

January 25, 2005

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
NRC INTEGRATED INSPECTION REPORT 5000331/2004005

Dear Mr. Peifer:

On December 31, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Duane Arnold Energy Center. The enclosed integrated inspection report documents the inspection findings which were discussed on January 4, 2005, with you 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.

Based on the results of this inspection, there was one NRC-identified finding and one self-revealed finding of very low safety significance, one of which involved a violation of NRC requirements. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program, the NRC is treating this finding and issue as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally, a licensee identified violation is listed in Section 4OA7 of this report.

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 the 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, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; 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.

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Sincerely,

/RA/

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

Docket Nos. 50-331
License Nos. DPR-49

Enclosure: Inspection Report 5000331/2004005
w/Attachment: Supplemental Information

cc w/encl: E. Protsch, Executive Vice President -
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-331

License No: DPR-49

Report No: 05000331/2004005

Licensee: Nuclear Management Company, LLC

Facility: Duane Arnold Energy Center

Location: 3277 DAEC Road
Palo, Iowa 52324-9785

Dates: October 1, 2004, through December 31, 2004

Inspectors: G. Wilson, Senior Resident Inspector
R. Baker, Resident Inspector
M. Franke, Reactor Engineer
M. Mitchell, Radiation Specialist
H. Peterson, Senior Operations Engineer
N. Valos, Operations Engineer

Observers: G. Gibbs, Reactor Engineer

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

Enclosure

SUMMARY OF FINDINGS

IR 05000331/2004005; 10/01/2004 - 12/31/2004; Duane Arnold Energy Center; Operability Evaluations and Post Maintenance Testing.

This report covers a 3-month period of baseline resident inspection and announced baseline inspections of radiation protection and operator licensing. The inspections were conducted by Region III reactor inspectors and the resident inspectors. These inspections identified two Green findings, one of which involved a Non-Cited Violation (NCV). 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 Nuclear Regulatory Commission (NRC) management review. The NRC'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. Inspector-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. A finding of very low safety significance was identified through a self-revealing event when the licensee failed to ensure that the excessive vibration problems associated with the 'A' Feedwater Regulating Valve (FRV) Positioner was properly addressed after the initial failure. Since the vibration problems were not properly addressed, a subsequent failure occurred, which resulted in severe feed water oscillations.

The finding was more than minor, since the excessive vibrations resulted in a valve Positioner failure that caused severe feed water oscillations, thereby affecting plant stability. This finding was determined to be of very low safety significance, since it would not have impacted any mitigating systems availability or functions during a reactor trip. The licensee replaced the 'A' FRV Positioner and addressed the vibration problems by modifying the mounting bracket. No violation of NRC requirements occurred. (Section 1R19)

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance was identified by the inspectors when the licensee failed to take prompt and adequate corrective actions for Visual Testing (VT) -2 inspections that were performed by unqualified personnel. The primary cause of this finding was related to the Cross-Cutting area of Problem Identification and Resolution.

The finding was more than minor since the failure to take prompt and adequate corrective actions on plant mitigating systems has the potential to adversely impact plant safety by affecting the availability and reliability of the associated equipment. The finding was determined to be of very low safety significance since all mitigating systems were still available. Adequate corrective actions

were not put into place until after the inspectors challenged Plant and Engineering Management. An NCV of 10 CFR 50, Appendix B, Criterion XVI, was identified for the failure to take prompt and adequate corrective actions. The licensee re-qualified VT-2 inspectors, rescheduled the associated VT-2 inspections, and revised the operability evaluation to address surveillance requirements. (Section 1R15)

B. Licensee-Identified Violations

A Violation of very low safety significance, which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective actions tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Duane Arnold Energy Center operated at full power for the entire assessment period except for brief down-power maneuvers to accomplish rod pattern adjustments and to conduct planned surveillance testing activities with the following exceptions:

- On October 24, 2004, a reactor shutdown was commenced for a maintenance outage to repair a main condenser tube leak. The reactor was restarted on October 28 and the turbine-generator connected to the grid on October 29, 2004. During power ascension, the 'A' Feedwater Regulating Valve was oscillating, so power was held at approximately 80 percent. On November 4, 2004, power was reduced to approximately 50 percent to replace the valve Positioner. Following that maintenance, full power was achieved on November 5, 2004.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather (71111.01)

a. Inspection Scope

During the week ending November 20, 2004, the inspectors performed a detailed review of the licensee's cold weather procedures and performed walkdowns on three systems to observe the licensee's preparations for cold weather, for a total of one sample. The three systems included the intake structure heating ventilation and air conditioning (HVAC) system, pump house HVAC system, and the plant freeze protection system. As part of this inspection, the documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure. The inspectors focused on plant specific design features for the systems and implementation of the procedures for responding to or mitigating the effects of adverse weather. Inspection activities included, but were not limited to, a review of the licensee's adverse weather procedures, preparations for the winter season and a review of analysis and requirements identified in the Updated Final Safety Analysis Report (UFSAR). The inspectors also verified that operator actions specified by plant specific procedures were appropriate.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed three partial walkdowns on accessible portions of risk-significant mitigating systems equipment. The documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure. Equipment alignment was reviewed to identify any discrepancies that could impact the function of the system and potentially increase risk. Redundant or backup systems were selected by the inspectors during times when the trains were of increased importance due to the redundant trains of other related equipment being unavailable. Inspection activities included, but were not limited to, a review of the licensee's procedures, verification of equipment alignment, and an observation of material condition, including operating parameters of in-service equipment. Identified equipment alignment problems were verified by the inspectors to be properly resolved.

The inspectors selected the following equipment trains to verify operability and proper equipment line-up for a total of three samples:

- 'B' Residual Heat Removal (RHR) System with the 'A' RHR System Out-of-service (OOS) for maintenance during the week ending October 23, 2004;
- 'B' Residual Heat Removal Service Water (RHRSW) System with 'A' RHRSW System OOS for maintenance during the week ending October 23, 2004; and
- Reactor Core Isolation Cooling (RCIC) System with the High Pressure Core Injection (HPCI) System OOS for maintenance during the week ending November 27, 2004.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Zone Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors walked down nine risk-significant fire areas to assess fire protection requirements. The documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure. Various fire areas were reviewed to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for OOS, degraded, or inoperable fire protection equipment, systems or features. Fire areas were selected based on their overall contribution to internal fire risk as documented in the

plant's Individual Plant Examination of External Events (IPEEE), or their potential to adversely impact equipment which is used to mitigate a plant transient. Inspection activities included, but were not limited to, the control of transient combustibles and ignition sources, fire detection equipment, manual suppression capabilities, passive suppression capabilities, automatic suppression capabilities, compensatory measures, and barriers to fire propagation.

The inspectors assessed the following fire zones for a total of nine samples:

During the week ending October 16, 2004:

- Area Fire Plan (AFP) 28, Pump House Emergency Service Water (ESW)/RHRSW Pump Rooms and Main Pump Room;
- AFP 29, Pump House Fire Pump and Fire Pump Day Tank Rooms;
- AFP 30, Pump House Safety Related Piping Area;
- AFP 23, Control Building Battery Rooms; and
- AFP 24, Control Building Essential Switch Gear.

During the week ending November 6, 2004:

- AFP 03, Reactor Building HPCI, RCIC, & Radwaste Tank Rooms;
- AFP 06, Reactor Building RHR Valve Room;
- AFP 10, Reactor Building Main Exhaust Fan Room, Heating Hot Water Pump Room, and Plant Air Supply Room; and
- AFP 11, Reactor Building Laydown Area - Elevation 833 feet 6 inches.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Facility Operating History

a. Inspection Scope

The inspectors reviewed the plant's operating history from September 2002 through September 2004, to assess whether the Licensed Operator Requalification Training (LORT) program had addressed operator performance deficiencies noted at the plant.

b. Findings

No findings of significance were identified.

