESG	Evaluated Scenario Guide
ESW	Emergency Service Water
GPM	Gallons Per Minute
HPCI	High Pressure Coolant Injection
HRCQ	Highway Route Controlled Quantity
HSAS	Homeland Security Advisory System
ICDP	Incremental Core Damage Probability
IMC	Inspection Manual Chapter
LER	Licensee Event Report
LCO	Limited Condition Of Operation
LPCI	Low Pressure Coolant Injection
MGP	Merlin Gerin Probenal
MOV	Motor Operated Valve
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OI	Operating Instruction
OS	Occupational Radiation Safety
OWA	Operator Work Arounds
P&IDs	Piping and Instrumentation Drawings
PARS	Public Availability Records
PDIC	Pressure Differential Input Controller
PM	Preventive Maintenance
PWO	Preventive Work Order
PS	Public Radiation Safety
PSID	Pounds Per Square Inch Differential
PTAT	Plant Transient Assessment Tree
Radwaste	Radioactive Waste

RCA	Radiologically Controlled Area
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RIS	Regulatory Information Summary
ROP	Reactor Oversight Process
RP	Radiation Protection
RPT	Radiation Protection Technician
RWP	Radiation Work Permit
SDC	Shutdown Cooling
SDP	Significance Determination Process
SER	Safeguard Event Report
SGI	Safeguards Information
SRA	Senior Reactor Analyst
SSCs	Structure, System, or Components
STP	Surveillance Test Procedure
TMP	Temporary Modification Permit
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
USNRC	U.S. Nuclear Regulatory Commission
VDC	Volts Direct Current
VOTES	Valve Operation Test and Evaluation System

## LIST OF DOCUMENTS REVIEWED

The following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings.

### 1R04 Equipment Alignment

P&ID M-117, Sheet 1	Control Rod Drive Hydraulic System	Revision 56
P&ID M-118, Sheet 2	Control Rod Drive Hydraulic System	Revision 23
OI 255	Control Rod Drive Hydraulic System	Revision 49
UFSAR Section 3.9.4	Control Rod Drive System	
UFSAR Section 4.6	Functional Design of Reactivity Control Systems	
UFSAR Section 7.7.3	Reactor Manual Control System	
UFSAR Section 15.4	Reactivity and Power Distribution Anomalies	
ACP 1410.5	Tagout Procedure	Revision 38
OI 152 Attachment 1	High Pressure Coolant Injection System Electrical Lineup	Revision 0
OI 152 Attachment 2	High Pressure Coolant Injection System Valve Lineup	Revision 1
BECH-M122	HPCI System Steam Side	Revision 15
BECH-M123	HPCI System Water Side	Revision 15
BECH-M119	Residual Heat Removal System	Revision 76
BECH-M120	Residual Heat Removal System	Revision 58
BECH-M121	Core Spray System	Revision 35
OI 149A1	RHR System Electrical Lineup	Revision 1
OI 149A4	“B” RHR System Valve Lineup and Checklist	Revision 1
OI 149A6	RHR System Control Panel Lineup	Revision 1
OI 151A1	Core Spray System Electrical Lineup	Revision 2

OI 151A4	"B" Core Spray System Valve Lineup and Checklist	Revision 2
OI 151A6	Core Spray System Control Panel Lineup	Revision 1
<u>1R05 Fire Protection</u>		
AFP 10	Reactor Building Main Exhaust Fan Room, Heating Hot Water Pump Room and the Plant Air Supply Fan Room	Revision 22
AFP 11	Reactor Building Laydown Area - El. 833'-6"	Revision 22
AFP 12	Reactor Building Decay Tank and Condensate Phase Separator Rooms	Revision 22
AFP 3	Reactor Building HPCI, RCIC & Radwaste Tank Rooms	Revision 22
AFP 20	Turbine Building Aux Boiler Room, Emergency Diesel Generator Rooms, and Generator Day Tank Rooms	Revision 22
AFP 24	Control Building 1-A4, 1-A3 Essential Switchgear Rooms	Revision 22
Fire Plan	Volume II - Fire Brigade Organization	Revision 32
AR 32225	FHA-401-F, Fire Zone Summary for the RCIC Room, Contains Correct but Superfluous Information under "Consequences of Design Basis Fire" Paragraph 2	August 21, 2002
<u>1R07 Heat Sink Performance</u>		
PWO 1120742	Perform SBDG HXH 1E053B Heat Transfer Test IAW EMP-1E053-HT	July 22, 2002
EMP-1E053-HT	Emergency Diesel Generator 1E-53A & B Coolers Heat Transfer Test	Revision 5
EPRI TR-107397	Service Water Heat Exchanger Testing Guidelines	March 1998
<u>1R11 Licensed Operator Requalification Program</u>		
	ESG 18 Scenario Guide	Revision 4
EOP 3	Secondary Containment Control	Revision 15
EOP 1	Reactor Pressure Vessel Control	Revision 9
EOP 2	Primary Containment Control	Revision 9

