UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

February 3, 2010

Mr. Christopher R. Costanzo
Vice President
NextEra Energy Duane Arnold, LLC
3277 DAEC Road
Palo, IA 52324-9785

SUBJECT: DUANE ARNOLD ENERGY CENTER NRC INTEGRATED INSPECTION REPORT 05000331/2009005

Dear Mr. Costanzo:

On December 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Duane Arnold Energy Center. The enclosed report documents the inspection results, which were discussed on January 5, 2010, with Mr. D. Curtland 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, one NRC-identified finding and two self-revealed findings of very low safety significance were identified. Each finding involved a violation of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, 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. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Duane Arnold Energy Center. The information that you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA by N. Shah, Acting For/

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report 05000331/2009005
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-331
License No:	DPR-49
Report No:	05000331/2009005
Licensee:	NextEra Energy Duane Arnold, LLC
Facility:	Duane Arnold Energy Center
Location:	Palo, IA
Dates:	October 1 through December 31, 2009
Inspectors:	R. Orlikowski, Senior Resident Inspector R. Baker, Resident Inspector C. Scott, Reactor Engineer R. Murray, Reactor Engineer T. Go, Health Physicist D. McNeil, Sr. Operations Engineer R. Russell, Emergency Preparedness Inspector
Observers:	M. Audrain, Materials Engineer
Approved by:	K. Riemer, Chief Branch 2 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000331/2009005; 09/01/2009 – 12/31/2009; Duane Arnold Energy Center; Identification and Resolution of Problems and Follow-up of Events and Notices of Enforcement Discretion.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding was identified by the inspectors and two Green findings were self-revealed. The findings were considered Non-Cited Violations (NCVs) of NRC regulations. 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 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 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," was identified by the NRC for the failure to maintain 'A' Emergency Service Water (ESW) safety-related cables in an environment for which they were designed. The inspectors determined that the failure to maintain safety-related cables for the 'A' ESW system in an environment for which they were designed was contrary to the requirements contained in 10 CFR 50, Appendix B, Criterion III, "Design Control," and was therefore a performance deficiency. The licensee entered this event into their Corrective Action Program (CAP) as CAP 070938, and implemented corrective actions including creating inspection tasks to periodically inspect 21 manholes that are susceptible to water intrusion, as well as evaluating the feasibility of installing sump pumps in those manholes.

  The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to maintain 'A' ESW safety-related cables in an environment for which they were designed when the cables were allowed to be submerged in water inside manhole 1MH109. The finding was of very low safety significance (Green) because it was a qualification deficiency that did not result in a loss of operability. This finding has a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner. Specifically, the licensee failed to implement timely corrective actions to address an adverse trend of water in manhole 1MH109 which led to 'A' ESW safety-related cables being submerged in water. [P.1(d)] (Section 4OA2.3)

Cornerstone: Initiating Events

- Green. A finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when Instrumentation and Controls (I&C) Technicians failed to fully shut an instrument isolation valve for a Reactor Vessel Pressure Transmitter. During subsequent steps of the Surveillance Test Procedure (STP), a pressure surge occurred on the shared reference leg and RPS channels A2 and B2 initiated an automatic reactor scram due to a sensed low reactor water level. The inspectors determined that the failure to complete the steps of STP 3.3.3.2-09B was contrary to the requirements contained in 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and was therefore a performance deficiency. The licensee entered this event into their Corrective Action Program as CAP 070334, and implemented corrective actions including enhancement of all STPs that test instruments on shared reference legs. These enhancements include requiring pre-pressurization of instrument test lines during the surveillance testing and also revising STP 3.3.3.2-09B to identify the manipulation of shared reference leg isolation valves as critical steps. Additionally, the licensee has implemented corrective actions to improve the Apprenticeship Training Program for I&C Technicians.

The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of Human Performance and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, the failure to fully isolate the Reactor Vessel Pressure Transmitter from the Reactor Vessel Level Instruments installed on the shared reference leg as required by the STP resulted in an unplanned reactor scram. The inspectors determined the finding was of very low safety significance (Green) because the finding only resulted in a reactor scram and did not contribute to the likelihood that mitigation equipment or functions would not be available. This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, because the licensee did not use human error prevention techniques commensurate with the risk of the assigned task and personnel proceeded in the face of uncertainty. Specifically, an I&C technician failed to complete a step of STP 3.3.3.2-09B when the technician encountered difficulty in shutting the instrument isolation valve for a Reactor Vessel Pressure Transmitter. After several attempts to shut the isolation valve followed by a discussion with a peer, the I&C technician then proceeded in the face of uncertainty and caused a reactor scram. [H.4(a)] (Section 4OA3.1)

Cornerstone: Occupational Radiation Safety

- Green. A self-revealed finding of very low safety significance and an associated NCV of Technical Specification 5.4.1(a) was identified for the failure to comply with the requirements of the "Diving Operation within Radiological Areas" procedure during torus underwater diving operations on February 17, 2009. Specifically, two divers entered the water in the torus bay no.7 to perform wall coating repairs. Dives were performed approximately 10 feet from the water surface. The diving was monitored by two tenders and two health physics (HP) technicians. The HP technicians provided continuous coverage and monitored activities through a Teleview system that continuously monitored the divers' electronic dosimetry (ED). At approximately 2.5 hours into the dive, the senior HP technician glanced at the Teleview monitor and discovered that an accumulated dose alarm condition had occurred several minutes earlier for a three-minute duration on one of the divers. This resulted in one diver receiving an accumulated dose of 133 millirem (mrem). Both divers were ordered out of the water and were subsequently surveyed and were found free of contamination.

  The licensee failed to recognize the radiological impact of various operational activities on dive conditions, which introduced discrete radioactive particles (DRPs) into the torus water. Drain down of the reactor cavity and the torus spray header along with the storage of contaminated filters in the torus all contributed to the presence of DRPs. Although underwater radiation surveys were performed shiftly by the radiation protection (RP) staff, these surveys were limited to the immediate dive area. Surveys were not sufficiently comprehensive or timely, as required by the licensee's procedure, to ensure that changes in radiological conditions were identified to maintain diver dose as-low-as-reasonably-achievable (ALARA). Sufficiently comprehensive surveys of the torus were last performed four-days prior to the February 17th incident. As a result, one of the torus divers encountered radiation levels greater than expected and received additional unanticipated dose. The licensee’s corrective actions included counseling of the involved diving crew and conducting a stand-down with the dive crew to reinforce radiological requirements along with communication expectations such as notifying RP supervisors of any reported plant operations that may affect radiological conditions prior to the start of diving activities. The licensee had completed an extent of condition evaluation and formulated additional actions to prevent recurrence.

The finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and affected adversely the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that, access into underwater high radiation areas whose radiological conditions were unknown placed the divers at risk for unnecessary radiation exposure. The finding was determined to be of very low safety-significance because it was not an ALARA planning issue, there was no overexposure or substantial potential for an overexposure, and the licensee’s ability to assess worker dose was not compromised. The finding involved a cross-cutting aspect in the area of human performance related to decision making, in that, the licensee did not use conservative assumptions in its decision making to ensure that the torus diving activity was radiologically safe. Specifically, the licensee did not perform underwater dose surveys that were sufficiently thorough to provide an accurate characterization of the radiological conditions. (H.1.b) (Section 2OS1.3)

B. Licensee-Identified Violations

A violation of very low safety-significance that was identified by the licensee has been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee’s corrective action program. The violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Duane Arnold Energy Center (DAEC) 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 exception:

- On October 8, 2009, while performing Surveillance Test Procedure 3.3.3.2-09B, Reactor Water Level and Pressure Instruments (Loop B) Calibration, two Instrument and Controls (I&C) Technicians caused a pressure surge on a shared reference leg and inadvertently caused an automatic reactor scram due to a sensed low reactor water level. The unplanned outage continued through October 10, 2009, when the generator was connected to the grid. Power ascension was completed on October 14, 2009, when the plant returned to full power.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparations

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable.
The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment to this report. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- Intake Structure Heating, Ventilation, and Air Conditioning (HVAC) System;
- Pumphouse HVAC system; and
- Cooling Towers and Circulating Water System.

These inspection activities constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance were identified.

.2 Readiness for Impending Adverse Weather Condition – Heavy Snowfall and Extreme Cold Conditions

a. Inspection Scope

On December 7, 2009, a winter weather advisory was issued for expected snow squalls. The inspectors observed the licensee's preparations and planning for the significant winter weather potential. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures for ensuring adequate personnel for safe plant operation and emergency response would be available. The inspectors conducted a site walkdown including walkdowns of various plant structures and systems to check for maintenance or other apparent deficiencies that could affect system operations during the predicted significant weather. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

Since extreme cold conditions were forecast in the vicinity of the facility for December 9, 2009, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On December 7, the inspectors walked down the Emergency Service Water (ESW), Residual Heat Removal (RHR) Service Water, and Auxiliary Boiler systems because their safety-related functions could be affected or required as a result of the extreme cold conditions forecast for the facility. The inspectors observed insulation, heat trace circuits, space heater operation, and weatherized enclosures to ensure operability of affected systems. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures for ensuring adequate personnel for safe plant operation and emergency response would be available. Specific documents reviewed during this inspection are listed in the Attachment to this report.

