



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION III  
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LISLE, IL 60532-4352

November 3, 2014

Mr. Thomas A. Vehec  
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Palo, IA 52324-9785

**SUBJECT: DUANE ARNOLD ENERGY CENTER - NRC INTEGRATED INSPECTION  
REPORT 05000331/2014004**

Dear Mr. Vehec:

On September 30, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Duane Arnold Energy Center. The enclosed report documents the results of this inspection, which were discussed on October 9, 2014, with you and other members of your staff.

Based on the results of this inspection, two NRC-identified and one self-revealed finding of very low safety significance were identified. One finding involved a violation of NRC requirements. However, because of the very low safety significance, and because the issue was entered into your corrective action program, the NRC is treating the issue as a non-cited violation (NCV) in accordance with Section 2.3.2 of the NRC Enforcement Policy. If you contest the subject or severity of the NCV, 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 cross-cutting aspect assigned to 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.

T. Vehec

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Christine Lipa, Chief  
Branch 1  
Division of Reactor Projects

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

Enclosure:  
Inspection Report 05000331/2014004  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000331/2014004

Licensee: NextEra Energy Duane Arnold, LLC

Facility: Duane Arnold Energy Center

Location: Palo, IA

Dates: July 1 through September 30, 2014

Inspectors: L. Haeg, Senior Resident Inspector  
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Approved by: Christine Lipa, Chief  
Branch 1  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

Inspection Report 05000331/2014004; 07/01/2014 – 09/30/2014; Duane Arnold Energy Center; Fire Protection; Maintenance Risk Assessments and Emergent Work Control; and Post Maintenance Testing.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two NRC-Identified Green findings and one self-revealed Green finding were identified by the inspectors. One finding was considered a non-cited violation (NCV) of NRC regulations. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas" effective date January 1, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 5, dated February, 2014.

### Cornerstone: Mitigating Systems

Green. A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to accomplish procedure OP-AA-101-1000, "Clearance and Tagging," Revision 10. Specifically, on July 21, 2014, the licensee failed to ensure that clearance isolation 5500-1T221(34-19) for hydraulic control unit (HCU) 34-19 was appropriate for the requested work scope and that all applicable Technical Specification actions were entered. After receiving a high temperature alarm associated with HCU 34-19, the licensee incorrectly concluded that the alarm was expected. During a walk down by an operator on the subsequent shift, it was determined that HCU 34-19 was improperly tagged out as revealed by the temperature alarm, and that control rod 34-19 should have been declared inoperable instead of slow. The licensee entered the issue into the corrective action program (CAP) as condition report (CR) 01979472, and invoked corrective actions to brief all licensed operators on the event, updated procedures to clearly define clearance reviewer responsibilities, and made changes to the HCU operating instructions to recognize applicable Technical Specification (TS) Required Actions.

The inspectors determined that the issue of concern represented a performance deficiency because it was the result of the licensee's failure to meet a procedural requirement, and the cause was reasonably within the licensee's ability to foresee and correct and should have been prevented. The licensee failed to properly accomplish procedure OP-AA-101-1000, "Clearance and Tagging," Revision 10, to ensure that a clearance isolation for HCU 34-19 was appropriate for the requested work scope and that all applicable TS actions were entered. The performance deficiency was determined to be more than minor and a finding because it impacted the Mitigating Systems Cornerstone Attribute of Configuration Control, and adversely affected the Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," to this finding. The inspectors answered "No" to all questions within Table 3 – SDP Appendix Router, and transitioned to IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Because the inspectors answered "No" to questions 1-3 of Section C – Reactivity Control Systems of Exhibit 2 – Mitigating

Systems Screening Questions, the finding screened as very low safety significance (Green). The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the performance deficiency was associated with the cross-cutting aspect of Human Performance, Work Management, and involving the organization implementing a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the clearance preparer, reviewer and approver for the clearance isolation of HCU 34-19 failed to properly implement the clearance and tagging process to ensure the proper isolation was made and the applicable TS actions were entered. [H.5] (Section 1R13)