ED	Emergency Depressurization	Revision 2
ALC	Alternate Level Control	Revision 2
EAL	Emergency Action List Table 1	Revision 2
ACP 110.1	Conduct of Operations	Revision 0
ACP 101.01	Procedure Use and Adherence	Revision 19
ACP 101.2	Verification Process and SELF/PEER Checking Practices	Revision 5
<u>1R12 Maintenance Rule Implementation</u>		
Performance Criteria Basis Document	Emergency Diesel Generators	Revision 2
NG-02-0532, Expert Panel Meeting Minutes	March/April 2002 Maintenance Rule Monitoring and Status Report	June 25, 2002
Performance Criteria Basis Document	125 VDC Battery	Revision 3
AR 31507	Cells 52 and 58 of 125VDC Division 1 Battery Below Cell Average	June 27, 2002
AR 31509	Cell 3 of 125 VDC Division 2 Below Cell Average	June 27, 2002
AR 32426	Maintenance Rule Criteria for 125 VDC Battery	September 5, 2002
<u>1R13 Maintenance Risk Assessments and Emergent Work Control</u>		
	Online Look-Ahead Agenda	Various
	Level 'A' and Other Significant Activities Summary	Various
	Planned Outage Look-Ahead Report	Various
AR 32344	Actual Plant Overall risk was yellow	August 29, 2002
<u>1R14 Personnel Performance During Nonroutine Plant Evolutions and Events</u>		
AR 32010	"B" RHRSW Strainer High Dp Alarm while Running "B" RHRSW Pump	August 4, 2002
AR 32025	"A" RHRSW Strainer High Dp while Running "A" and "C" RHRSW Pumps	August 6, 2002

AR 32065	Operation of the RHRSW System Bypassing the RHRSW Strainers	August 8, 2002
	Operator Logs	August 4-9, 2002
PWO 1121932	Inspect and Clean Intake Structure Pits	June 27, 2002
<u>1R15 Operability Evaluations</u>		
AR 31075	10 CFR 21 Notification Regarding K-Line Circuit Breakers' Failure to Charge and Close	May 28, 2002
AR 31776	Silt Buildup in the Riverbed in Front of the Intake Structure has reduced Water Depth in Front of the Intake to Approximately 1 ft. Where 8 ft. of Depth was Expected	July 18, 2002
Design Change Package 1502	Cedar River Sediment Management Structures	June 19, 1990
AR 31715	Control Building Envelope	July 15, 2002
AR 32234	RCIC	September 7, 2002
ACP -114.5	Action Request System	Rev. 32
<u>1R16 Operator Workarounds</u>		
AR 31743	Work Around on Diesel Fire Pump Basket Strainer BS3300	July 16, 2002
AR 31266	BS3300 (1P-49 Cooling Water Supply Basket Strainer) High DP	June 10, 2002
AR 29673	Bridge Reliability Preventive Maintenance Program	January 28, 2002
AR 25235	During RFO17, Multiple Delays were Encountered due to 1S081 (Refueling Platform) Problems	April 24, 2001
<u>1R17 Permanent Plant Modifications</u>		
ECP-1616-1.01	Engineering Change Package Form	Revision 0
ECP-1616-1.01.1	Project Plan	Revision 0
ECP-1616-1.02	Design Input Record	Revision 0
ECP-1616-1.03	Safety Evaluation 00-32	Revision 0
ECP-1616-1.04	UFSAR Change Request	Revision 0