These inspection activities constituted one readiness for impending adverse weather condition sample as defined in IP 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- ‘A’ Standby Diesel Generator (SBDG) System with the ‘B’ SBDG Out-of-Service (OOS) for Emergent Troubleshoot and Testing;
- ‘B’ RHR Service Water and ESW Systems with the ‘A SBDG and ESW Systems OOS for Planned Maintenance; and
- ‘A’ RHR and Core Spray Systems with the ‘B’ RHR and Core Spray Systems OOS for Surveillance Testing.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), CAP documents, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted three partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns, which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Area Fire Plans (AFPs) 4, 5, and 6; Reactor Building North and South Control Rod Drive Areas and RHR Valve Room;
- AFPs 10, 11, and 12; Reactor building Main Exhaust Fan Room, Laydown Area, and Decay Tank and Condensate Phase Separator Rooms;
- AFPs 23 and 74, Battery Rooms, Battery Corridor, and Switchyard;
- AFPs 28, 29, 30, Pump House; and
- AFP 79, Spent Fuel Storage Facility.

The inspectors reviewed areas 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 implemented adequate compensatory measures for OOS, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On October 14 and 21, 2009, the inspectors observed crews of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

.2 Annual Operating Test Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the individual Job Performance Measure operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from November 2009 through December 2009 as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," and IP 71111.11, "Licensed Operator Requalification Program." Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant system:

- Nuclear Boiler (includes fuel).

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection activity constituted one quarterly maintenance effectiveness sample as defined in IP 71111.12-05.

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 and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Emergent Work on the Electro-Hydraulic Control System with Concurrent Switchyard Work During Work Week 9942;
- Aggregate Plant Risk Associated with Concurrent Work on Standby Filter Units and Standby Gas Treatment Systems During Work Week 9945;
- Aggregate Plant Risk Associated with Multiple High Risk Activities performed in Parallel During Work Week 9949;

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These maintenance risk assessments and emergent work control inspection activities constituted three samples as defined in IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- Operability Recommendation (OPR) 407 & 409 on A & B SBDG Air Start Systems;
- OPR 414: 'A' SBDG Lube oil Temperature High Out of Specification; and
- Licensee's Evaluation for Potential Non-Conservative TS Allowable Value Setpoint Associated with the Condensate Storage Tank Low Level Suction Transfer.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

These operability inspection activities constituted three samples as defined in IP 71111.15-05.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification:

- Temporary Modification TM-09-031, 1X001 [Main Transformer] Nitrogen Bottle Supply Banks.

The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors, as applicable, performed field verifications to ensure that the modifications were installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. Lastly, the inspectors discussed the temporary modification with operations, engineering, and training personnel to ensure that the individuals were aware of how extended operation with the temporary modification in place could impact overall plant performance. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

This inspection activity constituted one temporary modification sample as defined in IP 71111.18-05.

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 to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Operational Testing of CV-1068, Moisture Separator Drain Tank 1T-92B Drain to Feedwater Heater 1E-6B Following Valve Disassembly, Repair and Repacking;
- Post-Maintenance Activities following the Annual Inspection of the Standby Transformer and Repair of the Racking Mechanism for Circuit Breaker 1A401, the Standby Transformer Supply to Essential 4 KV Bus 1A4;
- Post-Maintenance and Operability Testing of the 'A' SBDG Following Completion of the 2-YR Diesel Engine Mechanical Inspection;
- Replacement and Testing Activities for TS3270A, the ‘A’ SBDG Lube Oil Heater Temperature Switch; and
- Emergent Replacement and Testing Activities for 1VEF023B, the ‘B’ Isophase Bus Duct Cooling Fan Motor.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted five post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Other Outage Activities

a. Inspection Scope

The inspectors evaluated outage activities for an unscheduled outage that began on October 8, 2009, when the reactor was inadvertently scrammed during surveillance testing. The outage continued through October 10, 2009, when the generator was synchronized to the grid. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors observed or reviewed the reactor shutdown to a hot shutdown condition, outage equipment configuration and risk management, electrical lineups, selected clearances, control and monitoring of decay heat removal, control of containment activities, startup and heatup activities, and identification and resolution of problems associated with the outage. Additionally, the inspectors reviewed activities associated with the repair of CV-1068, the Moisture Separator Reheater Second Stage Drain Tank Drain Valve.

These inspection activities constituted one other outage sample as defined in IP 71111.20-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- STP 3.5.3-05, RCIC [Reactor Core Isolation Cooling]/HPCI [High Pressure Coolant Injection] Suction Transfer Interlock;
- STP 3.8.1-04A, ‘A’ SBDG Operability Test (Slow Start from Normal Starting Air);
- STP 3.3.5.1-20, LPCI [Low Pressure Coolant Injection] Loop Select Recirculation Pump Dp Calibration;
- STP 3.8.1-06A, ‘A’ SBDG Operability Test (Fast Start);
- STP 3.5.1-01B, ‘B’ Core Spray System Operability Test; and
- STP 3.3.1.1-34, Recirculation Flow Unit Functional Test and Calibration.

The inspectors observed in plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted five routine surveillance testing samples, and one inservice testing sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors conducted a review of all the emergency action level changes and sampled the revisions to the emergency plan to evaluate whether the changes identified in the revisions may have decreased the effectiveness of the emergency plan. The inspection included a review of the 10 CFR 50.54(q) change process documentation. The inspectors reviewed the changes made to the emergency plan that were implemented based on the licensee's determination the changes resulted in no decrease in effectiveness of the emergency plan and the revised plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review of the revisions does not constitute formal approval of the changes; therefore, the emergency action level and emergency plan changes remain subject to future NRC inspection in their entirety. Documents reviewed are listed in the Attachment to this report.

This emergency action level and emergency plan changes inspection constituted one sample as defined in IP 71114.04-05.

b. Findings

(1) Unresolved Item (URI) 20090005-04 Changes to Duane Arnold Energy Center Action Level Notification Form, Note-05

Introduction: The inspector reviewed changes made to the form used to notify state and local counties of an emergency event classification and other event related information such as meteorological data, release status, and protective action recommendations. The changes implemented to the *Duane Arnold Energy Center Action Level Notification Form, Note-05*, were reviewed for a potential decrease in effectiveness of the notification information provided offsite agencies relative to event related release-in-progress information.

Description: The licensee made several changes to the notification form to eliminate confusion for the operating crew on the determination of a release status during a classifiable event. One of the changes included the term "release" which was changed to "abnormal release." The term "release in progress" on the original version was defined as a release occurring due to the event. On the changed version, "abnormal release in progress" was defined by the radiation monitor, i.e., KAMAN, reaching the KAMAN high alarm set point. Another change to the form was on the original version, the KAMAN high alarm indicated the release due to the event was 'at or above' federal limits. On the changed version of the form, the KAMAN high-high alarm indicated the release was 'at or above' federal limit. Another change made to the notification process was on the original notification form, the operators would determine if a release was occurring related to the event and then would quantify the release as either 'below' or 'at or above' federal limits. On the changed version, the operators could determine a release to be occurring due to the event; however, the release would not be notified as a release until the radiation level became 50 times the normal level or if a field team reported radiation levels. Additional changes were made to the KAMAN alarm set point numeric values for both the high and high-high set points. The licensee has indicated the notification form changes would have no effect on the offsite agencies' response since the values are very low and below the thresholds for offsite actions. The issue of concern was considered an Unresolved Item because more information is needed from the licensee to fully understand the changes and to determine if the changes to the notification form are decreases in effectiveness that would require prior NRC approval. (URI 05000331/2009005-04).

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 the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within the spent fuel pool or other storage pools.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors evaluated the licensee's process for problem identification, characterization, and prioritization and verified that problems were entered into the CAP and resolved. For repetitive deficiencies and/or significant individual deficiencies in problem identification and resolution, the inspectors verified that the licensee's self-assessment activities were capable of identifying and addressing these deficiencies.

This inspection constituted one sample as defined in IP 71121.01-5.

The inspectors reviewed licensee documentation packages for all PI events occurring since the last inspection to determine if any of these PI events involved dose rates in excess of 25 R/hr at 30 centimeters or in excess of 500 R/hr at 1 meter. Barriers were evaluated for failure and to determine if there were any barriers left to prevent personnel access. Unintended exposures exceeding 100 millirem total effective dose equivalent (or 5 rem shallow dose equivalent or 1.5 rem lens dose equivalent) were evaluated to determine if there were any regulatory overexposures or if there was a substantial potential for an overexposure.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

The inspectors reviewed radiological problem reports for which the cause of the event was due to radiation worker errors to determine if there was an observable pattern traceable to a similar cause and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. Problems or issues with planned or completed corrective actions were discussed with the Radiation Protection Manager.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

Introduction: A self-revealed finding of very low safety significance and an associated NCV of Technical Specification 5.4.1(a), was identified for the failure to comply with the requirements of the “Diving Operation within Radiological Areas” procedure which requires that dive area surveys be performed shiftly if the potential for changing dose rates exists in the dive area.