### **Cornerstone: Barrier Integrity**

Green. A finding of very low safety significance with no associated violation was identified by the inspectors for the licensee's failure to accomplish procedure PI-AA-204, "Condition Identification and Screening Process," Revision 24. Specifically, on September 4, 2014, the inspectors identified that an inappropriate significance level (SL) was assigned to CRs 01976835 and 1977206 following the extension of a planned TS Limiting Condition for Operation (LCO) (treated as an unplanned LCO) due to the failure of the "A" standby filter unit (SFU) exhaust isolation AV-7322A to close in a timely manner during surveillance testing. Although the apparent failure mechanism was known and several corrective actions were taken, an apparent cause evaluation (ACE) was not performed (or ACE-nonperformance justified) to review the cause of the mispositioning as well as why adequate post maintenance testing was not performed following charcoal replacement in January of 2014. The licensee entered the issues into the CAP as CR 01989031, and performed ACEs to evaluate why the speed control valve was out of position closed, why an adequate post maintenance test (PMT) was not performed in January of 2014, and why the inappropriate SL was assigned following the unplanned LCO.

The inspectors determined that the issue of concern represented a performance deficiency because it was the result of the licensee's failure to meet a procedural requirement, and the cause was reasonably within the licensee's ability to foresee and correct and should have been prevented. Per PI-AA-204, Attachment 3, CRs 01976835 and 01977206 documented extensions of planned LCO entries and should have been assigned SL 2-level ACEs (or non-performance justifications). The performance deficiency was determined to be more than minor and a finding because if left uncorrected, failing to evaluate the cause of inadequate PMTs following maintenance on safety-related equipment would have the potential to lead to a more significant safety concern. The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," to this finding. The inspectors answered "No" to all questions within Table 3 – SDP Appendix Router, and transitioned to IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power." Because the finding only represented a degradation of the radiological barrier function provided for the control room per Exhibit 3 – Barrier Integrity Screening Questions, the finding screened as very low safety significance (Green). The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the performance deficiency was associated with the cross-cutting aspect of H.13, Consistent Process, and involving

individuals using a consistent systematic approach to making decisions. Specifically, the failure to appropriately characterize the unplanned LCO to invoke appropriate causal evaluations demonstrated an inconsistency in licensee decision making within the CAP. [H.13] (Section 1R19)

### **Cornerstone: Miscellaneous**

Green. A finding of very low safety significance, with three examples, and no associated violation was identified by the inspectors for the licensee's failure to accomplish procedure ER-AA-204-2005, "Critical Equipment Failure Evaluation," Revision 5. Specifically, on July 11, 2014, the inspector's identified that a critical equipment failure evaluation (CEFE) was not performed following the testing failure of the cable spreading room carbon dioxide fire suppression (CARDON) system. Although the apparent failure mechanism (solenoid valve (SV)-8521 pilot valve seal failure) was known, and repairs and successful testing was accomplished, a CEFE was not performed to review the adequacy of preventive maintenance bases, operating experience, and effectiveness of prior corrective actions. During a subsequent extent of condition review, two additional instances of failing to perform CEFEs were identified associated with an "A" control building chiller pressure switch failure (safety function maintained) and a fuel pool temperature lost indication (compensatory measures invoked). The licensee entered the issue into the CAP as CR 01977645, performed a CEFE to create a preventive maintenance task for periodic replacement of SV-8521 based on prior failures, and briefed the corrective action program coordinators (CAPCOs) on equipment failure evaluation requirements.

The inspectors determined that the issue of concern represented a performance deficiency because it was the result of the licensee's failure to meet procedural requirements, and the cause was reasonably within the licensee's ability to foresee and correct and should have been prevented. Section 4.1.1.A of ER-AA-204-2005, "Critical Equipment Failure Evaluation," Revision 5, stated, in part, that "a CEFE is required if the condition resulted from a FID 2 component failure that would have led to a FID 2 failure." The licensee did not perform a CEFE for the failure of pilot solenoid valve (SV)-8521. The performance deficiency was determined to be more than minor and a finding because if left uncorrected, failing to conduct evaluations of equipment failures to develop appropriate corrective actions would have the potential to lead to a more significant safety concern. The inspectors utilized IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and concluded that this finding's significance was best characterized by using Appendix M, of IMC 0609, "Significance Determination Process Using Qualitative Criteria." Based upon the fact that the three finding examples did not rise to a level of greater than very low safety significance, the inspectors determined that this issue was best characterized as having very low safety significance (Green). The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the performance deficiency was associated with the cross-cutting aspect of Problem Identification and Resolution, Identification, and involving individuals identifying issues completely and accurately in accordance with the corrective action program. Specifically, for each example, condition reports initiated did not clearly identify that an equipment failure occurred which led to an improper screening by the CAPCOs such that CEFEs were not performed. [P.1] (Section 1R05)