Modification Work Order (MWO) 1116109	Replace Controller PDIC2046 with 3-Position Hand Switch	May 11, 2002
MWO 1116110	Replace Controller PDIC1947 with 3-Position Hand Switch	April 28, 2001
MWO 1117579	Relocate Indicating Lights for Recirculating Heating Water Heat Exchanger Outlet MO1947 Above Hand Switch on Control Room Panel 1C003	May 2, 2001
ECP-1616-2.1	Installation Instructions	Revision 0
ECP-1616-2.2	Engineering Acceptance Requirements	Revision 0
P&ID M-113	RHRSW and Emergency Service Water	Revision 53
P&ID M-119	Residual Heat Removal System	Revision 70
P&ID M-120	Residual Heat Removal System	Revision 55
ECP-1616-3.2.2.1 4	Parts List, Document Number APED-H11-048	Revision 0
ECP-1616-3.2.2.1 5	Instrument Data Sheet, APED-E11-014	Revision 0
Modification Acceptance Test 1616	PDIC1947 and PDIC2046 Removal	Revision 0
AR 10519	Evaluate Design of Control Logic/System for MO2046/MO1947	January 14, 1998
1R19 <u>Post-Maintenance Testing</u>		
CWO A58795	Unable to Pass STP 3.7.4-03 for 1A4 Switchgear Room. Supply Damper to 1A4 Needs Adjusting to Point that Steps of STP can be Completed Sat for Doors 402 and 401	July 17, 2002
AR 31715	STP 3.7.4-03, Control Building Positive Pressure Test was not able to be Completed because the Smoke Tests Failed at Door 401, 1A4 Essential Switchgear Room, and Door 402, 1D2 Battery Room	July 15, 2002
CWO A59252	Inspect Backwash Assembly and Replace Parts as Required. Inspect Strainer Assembly and Clean as Required	August 5, 2002

CWO A59282	Scoop Tube Locked Up and High Trip Setpoint is Cycling On and Off. Deviation Meter Shows no Indication of Change	August 22, 2002
I.UA-T116-01, Section B, Att. 1	Telmar DC Alarm Modules Calibration	Revision 2
PWO 1121296	VOTES Diagnostic Test - MO2517	August 20, 2002
VOTES Test Evaluation Package	MO2517 Post Overhaul Static	Test No. 8
VALOP-L993-01	Liberty Technological Center Inc. MOV Test Equipment, VOTES	Revision 18
CWO A60308	Oil is Backing Up in System [RCIC] and Misting Out of the Outboard Bearing Pedestal	August 21, 2002
AR 32244	Incorporate OE from NRC IN 94-84 & OE 9147 into TURBINE-T147-02, "RCIC Turbine Oil System Maintenance"	August 22, 2002
CWO A50919	Torus Exhaust Isolation, Standby Gas Treatment Switch, HS4301	September 3, 2002
AR 32398	Modification of replacement HS4301	September 3, 2002
PWO 1121102	Remove and Replace Air Start Check Valves	September 23, 2002
<b>1R20 <u>Refueling and Outage</u></b>		
	Planned Outage Look Ahead Report	August 30, 2002
	Planned Outage Risk Analysis	August 30, 2002
<b>1R22 <u>Surveillance Testing</u></b>		
STP NS540002	Emergency Service Water Operability Test	Revision 8
Reference Test Evaluation 2002-02	CWO A58592 Installed Another Pump	June 26, 2002
STP 3.3.6.1-03	Main Steam Line High Flow Channel Calibration	Revision 6
A58581	Perform 3 Pin Reconstitution on Bundles YJF 372/343 and Ship per G.E. Procedures and Cask Licensing in Progress	Revision 0
RFP 402	Fuel Movement Within the Spent Fuel Pool	Revision 10
Fuel Moving Plans 02-003 and 02-004	Fuel Bundles YJF343 and YJF372	July 18, 2002

RWH 3404.11	LWT Cask Operating Procedure	Revision 1
Global Nuclear Fuels (GNF) 246-GP-01	Fuel Bundle Upper Tie Plate Removal/Replacement and Individual Rod Handling	Revision 18
GNF 246-GP-22	Reactor Site Receiving Inspection and Packaging of Individual Fuel Bundle Components	Revision 4
GNF 246-GP-37	Removal and Reinstallation of a Channel on an Irradiated Fuel Bundle	Revision 8
GNF 246-GP-43	Fuel Rod Accountability	Revision 6
NAC International Inc. 315-P-07	PWR/BWR Transport Canister Generic Loading Procedure	Revision 2
STP 3.5.3-02	RCIC System Operability Test	Revision 11
STP 3.6.1.3-01	Containment Purge and Vent Valve Leakage Integrity Test	Revision 1