Description: At 1425 hours, on February 17, 2009, two divers entered the water in the torus bay no. 7 to perform wall coating repairs. Dives were conducted at approximately 10 feet from the water surface while the activity was monitored by two tenders and two HP (senior and junior HP) technicians. According to the licensee, the clarity of the water was excellent during the dive and the dive crew had previously completed 60 dives. The HP technicians provided continuous coverage and monitored divers’ activities through a Teleview system that continuously monitored the divers’ EDs. About two and a half hours into the dive, the senior HP technician glanced at the Teleview monitor and discovered a dose alarm condition indicated by the Teleview monitor as a red flag. The dose alarm set point was 100 mrem while the dose encountered by one of the divers was 133 mrem. The alarm condition existed for several minutes before the discovery. The licensee’s investigation determined that the junior HP technician was assigned to monitor any alarm conditions during the dive but was momentarily distracted. After the senior HP technician noticed the dose alarm at 133 mrem, he ordered the divers to surface and initiated the diver extraction process including performing divers’ contamination surveys. Surveys determined that the divers were not contaminated.

The licensee's apparent cause investigation determined that exposure event was caused by a free moving microscopic high specific activity particle (discrete radioactive particle (DRP)) that migrated into the dive area and came in close proximity to one of the divers. The particle was postulated by the licensee to remain in the dive area for a short period of time and it was possibly a neutron-activated corrosion product that migrated from the torus vacuum filters located at the two torus bays or from the gravity drain down of the torus spray header. The licensee's investigation also determined that RP management failed to account for the impact of operational activities which occurred earlier that day. The operational transients did not prompt the diving crew or RP staff to take any specific action to assess its potential impact on dive activities. In addition, the licensee indicated that during the start of the outage, the plant experienced possible hot particle intrusion due to a “hard” shutdown which also was not factored into the torus diving activities.

The licensee failed to recognize the radiological impact of various operational activities on dive conditions, which introduced DRPs into the torus water. Drain down of the reactor cavity and the torus spray header along with the storage of contaminated filters in the torus all contributed to the presence of DRPs. Although underwater radiation surveys were performed shiftly by the RP staff, these surveys were limited to the immediate dive area. As a result, the inspector concluded that the surveys were not sufficiently comprehensive or timely, as required by the licensee's procedure, to ensure that changes in radiological conditions were identified to maintain diver dose as-low-as-reasonably-achievable. Sufficiently comprehensive surveys of the torus were last performed four-days prior to the February 17th incident.

As a result, one of the torus divers encountered radiation levels greater than expected and received additional unanticipated dose. The licensee’s corrective actions included counseling of the involved torus diving crew and conducting a stand-down with the diving operations to reinforce radiological requirements along with communication expectations such as notifying HP supervisors of any operational activities that could impact radiological conditions prior to the start of diving activities. The licensee had completed an extent of condition evaluation to formulate additional actions to prevent recurrence.

<u>Analysis</u>: The inspectors determined that the issue was a performance deficiency because area radiological conditions were not fully determined consistent with the work scope and because the licensee failed to comply with the survey requirements per Health Physics Program 3104.07, “Diving Operations within Radiological Areas.” Specifically, the licensee did not perform underwater surveys that were timely and sufficiently thorough. The inspectors determined that the cause of the performance deficiency was reasonably within the licensee’s ability to foresee and correct and should have been prevented.

The finding was not subject to traditional enforcement since the issue did not have an actual or potentially significant safety consequence, did not impact the NRC’s ability to perform its regulatory function, and was not willful.

In accordance with NRC Manual Chapter 0612, the inspectors determined that the finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, diving in areas where radiological conditions were unknown placed the divers at risk for unnecessary radiation exposure and resulted in additional dose. The finding was assessed using the Occupational Radiation Safety SDP and was determined to be of very low safety-significance because it was not an ALARA planning issue, there was no overexposure or substantial potential for an overexposure, and the licensee’s ability to assess worker dose was not compromised.

The finding involved a cross-cutting aspect in the area of human performance related to decision making, in that, the licensee did not use conservative assumptions in the decision making to ensure that the torus diving activity was radiologically safe. Specifically, the licensee did not perform underwater dive surveys that were timely and sufficiently thorough to provide an accurate characterization of the radiological conditions. (H.1.b)

Enforcement: Technical Specification 5.4.1(a) provides, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.

Section 2 of Appendix A to Regulatory Guide 1.33, Quality Assurance Program Requirements (Operation), Revision 2, February 1978 provides, in part, that the licensee establish written procedures for radiation surveys.

Section 5.4 of procedure HPP 3104.07, Revision No. 17, "Diving Operation within Radiological Areas," states, in part, that shiftly or continuous dive area surveys are required if the potential for changing dose rates exist in the dive area.

During diving activities between February 13 and 17, 2009, the radiological surveys performed by the licensee were insufficient in scope and frequency to identify changing radiological conditions in the torus dive areas. Since the failure to comply with the TS was of very low safety-significance, corrective actions were taken as described above, and the issue was entered into the licensee's corrective action program (apparent cause evaluation 001928), the violation is treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000331/2009005-03).

.4 Radiation Protection Technician Proficiency

a. Inspection Scope

The inspectors reviewed radiological problem reports for which the cause of the event was radiation protection technician error to determine if there was an observable pattern traceable to a similar cause and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

2OS2 As-Low-As-Is-Reasonably-Achievable Planning and Controls (71121.02)

a. Inspection Scope

The inspectors reviewed documents to determine if there were site-specific trends in collective exposures and source-term measurements.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning

a. Inspection Scope

The inspectors evaluated the licensee's list of work activities ranked by estimated exposure that were in progress and reviewed the following five work activities of highest exposure significance:

- Under Water Diving Work and Setup; Desludging, Inspection and Repair of the Torus Coating in the Locked High Radiation Area;
- Internal Torus Repair Project, Equipment Setup; for Contaminated and High Contaminated Areas;
- Reactor Vessel Dis/Re-assembly Activities in the Cavity including Decontaminations;
- Refuel Floor 360 Platform Work Activities Including Local Power Range Monitor Replacement, Sparger Modification; and
- Drywell Activities including Drywell 757' and 742' Elevations and Refuel Floor Support Work.

This inspection constituted one required sample as defined in IP 71121.02-5.

The inspectors compared the results achieved (including dose rate reductions and person-rem used) with the intended dose established in the licensee's ALARA planning for these five work activities. Reasons for inconsistencies between intended and actual work activity doses were reviewed.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the assumptions and bases for the current annual collective exposure estimate, including the applicable procedures, in order to evaluate the licensee's method for estimating work activity-specific exposures and the intended dose outcome. Dose rate and man-hour estimates were evaluated for reasonable accuracy.

This inspection constituted one required sample as defined in IP 71121.02-5.

The licensee's process for adjusting exposure estimates or re-planning work (when unexpected changes in scope, emergent work or higher than anticipated radiation levels were encountered) was evaluated. This included determining whether adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles or whether they resulted from failures to adequately plan or to control the work. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning process.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.4 Declared Pregnant Workers

a. Inspection Scope

The inspectors reviewed dose records of declared pregnant workers for the current assessment period to verify that the exposure results and monitoring controls employed by the licensee complied with the requirements of 10 CFR Part 20.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.5 Problem Identification and Resolutions

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, and Special Reports related to the ALARA program since the last inspection to determine if the licensee's overall audit program's scope and frequency for all applicable areas under the Occupational Cornerstone met the requirements of 10 CFR 20.1101(c).

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the fourth quarter 2009 performance indicators for any obvious inconsistencies prior to its public release in accordance with IMC 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings of significance were identified.

.2 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures performance indicator for the period from the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the Performance Indicator (PI) data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports and NRC Integrated Inspection Reports for the period of October 2008 through September 2009 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection activity constituted one safety system functional failures sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Residual Heat Removal System performance indicator for the period from the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of October 2008 through September 2009 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection activity constituted one MSPI residual heat removal system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Cooling Water Systems PI for the period from the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of October 2008 through September 2009 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection activity constituted one MSPI cooling water system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline inspection procedures discussed 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 licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that 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 that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the attached List of Documents Reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 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.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was 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. The inspectors' review nominally considered the six month period of July 1, 2009, through December 31, 2009, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP 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 inspectors compared and contrasted their results with the results contained in the licensee's

CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings and Observations

(1) Unqualified Safety-Related Cables Used in a Submerged Environment

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was NRC-identified for the failure to maintain 'A' ESW safety-related cables in an environment for which they were designed.