.2 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed a biennial inspection of the licensee's LORT program. The inspectors reviewed the current year requalification biennial written examinations and annual operating test material to evaluate general quality, construction, and difficulty level. The operating portion of the examination was inspected during November 30 through December 1, 2004. The operating examination material consisted of two dynamic simulator scenarios and six job performance measures (JPMs). The biennial written examination was administered on December 2, 2004, and consisted of 35 open reference, multiple choice questions. The written examination was organized into two parts, Part A and Part B. Part A used the static simulator as an open reference instrument. Part B was an open reference examination on administrative controls, systems, and procedural limits. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2 year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. The inspectors reviewed the licensee's program and assessed the level of examination material duplication during the current year annual examinations. The inspectors also interviewed members of the licensee's management, operations and training staff, and discussed various aspects of the examination development.

b. Findings

No findings of significance were identified.

.3 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed administration of the requalification operating test to assess the licensee's effectiveness in conducting the test and to assess the facility evaluators' ability to determine adequate performance using objective, measurable performance standards. The inspectors evaluated, in parallel with the facility evaluators, the performance of ten licensed operators and two shift technical advisors (STAs) for two operating shift crews during two dynamic simulator scenarios. Each crew consisted of two senior reactor operators, three reactor operators, and one STA position. In addition, the inspectors observed licensee evaluators administer five JPMs to selected licensed operators. The inspectors observed the training staff personnel administer the operating test, including pre-examination briefings, observations of operator performance, and individual and crew evaluations after the dynamic simulator scenarios.

b. Findings

No findings of significance were identified.

.4 Examination Security

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias). The inspectors also reviewed the facility licensee's examination security procedure, any corrective actions related to past or present examination security problems at the facility, and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination process.

b. Findings

No findings of significance were identified.

.5 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT program up to date, including the use of feedback from plant events and industry experience information. The inspectors interviewed licensee personnel (operators, instructors, and management) and reviewed applicable procedures. In addition, the inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions.

b. Findings

No findings of significance were identified.

.6 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of remedial training conducted since the previous annual requalification examinations. The inspectors reviewed the remedial training documentation for two individuals that demonstrated unsatisfactory performance during the current biennial written examination and the subsequent post-remedial reexamination administered in the previous weeks. The inspectors also reviewed the remedial training packages for two crews that demonstrated unsatisfactory performance during the current annual dynamic simulator operating test. The inspectors reviewed the training package to ensure that performance and knowledge weaknesses identified during the annual examination were adequately addressed. The inspectors also reviewed remedial training procedures and records to ensure that the

subsequent reevaluation was properly completed prior to returning the individuals and crews to licensed duties.

b. Findings

No findings of significance were identified.

.7 Conformance with Operator License Condition

a. Inspection Scope

The inspectors evaluated facility and individual operator license conformance with the requirements of 10 Code of Federal Regulations (CFR) Part 55. The inspectors reviewed the licensee's program for maintaining active operator licenses to assess compliance with 10 CFR 55.53(e) and (f). The inspectors reviewed the licensee's procedural compliance and the process for tracking on-shift hours for licensed operators. The inspectors also conducted reviews to verify that proficiency watch-standing hours were credited to the correct control room positions in accordance with Technical Specifications (TSs). The inspectors reviewed six licensed operator medical records to ensure compliance with 10 CFR 55.21 and 55.25, and medical standards delineated in ANSI/ANS-3.4. In addition, the inspectors reviewed the licensee's LORT program to assess compliance with the requalification program requirements prescribed by 10 CFR 55.59(c).

b. Findings

No findings of significance were identified.

.8 Conformance with Simulator Requirements

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors reviewed a sample of simulator performance test records (i.e., transient tests, malfunction tests, and reactor core performance tests), simulator work order records, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. This was accomplished by a review of discrepancies noted during the inspection to ensure that they were entered into the licensee's corrective action system and by an evaluation to verify that the licensee adequately captured simulator problems and that corrective actions were performed and completed in a timely fashion commensurate with the safety significance of the item (prioritization scheme). Open simulator discrepancies were reviewed for importance relative to impact on 10 CFR 55.45 and 59 operator actions, as well as nuclear and thermal hydraulic operating characteristics. Closed simulator discrepancies were reviewed for the last 12 months for timeliness of resolution. The inspectors reviewed the licensee's recent simulator core performance testing to assess that the simulator adequately replicates

the actual reactor plant core performance characteristics. In addition, the inspectors verified that the two missed simulator tests, identified during the previous LORT inspection, were adequately performed. The inspectors also conducted interviews with the licensee's simulator configuration control personnel and completed the NRC Inspection Procedure (IP) 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46 (c) and (d). The licensee does not use the simulation facility to meet the experience requirements in 10 CFR 55.31(a)(5).

b. Findings

No findings of significance were identified.

.9 Biennial Written Examination and Annual Operating Test Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the comprehensive biennial written tests, the annual job performance measure operating tests, and the annual simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee during calendar year 2004. The overall results were compared with the significance determination process (SDP) in accordance with U.S. Nuclear Regulatory Commission (NRC) Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance SDP." Year 2004 was the second year of the licensee's 24 month training program. This represented one sample.

b. Findings

No findings of significance were identified.

.10 Quarterly Review

a. Inspection Scope

During the week ending October 9, 2004, the inspectors observed a training crew performance on Simulator Exercise Guide (SEG) 2004C5-1 for a total of one sample. The scenario included a loss of the startup transformer, grid instability, and a leak from the 'B' recirculation loop. The documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure. The inspection activities assessed the licensee's effectiveness in evaluating the requalification program, ensuring that licensed individuals operated the facility safely and within the conditions of their license, and evaluated licensed operators' mastery of high-risk operator actions. Inspection activities included, but were not limited to, a review of high risk activities, emergency plan performance, incorporation of lessons learned, clarity and formality of communications, task prioritization, timeliness of actions, alarm response actions, control board operations, procedural adequacy and implementation, supervisory oversight, group dynamics, interpretations of technical specifications, simulator fidelity, and the licensee critique of performance.

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," Revision 2;
- ACP 101.01, "Procedure Use and Adherence," Revision 27; and
- ACP 101.2, "Verification Process and SELF/PEER Checking Practices," Revision 5.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed one system to assess maintenance effectiveness. The documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure. Maintenance activities were reviewed to assess maintenance effectiveness, including maintenance rule activities, work practices, and common cause issues. Inspection activities included, but were not limited to, the licensee's categorization of specific issues including evaluation of maintenance performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed implementation of the Maintenance Rule (10 CFR 50.65) requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with reviewed condition reports, and current equipment performance status.

The inspectors performed the following maintenance effectiveness review for a total of one sample:

- A function-oriented review of the RHR System was performed because it was designated as risk-significant under the Maintenance Rule, during the week ending November 20, 2004.

.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, and configuration control for a total of one sample. An evaluation of the performance of maintenance associated with planned and emergent work activities were completed by the inspectors to determine if they were adequately managed. In particular, the

inspectors reviewed the program for conducting maintenance risk safety assessments and to ensure that the planning, assessment and management of on-line risk was adequate. The documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure. Licensee actions taken in response to increased on-line risk were reviewed including the establishment of compensatory actions, minimizing activity duration, obtaining appropriate management approval, and informing appropriate plant staff. These activities were accomplished when on-line risk was increased due to maintenance on risk-significant structures, systems, and components (SSCs).

The following activities were reviewed for a total of one sample:

- The inspectors reviewed the maintenance risk assessment for work planned during the week ending October 16, 2004.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions and Events (71111.14)

.1 Annual Evaluation of Licensee Event Reports (LERs)

a. Inspection Scope

During the week ending December 25, 2004, the inspectors reviewed all LERs written during the 2004 calendar year, focusing on those involving personnel response to non-routine conditions for a total of one sample. Where applicable, the inspectors evaluated whether or not licensee personnel responded in accordance with applicable procedures and training. The documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed two of the licensee's operability evaluations of degraded or nonconforming systems. The documents listed in the Attachment were used by the inspectors to accomplish the objectives of the inspection procedure. Operability evaluations that affected mitigating systems or barrier integrity cornerstones were reviewed to ensure adequate justification for declaration of operability and that the component or system remained available. Inspection activities included, but were not limited to, a review of the technical adequacy of the evaluation against the TSSs, UFSAR, and other design information; validation that appropriate compensatory measures, if needed, were taken; and comparison of each operability evaluation for consistency with

the requirements of ACP-114.5, "Action Request System" and ACP-110.3, "Operability Determination."