1R23 Temporary Plant Modifications

TMP 02-032	Obtain Pressure Reading and Vent "A" and "B" LPCI Inject Lines	July 10, 2002
CWO A59109	12 DPM Leak From One of the Body to Bonnet Retaining Bolts	July 17, 2002
TMP 02-043	Obtain Differential Pressure Indication Across RHR Heat Exchanger 1E-201A	August 9, 2002
CWO A59473	Install pressure indicator across PP2048 and PP2049 for RHR heat exchanger 1E-201A	August 16, 2002
CWO A59474	Install differential pressure indicator across PP1950 and PP1951 for RHR heat exchanger 1E-201B	August 16, 2002

1EP6 Drill Evaluation

EOP 1	Reactor Pressure Vessel Control	Revision 9
EOP 2	Primary Containment Control	Revision 9
EOP 3	Secondary Containment Control	Revision 15
EOP 4	Radioactive Release Control	Revision 15
ED	Emergency Depressurization	Revision 2

2OS3 Radiation Monitoring Instrumentation and Protective EquipmentAction Request Items

AR 25678	Track/trend Initial And Subsequent Calibrations on Neutron Survey Instrument	May 7, 2001
AR 29250	Review PCM-1B Efficiencies on Semi-annual Basis	December 2001
AR 30326	Establish Methodology for Portal Monitor Alarm Set-points	March 22, 2002
AR 30327	Evaluate Replacement of Whole Body Counting for Passive Whole Body Monitoring	March 22, 2002
AR 31341	Malfunctioning Electronic Dosimetry	June 15, 2002

Procedures

02-001-A	Radiological Engineering Calculation, Periodic Evaluation of the Passive Internal Monitoring Program at DAEC, Calculation No. 02-001-A	June 2002
02-002-H	Radiological Engineering Calculation, PCM-1B Performance Verification, Calculation No. 02-002-H	July 23, 2002
HPP 3110.01	Calibration of Eberline RO-2, RO-2A, and RO-20 Ion Chambers	Revision 6
HPP 3110.09	Calibration of Eberline RM-14 Count Rate Meter	Revision 1
HPP 3110.14	Calibration of MGP Instruments TELEPOLE Dose Rate Meter	Revision 1
HPP 3110.71	Calibration of Whole Body Counting Systems	Revision 7

Self-Assessments

2002-002-1-026	Nuclear Oversight Observation Report	June 28, 2002
NG-02-0762	DAEC Instrument Trending Program	August 19, 2002

Miscellaneous Data

HPP 3110.27	Calibration Sheets, Electronic Dosimeters	August 4, 2000 to April 3, 2002
I.RIM-V115-01	Victoreen Model 876A Containment Radiation Monitor Calibration Sheet, Attachment 2, # RIM-9184B	March 13, 2001
I,RIM-G080-01	G.E. Area Radiation Monitor (ARMS) Calibration, Attachment 1, # RE-9158, RE-9163, RE-9178, RIT 9187	October 18, 2000 to August 6, 2002

I,RIM-E070-01	DA1-6 Detector Test Source and Remote Indicator Calibration, Attachment 1, # RIT 9187	August 1, 2002
	Calibration Records for R-140N # HP0304, RMS-3 # 335-01202, RM-14# 3927, RM-15 # 408, RO-20 #1200 , TELEPOLE # 8898-035, AMS-3 # HP0482, and E530N #1259	August 8, 2001 to August 22, 2002
	Calibration Records for PCM-1B Personnel Monitors # 518 and #1363, Gamma-10 Portal Monitor # 87199E, Gillian Air Sampler # 15298, and High Volume Air Sampler # 18319N	November 15, 2000 to May 14, 2002
	Calibration Records for Whole Body Counter, # FSDET1	October 26, 2001
	Listing of DAEC instruments and Calibration Dates	July 19, 2002
	Listing of DAEC Area Radiation Monitors	July 30, 2002
	Listing of Personnel Contamination Events at DAEC	September 1, 2001 to July 30, 2002
	Maintenance History Reports for Portable Radiation Detection Instruments RMS-3 # 335-01202, RM-14# 3927, RM-15 # 408, RO-20 #1200, TELEPOLE # 8898-035, and E530N #1259	May 24- August 22, 2002

2PS2 Radioactive Material Processing and Transportation

Action Request items

AR 32221	Shipping Trailer Deficiencies	August 20, 2002
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Procedures