Description: On July 15, 2009, maintenance personnel opened up manhole 1MH109, which contained safety-related electrical cables, per Maintenance Work Order 1151250. After the manhole cover was lifted, inspection of the manhole revealed standing water approximately 20 inches below the lowest cable tray. Since 1MH109 did not have a sump pump installed, maintenance personnel used a portable pump to dewater 1MH109 prior to replacing the manhole cover. CAP 068541 was initiated to document the standing water that was found in 1MH109, and engineering was assigned an action (OTH 040313) to review the inspection results from 1MH109 and determine if a preventative maintenance task was required for periodic inspection or if permanent sump pumps needed to be installed. OTH 040313 was assigned a due date of September 23, 2009.

On July 23, 2009, maintenance personnel opened up manhole 2MH207, which contained safety-related electrical cables, per Maintenance Work Order 1151250. Inspection of 2MH207 revealed standing water approximately 12 inches below the lowest cable tray. Since 2MH207 did not have a sump pump installed, maintenance personnel used a portable pump to dewater 2MH207 prior to replacing the manhole cover. CAP 068665 was initiated to document the standing water found in 2MH207, and engineering was assigned to perform a condition evaluation, CE 007585, to address the concern about the risk of possible standing water reaching the cables in the event of heavy rains or flood. CE 007585 was closed to OTH 040313 and corrective action CA 053180. CA 053180 was assigned to Design Engineering to study the feasibility to provide power to sump pumps in manholes 1MH109, 2MH207, and 1MH110/2MH208.

On August 12, 2009, manhole 1MH109 was opened for inspection by members of an NRC license renewal inspection team. Manhole 1MH109 was found with approximately 10 inches of water, which was removed prior to replacing the cover on the manhole after inspections were complete. CAP 068976 was written to document the deficiency, and the CAP was then closed to actions already taken.

On October 23, 2009, maintenance personnel opened manhole MH206, which does not contain any safety-related cables, and discovered approximately 7 feet of water inside. The manhole was dewatered and CAP 070736 was written to document the condition. Engineering personnel determined that the intrusion of water into manhole MH206 was due to the failure to maintain the grade below the lip of the manhole per the design drawings, as well as the compromise of the gasket surface between the cover and the pit due to gravel and sediment.

The Inspectors discussed CAP 070736 with DAEC engineers, and in the process of reviewing design drawings of the underground duct banks, identified that there was an underground duct bank running from manhole MH206 to manhole 1MH109. Knowing that there had been previous instances of water found in 1MH109, the inspectors questioned station personnel if the water in MH206 was running through the underground duct bank and causing a build-up of water in 1MH109. On October 30, 2009, maintenance personnel opened up manhole 1MH109 and found approximately 4 feet of water. This water submerged the lower two cable trays located in 1MH109. One of the cables that was submerged was a safety-related cable for the 'A' ESW flow indication and 'A' ESW wet pit level. Maintenance personnel dewatered manhole 1MH109, and then initiated CAP 070938 to document the issue. CA 053854 was initiated to create inspection tasks to periodically inspect 21 manholes that are susceptible to water intrusion.

While reviewing DAEC's CAP documents as part of a semi-annual trend review inspection sample, the inspector's identified that the due date for OTH 040313 had been changed on two separate occasions. On September 22, 2009, the original due date of September 23, 2009, was changed to November 11, 2009. Then on October 27, 2009, the due date was changed to January 27, 2010. Additionally, on October 27, 2009, the Activity Request was changed from "…Review inspection results from Manhole 1MH109 and determine if PM [Preventative Maintenance] is required for periodic inspection or permanent sump pump needs to be installed," to "CA 053180 is investigating the feasibility of installing sump pumps in 1MH109 and 2MH207. If feasible, a modification will be prepared to install the pumps and this OTH may be closed to no action. If pumps cannot be installed, the OTH will determine an alternate inspection method and frequency."

The inspectors reviewed calculation BECH-MRS-E019A, 600 Volt Shielded Instrument Cable, to determine the design specifications for the 'A' ESW cable that was found submerged. Section 5.1.1 states, "the cable shall be suitable for installation indoors and outdoors in metal trays, conduit, underground duct banks, and direct burial in earth in wet and dry locations (except high temperature cable need not be suitable for direct burial)." Section 5.2.1.2 states, "Continuous operations at 90 C temperature (ambient plus current generated heat) at 100% relative humidity." Okonite Report number NQRN-1A, Nuclear Environment Qualification Report for Okonite Insulated Cables, documents the test results for Okonite insulated cables. Per Appendix 6, Moisture Resistance, Okonite states that the cables "should be capable of a life in excesses of a generating station's designed life in an environment of 100% humidity." The Okonite report does not state that the cables are rated for continuous submergence.

Analysis: The inspectors determined that the failure to maintain safety-related cables for the 'A' ESW system in an environment for which they were designed was a performance deficiency.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

Specifically, the licensee failed to maintain 'A' ESW safety-related cables in an environment for which they were designed when the cables were allowed to be submerged in water inside manhole 1MH109.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone. The finding was of very low safety significance because it was a qualification deficiency that did not result in a loss of operability.

This finding has a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner. Specifically, the licensee failed to implement timely corrective actions to address an adverse trend of water in manhole 1MH109 which led to 'A' ESW safety-related cables being submerged in water. [P.1(d)]

Enforcement: 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, DAEC did not maintain safety-related cables in an environment for which they were designed. Specifically, the licensee failed to maintain 'A' ESW safety-related cables in an environment for which they were designed when the cables were allowed to be submerged in water inside manhole 1MH109. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as CAP 070938, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000331/2009005-01).

.4 Selected Issue Follow-Up Inspection: Root Cause Evaluation 1086: PT4564 Reactor Scram

a. Inspection Scope

The inspectors chose to perform an in-depth review of the licensee's Root Cause Evaluation (RCE) for a Reactor Scram that occurred on October 8, 2009.
The inspectors considered the following attributes during review of RCE 1086:

- Complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- Evaluation and disposition of operability/reportability issues;
- Consideration of extent of condition, generic implications, common cause, and previous occurrences;
- Classification and prioritization of the resolution of the problem commensurate with its safety significance;
- Identification of root and contributing causes of the problem;
- Identification of corrective actions which are appropriately focused to correct the problem; and
- Completion of corrective actions in a timely manner commensurate with the safety significance of the issue.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

No findings of significance were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 Unplanned Automatic Reactor Scram

a. Inspection Scope

The inspectors reviewed the plant's response to an unplanned reactor scram that occurred on October 8, 2009. While performing STP 3.3.3.2-09B, Reactor Water Level and Pressure Instruments (Loop B) Calibration, I&C Technicians failed to fully shut an instrument isolation valve for a Reactor Vessel Pressure Transmitter. Subsequently, Reactor Protection System (RPS) channels A2 and B2 caused an automatic reactor scram due to a sensed low reactor water level. Documents reviewed in this inspection are listed in the Attachment to this report.

This event follow-up review constituted one sample as defined in IP 71153-05.

b. Findings

(1) Failure to Follow Surveillance Test Procedure Results in Automatic Reactor Scram

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the failure of I&C Technicians to follow STP 3.3.3.2-09B.

Description: On October 8, 2009, Two I&C Technicians commenced STP 3.3.3.2-09B, Reactor Water Level and Pressure Instruments (Loop B) Calibration. Step 7.1.62 directed the closing of PT4564-V-92, the isolation valve for Reactor Vessel Pressure Transmitter PT4564. Technician A read the step to Technician B, who then proceeded to execute the step by attempting to shut PT4564-V-92. Technician B encountered difficulty in shutting the valve, and twice had to reposition his body to allow positioning the valve. Technician B then reported to Technician A that the valve was shut. Technician A asked Technician B for confirmation that the valve was shut. Technician B then rechecked valve PT4564-V-92 in the shut direction, and reported again to Technician A that the valve was shut.

The Technicians marked step 7.1.62 as complete, and proceeded to step 7.1.63. The Technicians completed step 7.1.63a, which directed removing the V-91 tubing cap for the instrument test line. The Technicians then completed step 7.1.63b by connecting a hand pump and test gage to the instrument test line. The Technicians completed step 7.1.63c by opening V-91. Upon opening V-91, the Technicians reported seeing the hand pump hose "jump" and then hearing the scram solenoids de-energize as the reactor scrammed. Technician A subsequently checked valve PT4564-V-92 in the shut direction, and reported that the valve turned an addition 1/8th of a turn in the shut direction, indicating that Technician B had not fully shut the valve as required by step 7.1.62.

A post-scram review determined that the Technicians had failed to fully shut isolation valve PT4564-V-92. After the hand pump and test gage were hooked into the test line, the Technicians opened valve V-91 to allow the test equipment to communicate with pressure transmitter PT4564. Because the isolation valve PT4564-V-92 was not fully shut, the pressure perturbation that occurred when V-91 was opened was communicated to the shared reference leg. This pressure perturbation was sensed by Reactor Vessel Level Instruments LIS-4592C and LIS-4592D, thus creating a sensed low reactor water level on RPS channels A2 and B2. Due to the sensed low reactor vessel level, RPS initiated a reactor scram.