The inspectors reviewed the following operability evaluations for a total of two samples:

- Operability (OPR) 275, RHR return line to the Torus, during the week ending November 13, 2004; and
- OPR 271, Visual Testing (VT) -2, during the week ending December 31, 2004.

b. Findings

Introduction: A finding of very low safety significance (Green) and an associated Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, were identified by the resident inspectors for the failure to take prompt and adequate corrective actions to address VT-2 examinations that were performed by unqualified personnel.

Description: In September 2004, the licensee became aware that qualifications for several VT-2 qualified personnel, who had performed VT-2 inspections, had expired due to the failure to maintain the every 3-year test requirement. An operability evaluation and an apparent cause evaluation (ACE) were performed to fully evaluate the issue and to provide corrective actions.

After evaluating the corrective actions, the inspectors challenged Plant and Engineering Management on several issues that were not properly addressed. One of the issues that the corrective actions failed to properly address was the compliance in accordance with the American Society of Mechanical Engineers (ASME) and Section XI Codes. Since the inspections were not performed in a manner as described by the Codes, the Codes were not met. Therefore, the associated VT-2 tests themselves would have to be re-performed or a relief request submitted and processed, to be in compliance with the Codes. The other issue was the failure to provide an evaluation which showed that the technical surveillance requirements were met, thereby maintaining operability. Following discussions with the inspectors, Plant and Engineering Management changed the corrective actions, by rescheduling the associated VT-2 inspections and revising the operability evaluation to address the surveillance requirements.

The primary cause of this finding was related to the Cross-Cutting area of Problem Identification and Resolution for the failure to promptly and adequately address the VT-2 inspections, which were performed by unqualified personnel.

Analysis: The inspectors determined that the Plant and Engineering Management's failure to perform adequate corrective actions was an example of a failure to meet a standard that could have reasonably been foreseen or corrected by the licensee and was, therefore, a performance deficiency. Since a performance deficiency existed, the inspectors reviewed this issue against the guidance contained in Appendix B, "Issue Screening," of Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports." The inspectors determined that the finding was more than minor because if left uncorrected, it would become a more significant safety concern. This was based on the fact that failures to perform prompt and adequate corrective actions on plant

mitigating systems have the potential to affect the availability and reliability of the associated equipment, thereby adversely impacting plant safety.

As a result, the inspectors reviewed this issue in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The inspectors determined that the finding affected the Mitigating Systems Cornerstone, due to the effect on the Emergency Core Cooling Systems; however, since the failure to perform adequate corrective actions did not represent the actual loss of a safety function, did not exceed a TS Allowed Outage Time (AOT), did not represent an actual loss of safety function for a non-Tech Spec train, and was not risk-significant due to seismic, fire, flooding or severe weather, the finding was of very low safety significance and screened as Green.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires that measures be established to assure that conditions adverse to quality, such as defective material and equipment, deficiencies, and nonconformances are promptly identified and corrected. In September 2004, the license became aware that several VT-2 inspections were performed by unqualified personnel. Corrective actions proposed by Plant and Engineering Management failed to properly address the requirements of Section XI or evaluate the associated surveillance requirements until challenged by the resident inspectors. The associated VT-2 inspections were required inspections of the Emergency Core Cooling Systems, which were safety-related systems subject to 10 CFR 50, Appendix B quality assurance measures. The failure to perform prompt and adequate corrective actions associated with the VT-2 inspections were considered an example of 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, the NRC is treating this issue as an NCV (NCV 5000331/2004005-01), in accordance with Section VI.A.1 of the NRC's Enforcement Policy. This issue was entered into the licensee's corrective action program as Corrective Action Plan (CAP) 032867.

Corrective actions taken include the requalification of several VT-2 Inspectors and the rescheduling of the associated VT-2 inspections.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

During the week ending November 6, 2004, the inspectors performed a semiannual review of the cumulative effects of operator workaround (OWAs) for a total of one sample. The documents listed in the Attachment were reviewed to accomplish the objectives of the inspection procedure. OWAs were reviewed to identify any potential effect on the functionality of mitigating systems. Inspection activities included, but were not limited to, a review of the cumulative effects of the operator workarounds on the availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents. Additionally, reviews were conducted to determine if the workarounds could increase the possibility of an initiating event, if the workaround was contrary to training, required a change from long standing operational practices, created the potential for

inappropriate compensatory actions, impaired access to equipment, or required equipment uses for which the equipment was not designed.

.b Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed two post-maintenance testing (PMT) activities. The documents listed in the Attachment were used to accomplish the objectives of the inspection procedure. PMT procedures and activities were verified to be adequate to ensure system operability and functional capability. Inspection activities were selected based upon the SSC's ability to impact risk. Inspection activities included, but were not limited to, witnessing or reviewing the 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, system restoration, and evaluation of test data. Also, the inspectors verified that maintenance and PMT activities adequately ensured that the equipment met the licensing basis, TSs, and UFSAR design requirements.

The inspectors selected the following PMT activities for review for a total of two samples:

- Corrective Work Order (CWO) A61157 for the 'A' RHR pump seal water cooler replacement during the week ending October 23, 2004; and
- CWO A64236 for the 'A' Feedwater Regulating Valve (FRV) Positioner mounting modification during the week ending November 6, 2004.

b. Findings

Introduction: A finding of very low safety significance (Green) was identified through a self-revealing event when Plant and Engineering Management failed to correct excessive vibration problems associated with the initial failure of the 'A' FRV positioner. Consequently, a subsequent failure occurred.

Description: Feed flow oscillations occurred during the plant shutdown, on October 24, 2004, and became more erratic, during the subsequent plant restart, on October 30, 2004. These oscillations were the same type that had occurred in April 2004. Troubleshooting efforts in April concluded that the vibration levels exceeded the manufacturer's specified limits for the positioner, thereby causing a portion of the valve positioner to fail. Plant and Engineering Management made a decision at that time to only replace the valve positioner. Since nothing was put into the field to address the excessive vibration condition of the valve positioner, the subsequent failure occurred. The vibration issues were addressed by modifying the mounting bracket of the positioner following the replacement on November 4, 2004.

Analysis: The inspectors determined that Plant and Engineering Management's failure to properly address the vibration problems associated with the 'A' FRV Positioner was an example of a problem that could have reasonably been foreseen or corrected by the licensee and was, therefore, a performance deficiency. Since a performance deficiency existed, the inspectors reviewed this issue against the guidance contained in Appendix B, "Issue Screening," of IMC 0612, "Power Reactor Inspection Reports." In particular, the inspectors compared this finding to the findings identified in Appendix E, "Examples of Minor Issues," of IMC 0612 to determine whether the finding was minor. Following that review, the inspectors concluded that the guidance in Appendix E was not applicable for the specific finding. As a result, the inspectors compared this performance deficiency to the minor questions contained in Appendix B of IMC 0612. The inspectors determined that the finding was more than minor, since the excessive vibrations resulted in a valve Positioner failure that caused severe feed water oscillations, thereby affecting plant stability.

As a result, the inspectors reviewed this issue in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The inspectors determined that the finding affected the Initiating Events Cornerstone, due to the effect on plant stability; however, since the finding did not contribute to the likelihood of a Primary or Secondary Loss of Coolant Accident (LOCA), affect the availability of mitigating equipment during a reactor trip, or increase the likelihood of a fire or flood, that the finding was of very low safety significance and screened as Green.

Enforcement: The inspectors determined that no violations of NRC requirements occurred during the failure to address the excessive vibration problems associated with the 'A' FRV Positioner, due to the feedwater system being non-safety related. The issue is a finding without an associated NCV (FIN 5000331/2004005-02). Corrective actions taken included a modification of the mounting bracket for the valve Positioner to address the vibration problem.