02-003	Fuel Moving Plan, Fuel Bundle #YJF343	
02-004	Fuel Moving Plan, Fuel Bundle #YJF372	
02-004	ALARA Review, "Spent Fuel Pin Shipment"	July 31, 2002
246-GP-01	Fuel Bundle Upper Tie Plate Removal/replacement and Individual Rod Handling	Revision 18
246-GP-22	Reactor Site Receiving Inspection, and Packaging of Individual Fuel Bundle Components	Revision 4
246-GP-37	Removal and Reinstallation of a Channel on an Irradiated Fuel Bundle	Revision 8
246-GP-43	Fuel Rod Accountability	Revision 6

315-P-07	PWR/BWR Transport Canister Generic Loading Procedure	Revision 2
A58581JS	Work Order: A58581, Perform 3 PIN Reconstitution on Bundles YJF372/343 & Ship Per G.E. Procedures and Cask Licensing	August 12, 2002
NG-112K	10 CFR 50.59 Screening #1461	Revision 12
HPP-55	Radiological Work Screening Form, "Fuel Pin Shipment"	August 12, 2002
HPP 3102.02	ALARA Pre-job Briefing Checklist, Attachment 4, "Fuel Pool Work and Cask Shipment"	August 12, 2002
RFP 402	Fuel Movement Within the Spent Fuel Pool	Revision 10
RWH 3404.8	NLI-1/2 Cask Operating Procedure (1998)	Revision 0
RWH 3404.11	LWT Cask Operating Procedure (2002)	Revision 1

Self -Assessments

DAEC R17, PIE	Site Kick-Off, June 18, 2002 Meeting Minutes	Revision 0
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Miscellaneous Data

A294264	General Electric/DAEC Shipping Package, "Two Irradiated Nuclear Fuel Rods"	September 18, 1998
RWP 246	NMCA Test Pin Shipment	Revision 2
	Contractor/Licensee photos of spent fuel pin shipping cask and overpack	August 9, 2002
	DAEC, Daily Focus Newsletter	August 23, 2002
	Letter from G.E. to DAEC, "DAEC R17 Spent Fuel Decay Heat & Activity Level"	July 22, 2002
	Letter from G.E. to DAEC, "Transmittal of Documents for RAM Shipment to GE-VNC"	July 25, 2002
	Letter from G.E. to DAEC, "Material Safety Data Sheets for Content of the LWT Cask Shield Tank and Laboratory Report"	August 14, 2002
	Letter from NAC International to DAEC, High Burnup Fuel Rod Shipment-Certification of Annual Maintenance for the NAC-LWT-5	August 9, 2002

NAC-LWT, Key Design & Operational Characteristics	
NRC Letter to NAC International, Inc., Regarding Model No. NAC-LWT Package, Certificate of Compliance	May 3, 2002
NRC Letter to DAEC, Certificate of Compliance Registration	July 16, 2002
Radioactive Shipment from DAEC to GE "Point of Interest"	
Schedule for Spent Fuel Pin Shipment Project	
Spent Fuel Pin Shipment Survey Packages	August 2002

3PP3 Response to Contingency Events (71130.03)

ACP 114.4	Corrective Action Program	Revision 10
Contingency Procedure (CP)1	Threat Contingency	Revision 0
CP 2	Intrusion Contingency	Revision 2
CP 3	Preplanned Contingencies	Revision 0
CP 4	Defensive Response Positions	Revision 2
CP 5	Defensive Response to Imminent or Actual Attack	Revision 5
Instructor Guide (IG) 30006,50055, Supl 2	Availability of Contingency and Special Equipment	November 7, 2000
IG 30006,50055.19	Response to Direct Attack	September 18, 2000
IG 30006,50055.20	Response to Intrusion Alarms/Degraded Barriers	January 15, 1998
	Mini Drill Summary Sheets	February, May and June 2002
Nuclear Oversight Assessment Observation Report 2001-04-017	NRC Safeguards Advisory Letter	October 6, 2001
Nuclear Oversight Observation Report (NOOR) 2001-004-1-044	Training	December 13, 2001
NOOR 2001-004-1-045	Lighting Levels	December 14, 2001

NOOR 2001-06-116	Fitness-For-Duty	August 6-9 and September 6, 2001
NOOR 2001-06-130	Corrective Actions	September 17-19, 2001
NOOR 2001-06-131	Self-Assessment	September 21, 2001
	Security Equipment Performance Indicator Data	First and Second Quarter of 2002
	Security Event Log Summary	April through June 2002
	15 Training Records for Recently Hired Security Officers	
	Four Training records for Alarm Station Certification	
SP 3	Local Law Enforcement Assistance	Revision 15