Analysis: The inspectors determined that the failure to complete the steps of STP 3.3.3.2-09B was contrary to the requirements contained in 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and was a performance deficiency.

The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of Human Performance and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, the failure to fully isolate the Reactor Vessel Pressure Transmitter from the Reactor Vessel Level Instruments installed on the shared reference leg as required by the STP resulted in an unplanned reactor scram.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a for the Initiating Events Cornerstone. Because the finding only resulted in a reactor scram and did not contribute to the likelihood that mitigation equipment would not be available, the finding screens as Green.

This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, because the licensee did not use human error prevention techniques commensurate with the risk of the assigned task and personnel proceeded in the face of uncertainty. Specifically, an I&C technician failed to complete a step of STP 3.3.3.2-09B when the technician encountered difficulty in shutting the instrument isolation valve for a Reactor Vessel Pressure Transmitter. After several attempts to shut the isolation valve followed by a discussion with a peer, the I&C technician then proceeded in the face of uncertainty and caused a reactor scram. [H.4(a)]

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to the above, on October 8, 2009, the licensee failed to accomplish a surveillance test in accordance with the written procedure. Specifically, an I&C technician failed to shut an instrument isolation valve for a Reactor Vessel Pressure

Transmitter, resulting in a reactor scram due to a sensed low reactor water level by RPS channels A2 and B2. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as CAP 070334, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000331/2009005-02).

.2 (Closed) Licensee Event Report (LER) 05000331/2009-004-00: Unplanned Automatic Scram due to an Invalid Reactor Protection Signal

On October 8, 2009, while performing Surveillance Test Procedure 3.3.3.2-09B, Reactor Water Level and Pressure Instruments (Loop B) Calibration, two I&C Technicians failed to fully shut an instrument isolation valve for a Reactor Vessel Pressure Transmitter. During subsequent steps of the STP, a pressure surge occurred on the shared reference leg and RPS channels A2 and B2 initiated an automatic reactor scram due to a sensed low reactor water level. The licensee entered this event into their Corrective Action Program as CAP 070334, and implemented corrective actions including enhancement of all STPs that test instruments on shared reference legs. These enhancements included requiring pre-pressurization of instrument test lines during the surveillance testing and also revising STP 3.3.3.2-09B to identify the manipulation of shared reference leg isolation valves as critical steps. Additionally, the licensee has implemented corrective actions to improve the Apprenticeship Training Program for I&C Technicians.

Section 4OA3.1 documents a finding and associated NCV for this event. Documents reviewed as part of this inspection are listed in the attachment. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 5, 2010, the inspectors presented the inspection results to Mr. D. Curtland, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The results of the licensed operator requalification training program inspection with W. Render, Instructor, on December 16, 2009.
- A review of the access control to radiologically significant areas and ALARA planning and control under the Occupational Radiation Safety Cornerstone with Mr. C. Costanza, Site Vice President on November 20, 2009.
- The annual review of emergency action level and emergency plan changes with the licensee's Site Vice President, Mr. C. Costanzo, via telephone on December 22, 2009.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) 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.

Technical Specification 5.7.2 (a) requires that each entryway to a HRA with dose rate greater than 1.0 rem/hour at 30 centimeters from radiation sources or from any surface penetrated by the radiation shall be locked or continuously guarded. On September 09, 2009, after completion of a dewatering evolution of a high integrity container (HIC) containing condensate resin in a pit located in the radwaste building truck bay, the HP technician re-installed the HIC cage on top of the pit area, a locked high radiation area. An HP technician padlocked the cage at three points to the floor using separate padlocks and locked one of those padlocks to the door lock mechanism of the HIC cage. The HP technician requested a second HP technician to perform a peer check of the locks. The second HP performed a peer check of the four padlocks using a broom handle to minimize exposure; however, the individual failed to challenge the HIC cage door lock mechanism. On September 13, 2009, during the weekly locked high radiation area verification surveillance, an HP technician discovered that the locked padlock to the HIC cage door mechanism was incorrectly installed and the cage door was unlocked. This was identified in the licensee's corrective action program as CAP 069642. The inspectors reviewed the licensee's determination that this event was a PI occurrence for occupational radiation safety occurrence. The finding was determined to be of low safety significance because it was not an ALARA planning issue, there was no overexposure, and the licensee's ability to access dose was not compromised.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

C. Costanzo, Site Vice President
D. Curtland, Plant General Manager
B. Eckes, NOS Manager
S. Catron, Licensing Manager
B. Murrell, Licensing Engineer Analyst
K. Kleinheinz, Engineering Director
B. Kindred, Security Manager
B. Simmons, Training Manager
C. Dieckmann, Operations Manager
G. Rushworth, Assistant Operations Manager
P. Giroir, Operations Support Manager
R. Porter, Chemistry & Radiation Protection Manager
M. Davis, Emergency Preparedness Manager
M. Lingenfelter, Design Engineering Manager
M. Ogden, Maintenance Manager (Acting)
M. Heermann, Radwaste Shipper in Training
N. McKenney, General Supervisor Radiation Protection
J. Karrich, ALARA Coordinator
R. Schlueter, ALARA Coordinator
W. Render, Instructor, DAEC Operator Training

Nuclear Regulatory Commission

K. Feintuck, Project Manager, NRR
K. Riemer, Chief, Reactor Projects Branch 2

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000331/2009005-01	NCV	Unqualified Safety-Related Cables Used in a Submerged Environment (4OA2.3)
05000331/2009005-02	NCV	Failure to Follow Surveillance Test Procedure Results in Automatic Reactor Scram (4OA3.1)
05000331/2009005-03	NCV	Failure to Comply with Technical Specification and Diving Survey Requirements During Work In The Torus Resulted In Unnecessary Radiation Exposure (2OS1.3)
05000331/2009005-04	URI	Changes to Duane Arnold Energy Center Action Level Notification Form, Note-05 (1EP4.1)

Closed

05000331/2009005-01	NCV	Unqualified Safety-Related Cables Used in a Submerged Environment (4OA2.3)
05000331/2009005-02	NCV	Failure to Follow Surveillance Test Procedure Results in Automatic Reactor Scram (4OA3.1)
05000331/2009005-03	NCV	Failure to Comply with Technical Specification and Diving Survey Requirements During Work In The Torus Resulted In Unnecessary Radiation Exposure (2OS1.3)
05000331/2009004-00	LER	Unplanned Automatic Scram Due to an Invalid Reactor Protection Signal (4OA3.1)

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 of 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.

Section 1R01

OP-AA-102-1002; Seasonal Readiness; Revision 0
OP-AA-102-1002 (DAEC); Seasonal Readiness; Revision 2
NG-270K; Plant Winterization Checklist; Revision 0 & 1
Operating Instruction (OI) 442; Circulating Water System; Revision 77
OI 442A1; Circulating Water System Electrical Lineup; Revision 9
OI 442A2; Circulating Water System Valve Lineup; Revision 14
OI 442A3; Circulating Water System Control Panel Lineup; Revision 1
OI 710; Intake Structure HVAC System; Revision 14
OI 710A1; Intake Structure HVAC System Electrical Lineup; Revision 3
OI 710A2; Intake Structure HVAC System Valve Lineup; Revision 2
OI 711; Pumphouse HVAC System; Revision 12
OI 711A1; Pumphouse HVAC System Electrical Lineup; Revision 3
OI 711A2; Pumphouse HVAC System Valve Lineup; Revision 2
OI 711A3; Pumphouse HVAC System Control Panel Lineup; Revision 2
CAP 070407; NCAQ [Condition not Adverse to Quality] – CB [Control Building] Intake Plenum Temp Greater Than 100 Causing Fire Alarm
CAP 070169 NCAQ – SAFETY – Hole in Decking on ‘B’ Cooling Tower
CAP 070243 NCAQ – SAFETY – Hole in Decking on ‘A’ Cooling Tower, 1E069A
CAP 070257 NCAQ – SAFETY – Wind Has Blown Sections of ‘B’ Cooling Tower Off
CAP 070271 NCAQ – SAFETY – Cooling Tower Wood Decking
CAP 070534 NCAQ – Swaying in ‘L’ Cell of ‘A’ Cooling Tower
CAP 070540 NCAQ – Review Cooling Tower Challenges
Abnormal Operating Procedure (AOP) 304; Grid Instability; Revision 22
AOP 903; High Winds/ Severe Thunderstorm/ Tornado; Revision 26
AOP 904; Extreme Cold Weather (<0^{o}F); Revision 2
OI 324A10; SBDG Standby/Readiness Condition Checklist; Revision 10
CAP 071651 NCAQ – Perform Schedule Review for Anticipated Severe Winter Weather
CAP 071695 NCAQ – Update Procedure with Emergency Diesel Generator [Emergency Diesel Generator] Preparation Checklist