1R20 Outage Activities (71111.20)

.1 Forced Outage for Condenser Tube Leak

a. Inspection Scope

The inspectors observed shutdown activities for the forced outage to repair a condenser tube leak, which began on October 24, 2004, for a total of one sample. The inspectors monitored the licensee's cooldown process and ensured that TS were followed during the transition into hot and cold shutdown. Outage configuration management was also monitored 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 reviewed during multiple reactor building and control room tours and observations. The licensee restarted the reactor on October 28, 2004. The documents listed in the Attachment were used to accomplish the objectives of the inspection procedure.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed five surveillance test activities. Inspection procedure objectives were accomplished as indicated by the documents listed in the Attachment to this inspection report. Surveillance testing activities were reviewed to assess operational readiness and ensure that risk-significant SSCs were capable of performing their intended safety function. Surveillance activities were selected based upon risk significance and the potential risk impact from an unidentified deficiency or performance degradation that a SSC could impose on the unit if the condition were left unresolved. Inspection activities included, but were not limited to, a review 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 (PI) reporting, and evaluation of test data.

The inspectors selected the following surveillance testing activities for review for a total of five samples:

- Surveillance Test Procedure (STP) 3.3.8.2-02, Reactor Protection System (RPS) Motor Generator (MG) Set and Alternate Power Source Electrical Protection Assemblies (EPA) Channel Functional test, during the week ending October 30, 2004;
- STP 3.3.6.1-11, Reactor Lo Lo Water Level and Lo Lo Lo Water Level Channel Functional Test, during the week November 13, 2004;
- STP 3.5.1-02, Low Pressure Coolant Injection (LPCI) System Operability Test, during the week November 13, 2004;
- STP 3.5.1-05, HPCI System Operability Test, during the week ending November 27, 2004; and
- STP 3.1.7-01, Standby Liquid Control (SBLC) Pump Operability Test, during the week ending December 4, 2004.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed licensee controls and surveys in the following two radiologically significant work areas within radiation areas, high radiation areas and airborne radioactivity areas in the plant and reviewed work packages which included associated licensee controls and surveys of these areas to determine if radiological controls including surveys, postings, and barricades were acceptable:

- Condenser Bay; and
- Heater Bay.

This review represented one inspection sample.

The inspectors walked down and surveyed (using an NRC survey meter) these two areas to verify that the prescribed radiation work permit (RWP), procedure, and engineering controls were in place, that licensee surveys and postings were complete and accurate, and that air samplers (if necessary) were properly located. This review represented one inspection sample.

The inspectors reviewed RWPs for airborne radioactivity areas to verify barrier integrity and engineering controls performance (e.g., High Efficiency Particulate Air (HEPA) ventilation system operation) and to determine if there was a potential for individual worker internal exposures of greater than 50 millirem committed effective dose equivalent. No work activities were identified as potential airborne radioactivity areas during the inspection period. Work areas having a history of, or the potential for, airborne transuranics were evaluated to verify that the licensee had considered the potential for transuranic isotopes and provided appropriate worker protection. This review represented one inspection sample.

The adequacy of the licensee's internal dose assessment process for internal exposures greater than 50 millirem committed effective dose equivalent was assessed. There were no internal exposures greater than 50 millirem committed effective dose. This review represented one inspection sample.

The inspectors also reviewed the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within spent fuel or other storage pools. This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, LERs, and Special Reports related to the access control program to verify that identified problems were entered into the corrective action program for resolution. This review represented one inspection sample.

The inspectors reviewed one corrective action report related to access control (non-PIs identified by the licensee in high radiation areas less than 1R/hr). Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of NCVs tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program (71122.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the most current Annual Environmental Monitoring Report and licensee assessment results to verify that the REMP was implemented as required by TS and the Off-site Dose Calculation Manual (ODCM). The inspectors reviewed the report for changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, interlaboratory comparison program, and analysis of data. The inspectors reviewed the ODCM to identify environmental monitoring stations and reviewed licensee self-assessments, audits, LERs, and interlaboratory comparison program results. The

inspectors reviewed the Final Safety Analysis Report (FSAR) for information regarding the environmental monitoring program and meteorological monitoring instrumentation. The inspectors reviewed the scope of the licensee's audit program to verify that it met the requirements of 10 CFR 20.1101(c). This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked down 30 percent of the air sampling stations and approximately 10 percent of the thermoluminescence dosimeter (TLD) monitoring stations to determine whether they are located as described in the ODCM and to determine the equipment material condition. This review represented one inspection sample.

The inspectors observed the collection and preparation of a variety of environmental samples (e.g., ground and surface water, milk, vegetation, sediment, and soil) and verified that environmental sampling is representative of the release pathways as specified in the ODCM and that sampling techniques are in accordance with procedures. This review represented one inspection sample.

The inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the FSAR, NRC Safety Guide 23, and licensee procedures. The inspectors verified that the meteorological data readout and recording instruments in the control room and at the tower were operable. The inspectors compared readout data (i.e., wind speed, wind direction, and delta temperature) in the control room and at the meteorological tower to identify if there were any line loss differences. This review represented one inspection sample.

The inspectors reviewed each event documented in the Annual Environmental Monitoring Report which involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement for the cause and corrective actions, and conducted a review of the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection (LLDs)). The inspectors reviewed the associated radioactive effluent release data that was the likely source of the released material. This review represented one inspection sample.

The inspectors reviewed significant changes made by the licensee to the ODCM as the result of changes to the land census or sampler station modifications since the last inspection. The inspectors reviewed technical justifications for changed sampling locations. The inspectors verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment. This review represented one inspection sample.

The inspectors reviewed the calibration and maintenance records for five air samplers and composite water samplers. The inspectors reviewed calibration records for the environmental sample radiation measurement instrumentation (i.e., count room). The inspectors verified that the appropriate detection sensitivities with respect to TS/ODCM were utilized for counting samples (i.e., the samples meet the TS/ODCM required LLDs). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance.

The inspectors reviewed the results of the REMP sample vendor's quality control program including the interlaboratory comparison program to verify the adequacy of the vendor's program and the corrective actions for any identified deficiencies. The inspectors reviewed audits and technical evaluations the licensee performed on the vendor's program. The inspectors reviewed quality assurance audit results of the program to determine whether the licensee met the TS/ODCM requirements. This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Unrestricted Release of Material from the Radiologically Controlled Area (RCA)

a. Inspection Scope

The inspectors observed several locations where the licensee monitors potentially contaminated material leaving the Radiologically Controlled Area, and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use to verify that the work was performed in accordance with plant procedures. This review represented one inspection sample.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was guidance on how to respond to an alarm which indicates the presence of licensed radioactive material. The inspectors reviewed the licensee's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in IE Circular 81-07 and IE Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material. The inspectors verified that the licensee performed radiation surveys to detect radionuclides that decay via electron capture. The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters (i.e., counting times and background radiation levels). The inspectors verified that the licensee had not established a "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area. This review represented one inspection sample.

b. Findings

No findings of significance were identified.

4. Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, LERs, and Special Reports related to the radiological environmental monitoring program since the last inspection to determine if identified problems were entered into the CAP for resolution. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors also reviewed corrective action reports from the radioactive effluent treatment and monitoring program since the previous inspection, interviewed staff and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of NCVs tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

Cornerstones: Mitigating Systems, Public Radiation Safety, and Occupational Radiation Safety.

.1 Reactor Safety Strategic Area

a. Inspection Scope

The inspectors reviewed the licensee PI submittals for a total of one PI. PI guidance and definitions contained in Nuclear Energy Institute (NEI) Document 99-02, Revision 2,

“Regulatory Assessment Performance Indicator Guideline,” were used to verify the accuracy of the PI data. The documents listed in the Attachment were used to accomplish the objectives of the inspection procedure. The inspectors’ review included, but was not limited to, conditions and data from logs, LERs, condition reports, and calculations for each PI specified.