4OA1 Performance Indicator Verification

NEI 99-02	Regulatory Assessment Performance Indicator Guideline	Revision 2
Memo	DAEC 2 <sup>nd</sup> Quarter 2002 PI Summary	July 19, 2002
Memo	DAEC 1 <sup>st</sup> Quarter 2002 PI Summary	April 20, 2002
Memo	DAEC 4 <sup>th</sup> Quarter 2001 PI Summary	January 25, 2002
Memo	DAEC 3 <sup>rd</sup> Quarter 2001 PI Summary	October 19, 2001
Memo	DAEC 2 <sup>nd</sup> Quarter 2001 PI Summary	July 20, 2001
Memo	DAEC 1 <sup>st</sup> Quarter 2001 PI Summary	April 17, 2001

4OA2 Problem Identification and Resolution

AR 27498	Clarify RHRSW Strainer DP Precaution	October 25, 2001
AR 27494	Stilling Basin Chlorination/Chemical Addition System	October 25, 2001
AR 27497	Review the Effectiveness of the Corrective Actions for AR 27459, Unknown Foreign Material Found in Pump House Stilling Basin	October 25, 2001
AR 27495	ESW/RHRSW Pit Chlorination During Outages	October 25, 2001



AR 27822	Program Engineering to Conduct a Review of Changes Associated with PIR 98-0076	September 24, 2001
AR 27548	Technical Specification Bases Change to Modify TS Bases 3.7.1 (RHRSW) and 3.7.3 (ESW)	March 1, 2002
AR 27493	Intake Structure Diver Inspections, Stilling Basin and Wet Pit Inspection	October 25, 2001
AR 27496	Review ESW/RHRSW Chlorination Modes for Alga Grass	October 25, 2001
AR 27499	Manual Control of Stilling Basin Level when ESW/RHRSW Pumps are Run	October 25, 2001
AR 27545	Received 1S090B (RHRSW Pumps 1P-22B/D Discharge Strainer) High DP Alarm	September 5, 2001
AR 27459	Unknown Foreign Material Found in Pump House Stilling Basin	September 7, 2001
AR 27548	DAEC TS Bases for 3.7.1 and 3.7.3 do not Address Self Cleaning Strainer Issues	September 5, 2001
AR 30411	Review and Revise as Required All VALVOP-L200 Series Procedures	March 28, 2002
AR 29820	"C" RHR Pump Took a "No Suction" Path Trip	February 7, 2002
VALVOP-L200-04	Limitorque Valve Operator Type SB-0, SB-1, SB-2, SB3, and SB-4	Revision 23
VALVOP-L200-05	Limitorque Valve Operator Type SMB-000	Revision 26
VALVOP-L200-06	Limitorque Valve Operator Type SMB-00	Revision 26
VALOP-L200-07	Limitorque Valve Operator Type SMB-0, SMB-1, SMB-2, SMB-3, SMB-4, and SMB-4T	Revision 28
AR 32558	Evaluate DAEC Risk Assessment Process	September 13, 2002
AR 32529	Wrong Risk Assessment	September 13, 2002
PSAG-3	On Line Maintenance Risk Assessment	Revision 0

4OA3 Event Follow-up

AR 30105

Violation of Tech Spec 3.0.4 due to Unplanned  
Mode Change

March 8, 2002

LER 2002-001-00	Unplanned Mode Change While Re-Aligning the RHR system from Shutdown Cooling (SDC) Mode to Low Pressure Coolant Injection Standby Readiness During Reactor Startup	March 8, 2002
CWO A57740	While Operating V19-0048, Mechanical Gear Box is Loose	March 8, 2002
AR 30105	Evaluate Preventing of RHR Loop Crosstie Valve Operator Bevel Gear Sleeve Nut Rotation	April 9, 2002
AR 30854	Install Mod for Preventing of Valve Operator Bevel Gear Sleeve Nut Rotation	May 3, 2002
AR 30494	Perform Maintenance on V19-0048 (RHR Loop Crosstie) to Provide a More Positive Method of Preventing Nut Rotation	April 10, 2002
AR 30106	While Removing Shutdown Cooling from Service Received 1C03B C-3 Alarm for Greater than 10 Seconds	March 8, 2002