Section 1R04

OI 324A1; SBDG 1G-31 System Electrical Lineup; Revision 2
OI 324A3; SBDG 1G-31 System Valve Lineup and Checklist; Revision 10
OI 324A7; SBDG 1G-31 System Control Panel Lineup; Revision 3
Corrective WO A95263; 1G-21/ENG ‘B’ SBDG Troubleshooting on Reported Starting Air System Leak Near the Air Start Distributor.
CAP 070040; CAQ [Condition Adverse to Quality] – ‘A’ EDG Air Start Piping Support Discrepancy
CAP 070061; CAQ – CAP 070040 (Air Start Piping on ‘A’ EDG) Issues
OI 416A4; ‘B’ RHRSW [RHR Service Water] System Valve Lineup and Checklist; Revision 11

OI 416A6; RHRSW System Control Panel Lineup; Revision 5
OI 454A1; ESW System Electrical Lineup; Revision 3
OI 454A4; ‘B’ ESW System Valve Lineup; Revision 11
OI 454A6; ESW System Control Panel Lineup; Revision 2
Maintenance WO 1152412; Test Molded Case Circuit Breaker in MCC 1B36
OI 149A1; RHR System Electrical Lineup; Revision 3
OI 149A2; RHR System Valve Lineup and Checklist; Revision 9
OI 149A6; RHR System Control Panel Lineup; Revision 2
OI 151A1; Core Spray System Electrical Lineup; Revision 3
OI 151A2; Core Spray System Valve Lineup and Checklist; Revision 4
OI 151A6; Core Spray System Control Panel Lineup; Revision 2

Section 1R05

Administrative Control Procedure (ACP) 1412.2; Control of Combustibles; Revision 36
ACP 1412.3; Control of Ignition Sources; Revision 23 and 24
ACP 1412.4; Impairments to Fire Protection Systems; Revision 55 and 56
AFP 04; Reactor Building North CRD [Control Rod Drive] Module Area, CRD Repair and CRD Cable Rooms; Revision 28
AFP 05; Reactor Building South CRD Module Area, Offgas Recombiner Rooms and Railroad Airlock; Revision 26
AFP 06; Reactor Building RHR Valve Room Elevation 757’-6”; Revision 24
AFP 10; Main Exhaust Fan Room, Heating Hot Water Pump Room and the Plant Air Supply Fan Room; Revision 24
AFP 11; Reactor Building Laydown Area, Elevation 833’-6”; Revision 25
AFP 12; Reactor Building Decay Tank and Condensate Phase Separator Rooms; Revision 24
AFP 23; Control Building 1D-2, 1D-4, 1D-1 Battery Rooms and Battery Corridor; Revision 24
AFP 28; Pump house Emergency Service Water/Residual Heat Removal Service Water Pump Rooms and Main Pump Room; Revision 29
AFP 29; Pump House Fire Pump and Fire Pump Day Tank Rooms; Revision 27
AFP 30; Pump House Safety-Related Piping Area Elevation 747’-6”; Revision 26
AFP 74; Switchyard; Revision 4
AFP 79; Spent Fuel Storage Facility; Revision 79

Section 1R11

Evaluation Scenario Guide 49; Revision 2
ACP 110.1; Conduct of Operations; Revision 22
AOP 388; Loss of 250 Vdc Power; Revision 18
AOP 644; Feedwater/Condensate Malfunctions; Revision 5
Integrated Plant Operating Procedure 4; Shutdown; Revision 101
Integrated Plant Operating Procedure 5; Reactor Scram; Revision 52
Emergency Operating Procedure 1; RPV [Reactor Pressure Vessel] Control; Revision 16
Emergency Operating Procedure 2; Primary Containment Control; Revision 15
DAEC Emergency Action Level Notification Form; NOTE 5; Revision 12
Emergency Plan Implementing Procedure 1.1; Determination of Emergency Action Levels; Revision 28
Emergency Action Level Matrix – Hot Modes; Revision 7
Results of Licensed Operator Requalification Training Program Evaluations; December 2009

Section 1R12

DAEC Maintenance Rule Program Module 0; Overview; Revision 3
DAEC Maintenance Rule Program Module 0; Attachment 3; Startup Systems Containing Components Performing Maintenance Rule Risk-Significant or Standby Functions at DAEC; Revision 3
DAEC Performance Criteria Basis Document; Nuclear Boiler SUS 62.00; Revision 5
DAEC System Checklist/Health Report for Nuclear Boiler & Reactor Recirc Systems; dated November 10, 2009
Plant Chemistry Procedure 1.9; Water Chemistry Guidelines; Revision 46
CAP 063779; CAQ – Historical Foreign Material Found During IVVI [Internal Vessel Visual Inspection]
CAP 063911; CAQ – Historical Foreign Material Found During IVVI
CAP 064513; CAQ – FME Found During RFO21 IVVI Activities
CAP 064435; CAQ – Legacy Foreign Material: Two Metallic Objects Were Retrieved During Vacuuming

Section 1R13

Work Planning Guideline 1; Work Process Guideline; Revisions 36 and 37
Work Planning Guideline 2; On-Line Risk Management Guideline; Revisions 55
WM-AA-1000; Work Activity Risk Management Process; Revisions 3
OP-AA-102-1003; Guarded Equipment; Revision 0
OP-AA-102-1003 (DAEC); Guarded Equipment (DAEC Specific Information); Revision 1
OP-AA-104-1007; Online Aggregate Risk; Revision 0
Maintenance Risk Evaluations for Work Week 9942; Revisions 0 and 1
DAEC On-line Schedule for Work Week 42
Maintenance Risk Evaluations for Work Week 9945; Revisions 0, 1, and 2
DAEC On-line Schedule for Work Week 45
Maintenance Risk Evaluations for Work Week 9949; Revision 0
DAEC On-line Schedule for Work Week 49
Equipment-Specific Maintenance Procedure; Filter-L889-01; Lane & Roderick Control Standby Filter Unit; Revision 12
CAP 070962; NCAQ – Discrepancy Found During Tag Verification
CAP 070971; NCAQ – Multiple Unexpected Annunciators During High Risk Evolution SBDG STP
CAP 071002; NCAQ – Incorrectly Operated Switch for Cooling Tower Fan
CAP 071531; NCAQ – Activity Reported as High Risk When it was Not Classified as High Risk

Section 1R15

OPR 000407; CAQ – ‘A’ EDG Air Start Piping Support Discrepancy
CAP 070040; CAQ – ‘A’ EDG Air Start Piping Support Discrepancy
Sargent and Lundy Document No. 2009-11708; Operability Assessment of the ‘A’ EDG Normal Air Start Piping and Pipe Supports
OPR 000409; CAQ – ‘B’ EDG Normal Air Start Piping Analysis Issues
CAP 070074; CAQ – ‘B’ EDG Normal Air Start Piping Analysis Issues
Adverse Condition Monitoring and Contingency Plan: 1G031 ‘A’ SBDG Oil Temperature Monitoring; dated November 16, 2009
OPR 000414: 1G31 Lube Oil Temp High out of Spec
CAP 071217; 1G31 Lube Oil Temp High out of Spec

CAP 058355; CAQ – 1G21 ‘B’ SBDG Lube Oil Temperature High out of Specification
CAP 071547; CAQ – Non-Conservative Tech Spec Allowable Value for ‘CST [Condensate Storage Tank] Tank Level-Low’
Other 003374; NRC AL98-10: Dispositioning of Technical Specifications That Are Insufficient
STP 3.3.5.1-24; Calibration of the Condensate Storage Tank Level (low) Instrumentation; Revision 11

Section 1R18

FP-E-MOD-03; Temporary Modifications; Revision 4
TM-09-031; 1X001 [Main Transformer] N2 Bottle(s)
DAEC 5059SCRN 044213; TM-09-031
Maintenance WO 1153021; Install Two 18-Bottle Racks at the Main Transformer
CAP 071830; NCAQ – N2 Usage for 1X001 is Very High During Cold Weather
CAP 071847; CAQ – Main Transformer Temperature Below 50 C Due to Switch and N2 Leakage Problem
CAP 071869; NCAQ – Unable to Operate Main Xfmr Components Due to Ice and Snow
CAP 071967; NCAQ – 18 Bottle Nitrogen Rack for Main Transformers Appears Empty
CAP 071989; NCAQ – Main Transformer Cooling Problems