The following PI was reviewed for a total of one sample during the week ending October 23, 2004:

- Safety System Functional Failures, for the period of October 2003 through June 2004.

b. Findings

No findings of significance were identified.

.2 Radiation Safety Strategic Area

a. Inspection Scope

The inspectors reviewed the licensee submittals for two PIs. The inspectors used PI guidance and definitions contained in NEI Document 99-02, Revision 2, “Regulatory Assessment Performance Indicator Guideline,” to verify the accuracy of the PI data. The documents listed in the Attachment were used to accomplish the objectives of the inspection procedure. The inspectors’ review included, but was not limited to, conditions and data from logs, licensee event reports, condition reports, and calculations for each PI specified.

The following PIs were reviewed for a total of two samples during the week ending October 23, 2004:

- Occupational Exposure Control Effectiveness, for the period of October 2003 through September 2004; and
- RETS/ODCM Radiological Effluent Occurrence, for the period of October 2003 through September 2004.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstone: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

For inspections performed and documented in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Minor issues entered into the corrective action program as a result of the inspectors' observations are included in the attached list of documents reviewed. This inspection activity does not count as an annual sample.

b. Findings

One specific issue which involved an NCV of 10 CFR 50, Appendix B, Criterion XVI, was identified during this routine review as discussed in Section 1R15.

.2 Biennial Licensed Operator Sample Review

a. Inspection Scope

The inspectors reviewed licensee self-assessments and 11 corrective action documents written to document deficiencies identified in the licensed operator training program. The licensee's self assessments included a review of the licensed operator training program completed approximately a month prior to this inspection activity. The self-assessments and corrective action documents were reviewed to ensure that the full extent of the issues were identified, an appropriate evaluation was performed, the condition report was appropriately prioritized, and that actions were planned or in-progress to resolve the issues. This inspection activity does not count as an annual sample.

b. Findings

No findings of significance were identified.

.3 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through

inspection of the station's daily condition report packages. This inspection activity does not count as an annual sample.

b. Findings

One specific issue which involved a Licensee-Identified Violation of 10 CFR Part 50.55a(g)4 was identified during this daily review as discussed in Section 4OA7.

.4 Semi-Annual Trend Review

a. Inspection Scope

During the week ending December 18, 2004, the inspectors performed a review of the licensee's CAPs and associated documents to identify trends that could indicate the existence of a more significant safety issue. This review focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in section 4OA2.2 above, licensee trending efforts, and licensee human performance results. Nominally, the review considered the 6-month period of July 2004 through December 2004, although some examples expanded beyond those dates when the scope of the trend warranted.

The inspectors' semi-annual trend review also included issues documented in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The results of this trend review was compared and contrasted with the results contained in the licensee's CAP and Nuclear Oversight Department reports. Corrective actions associated with a sample of the trends identified by the licensee were reviewed for adequacy.

Inspectors also evaluated the licensee's trending CAPs against the requirements of the licensee's CAP as specified in ACP 114.8, "Action Request Trending," Revision 5. Additional documents reviewed are listed in the Attachment. This inspection activity does not count as an annual sample.

b. Findings and Issues

No findings or issues of significance were identified.

.5 ASME and In-Service Inspection (ISI) Issues

Introduction: During routine reviews of the licensee's CAPs issued during 2004, the inspectors noted several problems associated with the ASME and ISI programs. Therefore, the inspectors selected this area for review for a total of one sample, during the week ending December 4, 2004. These problems have included tests performed by unqualified personnel, nonconformance issues, and non-Code repairs.

The inspectors selected the following CAPs for review:

- CAP 32867, Retests of VT-2 qualified individuals not performed in accordance with –546;
- CAP 33864, ISI Assessment Results in Areas for Improvement;
- CAP 33872, Non-Code Repair Performed without prior NRC Approval;
- CAP 33699, Ultrasonic Test Exam of RHR Return Line;
- CAP 33820, Refueling Outage (RFO) 19 ISI Schedule missing required inspections;
- CAP 33344, Code Case N598 not listed but appears to be used; and
- CAP 34023, Weld not previously listed in ISI plan.

a. Effectiveness of Corrective Actions

(1) Inspection Scope

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

(2) Issues

The licensee has begun an overall effort to address problems associated with the ASME and ISI programs. These efforts began after an assessment identified Areas of Improvement. As such, the licensee has begun measures to improve procedure and administrative controls, work planning, and training/qualifications associated with these programs.

In spite of these efforts, the inspectors observed that problems continue to exist with the assessment of issues pertaining to the ASME and ISI programs. The inspectors concluded that, while overall programmatic improvements are underway, more generic and fundamental weaknesses will need resolution to ensure that adequate assessments are performed by the plant staff. In particular, the inspectors noted several cases in which the engineering evaluations performed were not rigorous and detailed. An example of this was described in section 1R15 of this report, where a 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action” Violation was identified with respect to shortcomings in the evaluation of the VT-2 inspections, that were performed by unqualified personnel. In addition, a Licensee-Identified Violation of 10 CFR Part 50.55a(g)4 was described in section 4OA7 of this report for a non-Code case repair on the ‘A’ Essential RCIC room cooler due to a database error. Both of these issues could have been previously identified with a more rigorous review or validation process. Until these generic and basic fundamental weaknesses are resolved, problems will continue to exist.

The inspectors plan to continue inspection of the licensee’s efforts to improve assessments and evaluations involving the ASME and ISI process by reviewing the cumulative effect of their corrective actions.

40A4 Cross-Cutting Aspects of Findings

- .1 A finding described in Section 1R15 of this report had, as its primary cause, a Problem Identification and Resolution deficiency, in that, Plant and Engineering Management failed to promptly and adequately address corrective action issues associated with VT-2 inspections, that were performed by unqualified personnel.

40A6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. J. Bjorseth and other members of licensee management on January 4, 2005. 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.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Radiological Environmental Monitoring Program inspection with Mr. D. Curtland on October 29, 2004;
- Biennial Licensed Operator Requalification Program Inspection with Mr. Peifer on December 3, 2004; and
- Overall assessments of the annual operating test and the biennial written examination results via telephone with Mr. Kress on December 17, 2004.

40A7 Licensee-Identified Violations

The following violation of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

Cornerstone: Mitigating Systems

- .1 10 CFR Part 50.55a(g)4 requires in part that throughout the service life of a boiling or pressurized water reactor facility, components classified as ASME Code Class 1, 2 and 3 must meet requirements of Section XI. Section XI, Article IWA-4331 (a) requires "That after final grinding, the affected surfaces, including surfaces of cavities prepared for welding, shall be examined by magnetic particle or liquid penetrant method to ensure that the indication has been reduced to an acceptable limit in accordance with IWA-3000," and (b) "Indications detected as a result of excavation that are not associated with the defect being removed shall be evaluated for acceptability in accordance with IWA-3000." Article IWA-4310 states that "Defects shall be removed or reduced in size in accordance with this Paragraph. The component shall be acceptable for continued service if the resultant section thickness is equal to or greater than the minimum design thickness. If the resulting section thickness is reduced below the minimum design

thickness, the component shall be repaired or replaced in accordance with this Article," and IWA-7170 (b) requires that "Repairs and installation of replacement items shall be performed in accordance with the Owners Design Specification and the original Construction Code of the component system."

Contrary to these requirements, on April 21, 2003, in CWO A61699, the licensee did not perform repairs to the pitted areas/holes (which reduced the pressure boundary below minimum design thickness) on the 'A' RCIC essential room cooler end bell piping in accordance with the Construction Code or Owner's Design Specification. Further, the licensee did not perform a liquid penetrant or magnetic particle examination on repair cavities to determine the acceptability of these defects prior to conducting the non-Code repair using a Belzone coating material.

A review of the issue by the inspectors determined that it was of very low safety significance, because the 'B' RCIC essential room cooler was available. Since, this finding is of the very low safety significance and because the issue was entered into the licensee's corrective action program as CAP 33872, it is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Peifer, Site Vice President
J. Bjorseth, Site Director
D. Curtland, Plant Manager
S. Catron, Regulatory Affairs Manager
S. Haller, Site Engineering Director
B. Kindred, Security Manager
C. Kress, Training Manager
G. Rushworth, Operations Manager
W. Simmons, Maintenance Manager
D. Wheeler, Chemistry Manager
J. Windschill, Radiation Protection Manager

Nuclear Regulatory Commission

D. Beaulieu, Project Manager, NRR
B. Burgess, Chief, Reactor Projects Branch 2

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

5000331/2004005-01	NCV	Failure to Perform Prompt and Adequate Corrective Actions for Issues associated with VT-2 Inspections (1R15)
5000331/2004005-02	FIN	Failure to Correct the Excessive Vibrations on the 'A' FRV Positioner (1R19)

Closed

5000331/2004005-01	NCV	Failure to Perform Prompt and Adequate Corrective Actions for Issues associated with VT-2 Inspections (1R15)
5000331/2004005-02	FIN	Failure to Correct the Excessive Vibrations on the 'A' FRV Positioner (1R19)

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R01 Adverse Weather

Integrated Plant Operating Instruction (IPOI) 6, Cold Weather Operations, Revision 31
Operating Instruction (OI) 711, Pumphouse HVAC System, Revision 7
OI 711A1, Pumphouse HVAC Electrical Lineup, Revision 1
OI 710, Intake Structure HVAC System, Revision 10
OI 710A1, Intake Structure HVAC Electrical Lineup, Revision 2
OI 985, Plant Cathodic and Freeze Protection System, Revision 13
OI 985A1, Cathodic Protection Electrical Lineup, Revision 0
OI 985A2, Freeze Protection Electrical Lineup, Revision 4
OI 537, Condensate/Demin Services Water, Revision 32
Preventive Work Order (PWO) 1127695, Cathodic Protection System, September 3, 2004
PWO 1129263, Cathodic Protection System, November 11, 2004
CAP 33904, Discrepancy on Cathodic Protection Data Sheet, November 17, 2004 (NRC Identified)
CAP 33853, IPOI 6 Sign offs for Equipment that is broken, November 15, 2004 (NRC Identified)

1R04 Equipment Alignment

Operating Instruction (OI) 149A1, RHR System Electrical Lineup, Revision 2
OI 149A6, RHR System Control Panel Lineup, Revision 1
OI 149A4, 'B' RHR System Valve Lineup and Checklist, Revision 2
OI 416A1, RHRSW System Electrical Lineup, Revision 2
OI 416A6, RHRSW System Control Panel Lineup, Revision 4
OI 416A1, RHRSW System Valve Lineup and Checklist, Revision 6
OI 150A1, RCIC System Electrical Lineup, Revision 0
OI 150A4, RCIC System Control Panel Lineup, Revision 1
OI 150A2, RCIC System Valve Lineup and Checklist, Revision 5

1R05 Fire Protection

AFP 28 Pump House ESW/RHRSW Pump Rooms and Main Pump Room, Revision 28
AFP 29 Pump House Fire Pump and Fire Pump Day Tank Rooms, Revision 26
AFP 30, Pump House Safety Related Piping Area, Revision 25
AFP 23, Control Building Battery Rooms, Revision 23
AFP 24, Control Building Essential Switch Gear, Revision 27
AFP 03; Reactor Building HPIC, RCIC, & Radwaste Tank Rooms, Revision 23
AFP 06, Reactor Building RHR Valve Room, Revision 23

AFP 10, Reactor Building Main Exhaust Fan Room, Heating Hot Water Pump Room, & Plant Air Supply Room, Revision 23
AFP 11, Reactor Building Laydown Area - EL. 833' 6", Revision 23

1R11 Licensed Operator Requalification Program

SEG 2004C5-1, EOP 1/EOP 2/ Alternate Level Control (ALC)/ Emergency Depressurization (ED), Revision 0
EOP 2, Primary Containment Control, Revision 12
EOP 1, Reactor Pressure Control, Revision 11
ALC, Revision 4
ED, Revision 4
Emergency Action Level (EAL) Table 1, Revision 2
ACP 110.1, Conduct of Operations, Revision 2
ACP 101.01, Procedure Use and Adherence, Revision 27
ACP 101.2, Verification Process and SELF/PEER Checking Practices, Revision 5
Seven Licensed Operators Medical Records; dated various
Quality Form (QF) -1050-01a; Revision 1; Course/Cycle Feedback Summary Form; dated various
Management Observations of Training; Training Program Licensed Operator Requal; dated 2004
Training Program Anecdotes; Licensed Operator Requal; dated 2003 and 2004
DAEC Licensed Operator Requalification Training 52008 2003-2004 2 Year Plan; Revision 2; dated March 2, 2004
QF-1050-06; NMC Training Effectiveness Report; Revision 0; Licensed Operator Requalification; dated Third Quarter 2004 and Fourth Quarter 2004
RO/SRO/ILC Curriculum Review Committee Meeting Minutes; dated various 2003 and 2004
OSS/OSM Curriculum Review Committee Meeting Minutes; dated various 2003 and 2004
QF-1040-04; Remediation/Makeup Training Form; Revision 0; dated various 2003
QF-1040-04; Remediation Training Form; Revision 3; dated various 2004
QF-1040-15; Self Study/Makeup Training Form; Revision 0; dated various 2004
Training Deficiency Form (TDF) -4.01C; Training Center Attendance Sheet; Revision 1; dated January 12, 2004 to September 17, 2004
Operations Department Instruction (ODI) -009; Nuclear Station Plant Equipment Operator, Reactor Operator, Senior Reactor Operator, and Shift Technical Advisor Qualification Requirements; Revision 19; dated July 2, 2004
ODI-009; Attachment 7, Quarterly Watchstanding Record; dated various
2004 Cycle 6 Week 4 Series A Written Examination RO and SRO; Revision 0
Static Simulator Exam Scenario No. SSE 32; Revision 3
Simulator Scenario ESG 10; Revision 2; dated October 17, 2004
Simulator Scenario ESG 12; Revision 2; dated November 30, 2004
JPM 262002-03; Revision 3; dated October 12, 2004
JPM 295016-11; Revision 2; dated October 12, 2004
JPM 212000-11; Revision 1; dated October 12, 2004
JPM 215005-02; Revision 3; dated October 12, 2004
JPM 241000-02; Revision 2; dated October 12, 2004
JPM 2.1.12-03; Revision 1; dated October 18, 2004