Section 1R19

Corrective WO A103621; CV1068 is Not Working and is Locked at About 58% Open: Repair Valve and Remove TM-09-025
CAP 069846; NCAQ – Unexpected MSR [Moisture Separator Reheater 2nd Stage Drain Tank 1T-92B Hi Level (1C07B, C-4)
CAP 069857; NCAQ – Packing Failure on CV1068
CAP 070071; NCAQ – Trended Failures of CV1068, Work History Evaluation
CAP 070364; CAQ – Potential FME [Foreign Material Exclusion] Issue
CAP 070370; NCAQ – CV1068 Carbon Plug Ring Found Missing and Significant Plug & Seat Erosion Found
CAP 070411; NCAQ – CV1068 Position Indication
Corrective WO A96074; Repair or Replace the Sliding Clutch Gear on the Racking Mechanism of 1A401
Maintenance WO 1147244; Periodic Inspection of the 1X004, Standby Transformer
Maintenance WO 1147253; Oil Circuit Breaker Inspection for CB8490
CAP 070606; CAQ – White Residue Behind Control Wire Support in 1A401 Cubicle Above Racking Motor
CAP 070629; NCAQ – Grounding of 1X004 Took Longer Than Scheduled
CAP 070634; NCAQ – Standby Transformer Deluge #5 HAD [Heat Activated Device] is Leaking By
CAP 070651; NCAQ – Determine Correct Temperature Rating for Deluge #5 HAD
Condition Evaluation 007815; NCAQ – Perform a Functionality Assessment for Deluge #5 HAD
Maintenance WO 1146917; Complete the 2-yr Mechanical Inspection on the ‘A’ EDG Engine
CAP 071111; CAQ – Loose Speed Switch Found During ‘A’ EDG 2 Year Cycle Inspection
CAP 071123; NCAQ – TI3266A-Air Cooler Water Inlet Temp Indicator Broken Off During SBDG Inspection
CAP 071124; NCAQ – SBDG LCO Schedule and Adherence Improvement Needed
CAP 071128; CAQ – Jacket Cooling Water Inlet Expansion Joint Degraded
CAP 071135; NCAQ – Walkdown Required on ‘B’ SBDG for ‘A’ SBDG Work

Corrective WO A98669; 'A' SBDG Lube Oil Temperature High out of Specification, Suspect TS3270A is not Working Correctly
Corrective WO A94329; Motor Bearing Indicating Elevated Vibration; Replace Motor Bearing on 1VEF023B, Isophase Bus Duct Cooler Fan Motor
CAP 071920; NCAQ – Control Room Action Required to Protect Equipment
CAP 071946; NCAQ – 1VEF023B Isophase Motor Outboard Bearing Vibration Excessive
CAP 071978; CAQ – 1VEF023B Isophase Bus Duct Cooler Motor Bearing Failure

Section 1R20

IPOI 2; Startup; Revision 114
IPOI 3; Power Operations (35% to 100% Reactor Power); Revision 114
IPOI 5; Reactor Scram; Revision 51
IPOI 8; Outage and Refueling Operations; Revision 63
CAP 070342; NCAQ – IPOI 5 Procedure Inaccuracy
CAP 070347; NCAQ – LT1068, LT1069, and LT1077A Need Calibration During Forced Outage
CAP 070351; CAQ – Source Range Monitor Shirt Period Alarms on SRM-4573B
CAP 070362; NCAQ – Action Level 1 Entered for Reactor Conductivity and ECP Value
CAP 070374; CAQ – Exceeded Action Level 2 Conductivity Value for Primary Plant Chemistry PCP 1.9 Attachment 4
CAP 070385; CAQ – Reactor pH Less Than Acceptable Range per Technical Requirements Manual Table 3.4.1-1
CAP 070390; CAQ – Rod Drift Alarms for 38-31
Nuclear Policy NP-910; Plant Readiness for Operations; Revision 11
CAP 070416; NCAQ – Clarification Needed for PCP 1.9 Issues Identified During 2009 Forced Outage 2
CAP 070418; NCAQ – Preaction System #1 Initiated Due to Steam Leak at Flange to LT1068
CAP 070441; CAQ – Maintenance Rule 50.65(a)(1) [RED] Evaluation Status for Scram Rate
DAEC E-Log Operations Logbook Entries for October 8 – October 12, 2009

Section 1R22

STP 3.5.3-05; RCIC/HPCI Suction Transfer Interlock; Revision 13
STP 3.5.3-01; RCIC System Inoperable; Revision 1
STP 3.5.1-08; HPCI System Inoperable; Revision 1
CAP 070240; STP 3.5.3-05 Needs Improvement for Determining RCIC & HPCI Operable
STP 3.8.1-04A; 'A' SBDG Operability Test (Slow Start From Norm Start Air); Revision 3
OI 324; SBDG System; Revision 94
OI 324A10; SBDG Standby/Readiness Condition Checklist; Revision 10
CAP 070660; NCAQ – Spurious Annunciators Rec'd While Placing 1A3 & 1A4 Bus Transfer Switch to Manual
CAP 070793; NCAQ – Multiple Unexpected Annunciators During High Risk Evolution SBDG STP
ACP 110.1; Conduct of Operations; Attachment 1; Alarm Response; Revision 22
STP 3.3.5.1-20; LPCI Loop Select Recirculation Pump Dp Calibration; Revision 5
I.PDIS-I204-01; Barton Models 278, 288A, 288C, and 289A Dp Switches Dry Linear Calibration; Section A; Attachment 1; Calibration Data Sheet; Revision 19
STP 3.8.1-06A; 'A' SBDG Operability Test (Fast Start); Revision 3
STP 3.5.1-01B; 'B' Core Spray System Operability Test; Revision 2
STP NS510002B; 'B' CS [Core Spray] System Leakage Inspection Walkdown; Revision 0
STP 3.3.1.1-34; Recirculation Flow Unit Functional Test and Calibration; Revision 19

I.FIY-G080-01; G.E. APRM [Average Power Range Monitor]; Section A; Attachment 1; Calibration Data Sheet; Revision 9
CAP 071959; CAQ – Recirc Flow Unit Calibration STP 3.3.1.1-34 Issues
CAP 071961; NCAQ- Copies of Completed Surveillance Missing from Cabinet Discovered in System Engineer's Deck Drawer

Section 1EP4

DAEC Emergency Plan
Section A; Assignment of Responsibilities (Organizational Control); Revision 23
Section B; Emergency Response Organization; Revision 32
Section C, Emergency Response Support and Resources; Revisions 25
Section D, Emergency Classification System; Revision 26
Section E; Notification Methods and Procedures; Revision 22
Section F; Emergency Communications; Revision 27
Section H; Emergency Facilities Staffing, Activation and Equipment; Revision 28 and 29
Section I; Accident Assessment; Revision 25
Section L; Medical and Public Health Support; Revision 22
Section P; Planning Responsibilities; Revision 22
Appendix 2; Letters of Agreement; Revision 25
EBD-R; Abnormal Radiation Levels/Radiological Effluent; Revision 10
EPIP 3.1; In-Plant Radiological Monitoring; Revision 20
Note 5; DAEC Emergency Action Level Notification Form; Revision 12
10 CFR 50.54(q) Evaluation; EPIP 3.1, In-Plant Radiological Monitoring; Revision 20
10 CFR 50.54(q) Evaluation; Note 5; State and County Notification Form; Revision 12
Radiation Engineering Calculation; Determination of Effluent Concentrations Levels that Signify an Event Related Release in Progress for Each of the Normal Range KAMAN Monitors; dated November 5, 2008

Section 2OS1

CAP 065072; Refuel Floor GE Worker Receives Unanticipated Dose Alarm; dated February 24, 2009
CAP 065156; Issues Found with Administrative Control of Locked High Radiation Area; dated February 25, 2009
CAP 064942; Tri-Nuke Filters Being Stored in Cask Pool above 35 R/hr; dated February 22, 2009
CAP 063467; RCA Boundary Posting Discrepancy Identified; dated February 02, 2009
CAP 063542; Maintenance Worker in Steam Tunnel on Wrong RWP Became Contaminated; dated February 04, 2009
CAP 063511; Worker Fall on the Refuel Floor Resulted in Injury and Personal Contamination; dated February 03, 2009
CAP 063597; Contamination in a Clean Area; dated February 05, 2009
CAP 063694; Missed Post LPCI Full Flow Test Radiation Surveys; dated February 06, 2009
CAP 063853; Worker did not Hear ED Alarm due to Faulty Dosimeter; dated February 09, 2009
CAP 063986; Radiological Posting Issues from CRD Push/Pull High Radiation Area; dated February 11, 2009
CAP 063989; Main Steam Isolation Valve Project Dose will be 40 Percent Greater than Expected; dated February 11, 2009

CAP 064068; Contaminated Area Sign Found with “Danger” Heading; dated February 11, 2009
CAP 064149; Torus Dive Terminated due to Detected Hat to Suit Leak; dated February 12, 2009
CAP 064194; GSW Leakage during System Filling to Cause Potential Spread of Contamination; dated February 13, 2009
CAP 063752; Poor Radiation Worker Practices Observed at the East Side of the 360 Platform; dated February 07, 2009
CAP 065206; GE Technician Received Uptake While Cutting Tri-Nuke Hoses on the Refuel Floor; dated February 26, 2009
ACE 001928; Torus Diving Dose and Dose Rate Alarm Apparent Cause Evaluation; dated April 30, 2009
HPP 3104.07; Health Physics Procedure; Diving Operations within Radiological Areas; Revision No. 19
HPP 3104.07; Health Physics Procedure; Diving Operations within Radiological Areas; Revision No. 17
HP-41; Duane Arnold Energy Center; HP Survey Records of Torus Room 734’; dated from January 29 through February 19, 2009
RFP 607; Refueling Procedure; Removal and Movement of Material within the Spent Fuel Pool and Cask Pool; Revision No. 12
ACP 1407.2; Administrative Control Procedure; Material Control in the Spent Fuel Pool and Cask Pool; Revision No. 22
RWP 09-50380; Task 1.16; MD-Weld Repair and Inspections in the Torus Proper; Revision No. 04
RWP 09-50380; Task 1; Clean Area, Setup Demobilization and Support Work; Revision No. 4
RWP 09-50380; Task 6; Underwater Diving Work and Setup; Desludging, Inspection and Repair of the Torus Coating in the High Radiation Area; Revision No. 04
RWP 09-50380; Task 7; Underwater Diving Work and Setup; Desludging, Inspection and Repair of the Torus Coating in the Locked High Radiation Area; Revision No. 04