OTI-104; Development and Validation of Operations Department Examinations; Revision 6; dated April 28, 2004
 OTI-105; Licensed Operator Requalification Examination Administration; Revision 12; dated September 10, 2004
 OTI-112; Exam Security; Revision 8; dated October 12, 2004
 DAEC Licensed Operator Requal 50008; Training Program Description; Revision 2; dated March 2, 2004
 TDAP 1801.1; Organization and Responsibilities; Revision 5; dated May 1, 2000
 TDAP 1801.2; Conduct of Training; Revision 10; dated November 20, 2003
 TDAP-1801.3; Simulator Facility Administrative Program; Revision 2; dated July 20, 1998
 TDAP-1837; NRC License Application/Medical Examination/License Jacket; Revision 6; dated October 16, 2001
 TDF-6.17; Unsatisfactory Certification Test List; Revision 1; dated May 19, 1997
 TDF-6.18; Simulator Work Request; Revision 1; dated May 19, 1997
 TDF-6.24; NRC Medical Exam Results; Revision 0; dated May 31, 1996
 TDF-6.26; Licensed Operator Medical Exam; Revision 0; dated July 3, 1996
 TDF-6.27; Color Vision, Mobility, and Hearing Practical Tests; Revision 0; dated July 3, 1996
 TDF-6.28; Report of Licensed Operator Medical Examination; Revision 2; dated November 26, 2002
 TDF-6.29; Report of Licensed Operator Medical History; Revision 2; dated November 26, 2002
 ACP 110.1; Conduct of Operations; Revision 3; dated September 21, 2004
 EPIP 1.2; Notifications; Revision 31; dated July 23, 2004
 SOI-8.0; Certification Testing; Revision 8; dated November 15, 2004
 SOI-9.0; Documenting Certification Testing; Revision 6; dated March 12, 2003
 SOI-10.0; Simulator Discrepancies; Revision 10; dated February 9, 2000
 Comprehensive Self-Evaluation Report SA 38414; dated July 19-23, 2004
 Focused Self-Assessment Report SA #2408 DAEC Operations Training - 71111.11; dated October 27 - 29, 2004
 Licensed Operator Requal (LOR) Shift Technical Advisor Continuing Training (STACT) Training Program Evaluation; dated February 2003
 Operations Training Advisory Committee Meeting Minutes; dated various 2003 and 2004
 Training Oversight Committee Meeting Minutes; dated various 2003 and 2004
 Simulator Transient Tests; 2004; dated October 25, 2004
 Simulator Malfunction Tests; 2004; dated various
 Simulator Steady State Tests; 2004; dated October 26, 2004
 Simulator Surveillance Tests (STPs); 2004; dated various
 Simulator Normal Evolution Tests; 2004; dated November 4, 2004 and November 7, 2004
 Simulator Normal Evolution Test; 3.1.1(4); Manual Reactor Scram At MOC with Recovery to Full Power; Revision 2; dated February 26, 2003
 Simulator Normal Evolution Test; 3.1.1(9); Core Performance Testing; Revision 0; dated January 6, 2003
 List of Open Simulator Work Requests; dated November 23, 2004
 List of Closed Simulator Work Requests Between January 1, 2004 and November 23, 2004; dated November 23, 2004
 Closed Simulator Work Requests; 2004; dated various

DAEC Training Department Performance Indicator; Simulator Work Requests; dated October 2004
DAEC Information Technology Performance Indicator; Simulator Availability; dated October 2004
Corrective Action Program (CAP) 032770; Exam Security Violation for a Portion of LOR Biennial Exam; dated August 26, 2004
CAP 032866; Track completion of Exam Security Debrief (OTI-112) for 7 Individuals Remaining; dated September 1, 2004
CAP 019763; Potential Violation of Simulator Testing Requirements; dated November 7, 2002
CAP 025122; Simulator Testing; dated January 3, 2003
CAP 030323; Snapshot Self-Assessment (SSA): Procedure Use and Adherence in Operations; dated January 9, 2004
CAP 039284; Operations Comprehensive Self-Evaluation - Finding #4, Reinforce Standards; dated November 29, 2004
CAP 032469; LOR Self-Assessment Using NRC Inspection Manual 71111.11; dated July 30, 2004
CAP 033643; Items Identified During LOR Self-Assessment; dated October 29, 2004
RFT 002844; Request for Training; NRC 71111.11 Inspection Recommendations; dated December 7, 2004 (NRC Identified)
CAP 034176; Use of STA During Plant Transients Not Consistent with Program Description; dated December 9, 2004 (NRC Identified)
CAP 034177; Incorrect JPM Pass/Fail Determination During LOR Examination; dated December 9, 2004 (NRC Identified)
CAP 034178; ANSOE Watchstanding Proficiency Requirements Inconsistent with Technical Specification; dated December 9, 2004 (NRC Identified)

1R12 Maintenance Effectiveness

July/August 2004 Maintenance Rule Monitoring and Status Report, October 29, 2004
Maintenance Rule Performance Criteria Basis Document for RHR, Revision 4
Maintenance Rule Criteria Values for RHR, September 2004
Other (OTH) 38282, RHR cross-tie tripped on thermal overload, June 22, 2004
CAP 32764, RHR motor bearing oil colors differ, August 26, 2004
CAP 39110, Replace RHR piping due to wall thickness, November 4, 2004
CAP 33795, Foreign Material found in puffer tube of circuit breaker, November 10, 2004

1R13 Maintenance Risk Assessments and Emergent Work Control

Work Procedure Guidelines (WPG) - 2, On-Line Risk Management Guideline, Revision 17
Maintenance Risk Evaluation for Week 42, October 8, 2004
DAEC Online Schedule, Week 9441/9442, October 8, 2004

1R14 Personnel Performance During Non-Routine Plant Evolutions and Events

LER 050000331/2003-005-0, Unplanned Manual Reactor Scram due to High Reactor Coolant Conductivity, January 6, 2004

LER 050000331/2003-006-0, Unplanned Manual Reactor Scram due to Degrading Condenser Vacuum, January 26, 2004

1R15 Operability Evaluations

ACP 110.3, Operability Determination, Revision 1
ACP 114.5, Action Request System, Revision 32
OPR 275, RHR return line to the Torus, November 4, 2004
OPR 271, VT-2 Qualified Individuals, September 1, 2004
CAP 32867, VT-2 Qualified Individuals, September 1, 2004

1R16 Operator Workarounds

ACP 1410.12, Operator Burden Program, Revision 0
OWA 00-004, Control Building Chillers Trip, January 29, 2004
OWA 03-001, Control Room Habitability, January 29, 2004
OWA 03-002, 'A' and 'C' source range monitors spiking, September 14, 2004
OWA 03-004, Control Valve (CV) 1622 sticking, May 3, 2004
OWA 04-002, Feed water level control, October 27, 2004
Operator Challenge 02-002, Control Rods Double Notch, January 30, 2004
Operator Challenge 03-001, Control Rod 10-23 difficult to withdrawal, January 30, 2004
Operator Challenge 03-002, Rod 34-07 is double notching, January 30, 2004
Operations -001, Operator Burden and Tagout Audit, Revision 31
CAP 33696, October Op-1 performed with wrong revision, November 3, 2004 (NRC Identified)

1R19 Post-Maintenance Testing

Maintenance Directive-024, Post Maintenance Testing Program, Revision 31
CWO A61157 for the 'A' RHR pump seal water cooler replacement, October 18, 2004
CWO A64236 Modify Mounting for 'A' Feedwater Regulating Valve Positioner, November 3, 2004
CAP 33729, No Procedural Guidance for Lockwire, November 5, 2004 (NRC Identified)

1R20 Outage Activities

Planned Outage Look Ahead Report, October 19, 2004
Planned Outage Risk Analysis, October 19, 2004
IPOI 1, Startup Checklist, Revision 90
IPOI 2, Startup, Revision 75
IPOI 3, Power Operations, Revision 61
IPOI 4, Shutdown, Revision 61
IPOI 5, Reactor SCRAM, Revision 39
IPOI 8, Outage and Refueling Operations, Revision 30
Operating Instruction (OI) 149, RHR System, Revision 81
Outage Management Guidelines, Outage Risk Management Guidelines, Revision 11

1R22 Surveillance Testing

STP 3.3.8.2-02, RPS MG Set and Alternate Power Source EPA Channel Functional test, Revision 0
OI 358, Reactor Protection System, Revision 46
STP 3.3.6.1-11 Reactor Lo Lo Water Level and Lo Lo Lo Water Level Channel Functional Test, Revision 5
STP 3.5.1-02, LPCI System Operability Test, Revision 15
STP 3.5.1-05, HPCI System Operability Test, Revision 22
OI 149, RHR System, Revision 90
STP 3.6.2.1-01, Suppression Pool Water Temperature Surveillance, Revision 2
STP NS520001, HPCI System Leakage Inspection Walkdown, Revision 5
STP 3.1.7-01, SBLC Pump Operability Test, Revision 8
CAP 34081, Discharge Pressure for SBLC pumps not in spec, November 30, 2004
CAP 34078, Worker Observed Standing on Small Bore Piping, November 30, 2004 (NRC Identified)
CAP 34096, Frequency of Replacing HVAC Filters, December 2, 2004 (NRC Identified)

2OS1 Access Control to Radiologically Significant Areas

CAP 033473; Operator Entered a Locked High Radiation Area on the Wrong Radiation Work Permit; October 21, 2004
RWP 10, Step 6; High Radiation Area and Locked High Radiation Area: Operations Duties; Revision 16
RWP 10, Step 7; Turbine Building Steam Locked High Radiation Areas: Operations Duties; Revision 16

2PS3 Radiological Environmental Monitoring Program (REMP) And Radioactive Material Control Program

2003 Annual Exposure Report; dated April 28, 2004
2003 Annual Radioactive Material Release Report; dated April 30, 2004
2003 Annual Radiological Environmental Operating Report; dated April 30, 2004
Monthly Progress Report to IES, Utilities, Inc. REMP for Duane Arnold Energy Center, Palo, Iowa; dated August 2, 2004
NOOR Observation Report 2004-002-001; Radiological Environmental Monitoring Program; dated April 14, 2004
Offsite Dose Assessment Manual; Revision 19
ACP 1411.3; Radioactive Material Control; Revision 13
ACP 1411.4; Radioactive Waste Reduction Program; Revision 5
ACP 1411.23; Equipment and Material Controls in Radiological Controlled Areas; Revision 14
ESP 4.3.1.1; Airborne Particulate and Iodine Sampling; Revision 24
EAP 4.3.1.6; Bottom Sediments Sampling; Revision 12
HPP 2104.02; Personnel Contamination Monitoring, Whole Body Counting and Decontamination; dated August 26, 2004
HPP 3107.04; Radioactive Source Inventory, Control, Leak Check; dated August 26, 2004

HPP 3107.05; Release of Items From the Radiologically Controlled Area; dated June 9, 2004
HPP 3109.38; Operation Of Eberline PCM-2 Personnel Monitor; dated April 26, 2004
I.MIT-C012-01; Climatronics Met Tower Sensors Calibration; dated October 19, 2004
OTH 026484; Improve Annual REMP Report with Description of Performance of Evaluation of Receptors; dated June 27, 2003
OTH 026911, 10 and 50 Meter Primary Wind Speed Meters Found Out of Tolerance; dated March 14, 2003
OTH 029222; Review the Activities and Responsibilities for the Role of Environment Specialist; dated August 19, 2003
OTH 038166; Reduce the Number of Weekly Air Samples Taken at DAEC; dated June 8, 2004
OTH 038168; Reduce Number of Surface Water Samples Taken for DAEC Evaluate Site EP Requirements for Emergency TLDs; dated June 8, 2004
OTH 038320; Snapshot Self-Assessment (SSA): REMP Review Utility of Some Sample Types; June 25, 2004
OTH 038575; REMP Cost Savings Measures; Revise ODAM/ESPs to Reflect Reduced Sample Schedule; dated July 30, 2004
QF-0406 (FP-PA-SA-03); Duane Arnold Energy Center REMP Program; dated June 25, 2004
NMC Assessment Handbook, Sections: REMP Report and REMP Sampling; Revision 8
TP 600023 Revision D; NIST Traceable Wind Tunnel Anemometer Calibration; dated July 21, 2003
TP 600023 Revision D; NIST Traceable Wind Tunnel Anemometer Calibration; dated November 19, 2003
TP 600027 Revision E; Wind Direction Calibration; dated November 19, 2003
CAP 025742; Revise ODAM/REMP Manual to State Inclusion of 10 CFR 72 Requirements (ISFSI); dated February 23, 2004
CAP 07981; Improve Annual REMP Report with Description of Performance of Evaluation of Receptors; dated June 26, 2003
CAP 028587; Site Personnel Should Assume Bottom Sediments Sampling Responsibilities From UHL; dated August 13, 2003
CAP 029192; Inconsistent Methods are Used to Release Materials From Non-Radioactive Materials in the Plant; dated September 28, 2003
CAP 029041; Met Tower Precipitation Sensor Apparently Not Functioning; dated September 15, 2003
CAP 030027; Met Tower Data Unavailable to MIDAS Plume Model Software; dated December 5, 2003
CAP 030791; Procedure Issued Without Required OC Review; dated February 20, 2004
CAP 033441; Shortcomings with the State of Iowa Radioactive Material License 0095-1-57-CAL; dated October 19, 2004

40A1 Performance Indicator Verification

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2
ACP 1402.4, NRC Performance Indicators Collection and Reporting, Revision 3
Memorandum, DAEC 4th Quarter 2003 PI Summary, January 21, 2004
Memorandum, DAEC 3rd Quarter 2003 PI Summary, October 21, 2003

Memorandum, DAEC 1st Quarter 2004 PI Summary, April 21, 2004
Memorandum, DAEC 2nd Quarter 2004 PI Summary, July 20, 2004

4OA2 Identification and Resolution of Problems

ACP 114.4, Corrective Action Program, Revision 16
ACP 114.5, Action Request System, Revision 40
CAP 31829, Trend Evaluation for Unplanned LCO's, June 24, 2004
CAP 31829, Trend In Procedure Use/Adherence Issues, June 1, 2004
CAP 33883, Preventive Maintenance Performance, November 16, 2004
CAP 31962, Adverse Trend with performance of Maintenance Rule Systems,
October 25, 2004
CAP 32025, HP Performance Problems, June 18, 2004
CAP 32175, Increase in Human Performance Problems, July 1, 2004
CAP 32867, Retests of VT-2 qualified individuals not performed in accordance with
-546, September 1, 2004
CAP 33820, RFO 19 ISI Schedule missing required inspections, November 12, 2004
ACP 1211.1, Written Practice for Qualification and Certification of NDE Personnel,
Revision 10
CAP 33864, ISI Assessment Results in Areas for Improvement, November 16, 2004
CAP 33872, Non Code Repair Performed without prior NRC Approval, November 18,
2004
CAP 33344, Code Case N598 not listed but appears to be used, October 12, 2004
CAP 34023, Weld not previously listed in ISI plan, November 23, 2004
CAP 33699, Ultrasonic Test Exam of RHR Return Line, November 3, 2004

4OA7 Licensee-Identified Violations

CAP 33872, Non code repair performed without prior NRC approval, November 16,
2004

LIST OF ACRONYMS USED

ACE	Apparent Clause Evaluation
ACP	Administrative Control Procedure
AFP	Area Fire Plan
ALC	Alternate Level Control
AOT	Allowed Outage Time
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Plan
CFR	Code of Federal Regulations
CWO	Corrective Work Order
CV	Control Valve
DAEC	Duane Arnold Energy Center
EAL	Emergency Action Level
ED	Emergency Depressurization
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
EPA	Electrical Protection Assemblies
EPIP	Emergency Plan Implementing Procedure
ESW	Emergency Service Water
FRV	Feedwater Regulating Valve
HEPA	High Efficiency Particulate Air
HPCI	High Pressure Core Injection
HVAC	Heating, Ventilation, Air-Conditioning
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
IPOI	Integrated Operating Instructions
IR	Inspection Report
ISI	In-Service Inspection
JPM	Job Performance Measure
LER	Licensee Event Report
LLC	Limited Liability Company
LLD	Lower Limits of Detection
LOR	License Operator Requal
LORT	Licensed Operator Requalification Training
LPCI	Low Pressure Coolant Injection
MG	Motor Generator
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NCV	Non-Cited Violation
ODCM	Off-site Dose Calculation Manual
ODI	Operations Department Instruction
OI	Operating Instruction
OOS	Out-of-service
OPR	Operability
OTH	Other
OWA	Operator Workaround

LIST OF ACRONYMS USED

PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post-Maintenance Testing
PWO	Preventative Work Order
QF	Quality Form
RCIC	Reactor Core Isolation Cooling
REMP	Radiological Environmental Monitoring Program
RFO	Refueling Outage
RFT	Request for Training
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RPS	Reactor Protection System
RWP	Radiation Work Permit
SBLC	Standby Liquid Control
SDP	Significance Determination Process
SEG	Simulator Exercise Guide
SSA	Snapshot Self-Assessment
SSC	Structures, Systems, Components
STA	Shift Technical Advisor
STACT	Shift Technical Advisor Continuing Training
STP	Surveillance Test Procedure
TDF	Training Deficiency Form
TLD	Thermoluminescent Dosimeters
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VT	Visual Testing
WPG	Work Procedure Guidelines