Section 2OS2

RFO-21 ALARA Project Dose Report
CAP 063989; NCAQ-MSIV Dose at 40 Percent Greater than Expected; dated February 11, 2009
CAP 064294; HP-60 in Progress Evaluation and Dose Goal Increase Basis Project RFO-21
CAP 064504; M4 Project Dose Exceeded Goal Greater than 125 Percent for Seal Replacement; dated February 19, 2009
CAP 063923; Scaffold Erection Rework Resulted in Additional Dose; dated February 10, 2009
ALARA In Progress Evaluation for RWP 40214; ISI Project; dated February 2009
PDA-09-005; Duane Arnold Energy Center Nuclear Assurance Report; dated April 20, 2009
ALARA Post Job Evaluation; Drywell Motor Operated Valve Lube and Inspections; Replace Grayboot Connection Limit Torque; dated April 08, 2009
ALARA Post Job Evaluation; Miscellaneous Drywell I&C Work Including Air Operated Valve; Switches and Transmitter; dated October 27, 2009
CAP 064777; In Progress Evaluation of Miscellaneous Project to Re-reduce Dose Goal RWP 40130; dated February 20, 2009
CAP 064604; M4 Project Dose Exceeded Greater than 125 Percent for 1P-201B Seal Replacement; dated February 19, 2009
ALARA Post Job Evaluation; Replace 1P-201B Recirculation Pump Seal and Associated Support Work; dated March 03, 2009

OTH 037112; RFO-21 M4 ALARA to Investigate Dose 65 percent Over Estimate; dated March 25, 2009
ALARA Post Job Evaluation; M7 Project Pipe Replacement in the Drywell (RWP 40280) Including an Engineering Change Plan for Replacement of MO-4423 MSL System and Balance of Plant; dated November 12, 2009
ALARA Post Job Evaluation; RWP 50380; Diving in the Torus Water to Vacuum Sludge and Repair Surface Coating; RWP 50382; Transfer of Torus Filters to Radwaste Storage and Place it in the HIC; dated October 28, 2009
ALARA Post Job Evaluation; RWP 40002/2; Task 7; Draywell and Balance of Plant Health Physics Job Coverage; dated November 12, 2009
ALARA Post Job Evaluation; RWP 30004; Task 4; 360 Platform; LPRM Replacements and Sparger Modifications; dated October 27, 2009
ALARA Post Job Evaluation; RWP 30009; Task 4; All Refuel Floor Support Work; dated April 09, 2009
ALARA Post Job Evaluation; RWP 30014; Task 6; Reactor Vessel Dis/Re-Assembly Activities in the Cavity Including Decontaminations; dated February 25, 2009
ALARA Post Job Evaluation; RWP 40033/33/32; Task 7; Management and Supervisory Walk downs in the Drywell and Balance of Plant Including Drywell Laser Scanning; dated October 28, 2009

Section 4OA1

NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 5
ACP 1420.4; NRC & WANO Performance Indicator Reporting; Revision 14
LI-AA-204-1001; NRC Performance Indicator Guidelines; Revision 0
DAEC Open Work Order Report for the ‘A’ and ‘B’ RHR Systems
DAEC Open Work Order Report for the ‘A’ and ‘B’ RHRSW Systems
DAEC Open Work Order Report for the ‘A’ and ‘B’ ESW Systems
DAEC Level A and B CAP Items Report for the ‘A’ and ‘B’ RHR Systems
DAEC Level A and B CAP Items Report for the ‘A’ and ‘B’ RHRSW Systems
DAEC Level A and B CAP Items Report for the ‘A’ and ‘B’ ESW Systems
DAEC MSPI Derivation Report for the Residual Heat Removal System through October 2009
DAEC MSPI Derivation Report for the Cooling Water Systems through October 2009
LER 2009-001-00; Manual Reactor Scram due to Loss of Condensing Cooling
LER 2009-002-00; Outdoor Liquid Radwaste Storage Tank Radioactive Concentration Limit
LER 2009-003-00; Unplanned Manual Scram due to Increasing Water Levels

Section 4OA2

CAP 070334; SCAQ [Significant Condition adverse to Quality] – Auto Reactor Scram due to Sensed Low Reactor Pressure Vessel Water Level on Reactor Protection Channels A2 and B2
RCE 1086; [Pressure Transmitter] PT4564 Reactor Scram; Revision 0
Nuclear Administrative Procedure NAP-403; Conduct of Maintenance; Revision 7
Corrective Action Effectiveness Review Manual; Revision 3
Root Cause Evaluation Manual; Revision 17
Nuclear Administrative Procedure NAP-201; Human Performance; Revision 11
BECH-E350<1>; Underground Duct Bank Layout; Revision 5
BECH-E351; Manhole Details; Revision 17
BECH-E353; Underground Duct Bank Layout, Pumphouse Area; Revision 1
CAP 068541; CAQ – Standing Water in Manhole 1MH109

CAP 068665; CAQ – Standing Water in Manhole 2MH207
CAP 068976; NCAQ – Documentation of Water Levels in Manholes during NRC Inspections
CAP 070736; CAQ – Water Coming up Thru Conduit around Cables for 1P089C in 1A210
CAP 070938; CAQ – Water Found in MH206 and 1MH109
BECH-MRS-E019A; 600 Volt Shielded Instrument Cable; Revision 26
Letter from Florida Power and Light Company to U.S. Nuclear Regulatory Commission, L-2007-067; Response to NRC Generic Letter 2007-01 Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients; dated May 8, 2007
Letter from U.S. Nuclear Regulatory Commission to Duane Arnold Energy Center; DAEC – Closeout of Generic Letter 2007-01 "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients" (TAC No. MD4325); dated October 22, 2008
WO 1151250; Remove Asbestos Conduit Seals in Manholes 1MH109, 1MH110, 1MH111, 1MH112, and 1MH113
ER-AA-106; Cable Condition Monitoring Program; Revision 0
Okonite Report Number NQRN-1A; Nuclear Environmental Qualification Report for Okonite Insulated Cables; Revision 5

<u>Section 4OA3</u>

Off-Shift Analysis Report; Post-Trip Analysis Report for Scram Number 09-03
On-Shift Analysis Report; Scram Number 09-03
ACP 114.9; Event Response Procedure; Revision 18
LER 2009-004-00; Unplanned Automatic Reactor Scram due to an Invalid Reactor Protection Trip Signal
STP 3.3.3.2-09B; Reactor Water Level and Pressure Instruments Loop B) Calibration; Revision 0
CAP 070334; SCAQ [Significant Condition adverse to Quality] – Auto Reactor Scram due to Sensed Low RPV Water Level on RPS Channels A2 and B2
Corrective Action 053475; Interim Corrective Action for I&C

LIST OF ACRONYMS USED

ACP	Administrative Control Procedure
ADAMS	Agencywide Document Access Management System
AFP	Area Fire Plan
ALARA	As-Low-As-Reasonably-Achievable
AOP	Abnormal Operating Procedure
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CRD	Control Rod Drive
DAEC	Duane Arnold Energy Center
DRP	Division of Reactor Projects or Discrete Radioactive Particles
ED	Electronic Dosimety
EDG	Emergency Diesel Generator
ESW	Emergency Service Water
HP	Health Physics
HIC	High Integrity Container
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilation, and Air Conditioning
I&C	Instrument and Controls
IMC	Inspection Manual Chapter
IP	Inspection Procedure
LER	Licensee Event Report
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OI	Operating Instruction
OOS	Out-of-Service
OPR	Operability Recommendation
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification and Resolution
RCE	Root Cause Evaluation
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RP	Radiation Protection
RPS	Reactor Protection System
RWP	Radiation Work Permit
SBDG	Standby Diesel Generator
SDP	Significance Determination Process
STP	Surveillance Test Procedure
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Issue
WO	Work Order

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Sincerely,

/RA by N. Shah, Acting For/

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

Docket No. 50-331
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Letter to C. Costanzo from K. Riemer dated February 3, 2010

SUBJECT: DUANE ARNOLD ENERGY CENTER NRC INTEGRATED INSPECTION REPORT 05000331/2009005

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