### **Licensee-Identified Violations**

Violations of very low safety that were identified by the licensee have been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. These violations and CAP tracking numbers 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 inspection period except for brief down-power maneuvers to accomplish rod pattern adjustments or to conduct planned surveillance testing activities.

#### 1. REACTOR SAFETY

##### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness**

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Readiness of Offsite and Alternate AC Power Systems

##### a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- coordination between the TSO and the plant during off-normal or emergency events;
- explanations for the events;
- estimates of when the offsite power system would be returned to a normal state; and
- notifications from the TSO to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- actions to be taken when notified by the TSO that the post-trip voltage of the offsite power system at the plant would not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply;
- compensatory actions identified to be performed if it would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and
- communications between the plant and the TSO when changes at the plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power was challenged.

Documents reviewed are listed in the Attachment to this report. 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.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in IP 71111.01–05.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Condition – Severe Thunderstorm Watch

a. Inspection Scope

Since thunderstorms with potential for tornados and high winds were forecast in the vicinity of the facility during the week of August 24, 2014, the inspectors reviewed the licensee’s overall preparations/protection for the expected weather conditions. On August 27, 2014, the inspectors walked down the licensee’s emergency AC power systems, because their safety-related functions could be affected or required as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the licensee staff’s preparations against the site’s procedures and determined that the staff’s actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee’s procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. 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. The inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one readiness for impending adverse weather condition sample as defined in Inspection Procedure (IP) 71111.01–05.

b. Findings

No findings 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:

- Instrument/service air system;
- “A” core spray (CS) with “B” CS out-of-service for preventive maintenance (PM); and
- “B” emergency service water and “B” residual heat removal service water (RHRSW) subsystem with the ‘A’ standby diesel generator (SBDG) out-of-service for PM.

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), condition reports, 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 inspections constituted three partial system walkdown samples as defined in IP 71111.04–05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

During the week of September 14, 2014, the inspectors performed a complete system alignment inspection of the river water supply (RWS) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee’s probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one complete system walkdown sample as defined in IP 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Pre-Fire Plan (PFP)-TB-734, "Pre-Fire Plan Turbine Building El.734," Revision 0;
- PFP-TB-757, "Pre-Fire Plan Turbine Building El. 757," Revision 0;
- PFP-CB-757, "Pre-Fire Plan Control Building El. 757," Revision 0;
- PFP-CB-772, "Pre-Fire Plan Control Building El. 772," Revision 0; and
- PFP-CB-786, "Pre-Fire Plan Control Building El. 786," Revision 0.

The inspectors reviewed these 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 out-of-service, degraded or non-functional fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected these 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. 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 fire protection issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These inspections constituted five routine resident inspector tour samples as defined in IP 71111.05-05.

b. Findings

Failure to Perform Critical Equipment Failure Evaluations

Introduction: A finding of very low safety significance (Green), with three examples, and no associated violation was identified by the inspectors for the licensee's failure to accomplish procedure ER-AA-204-2005, "Critical Equipment Failure Evaluation," Revision 5. Specifically, on July 11, 2014, the inspector's identified that a critical equipment failure evaluation (CEFE) was not performed for the testing failure of the cable spreading room carbon dioxide fire suppression (CARDOX) system. During a subsequent extent of condition review, two additional instances of failing to perform CEFEs were identified associated with an "A" control building chiller pressure switch

failure (safety function maintained) and a fuel pool temperature lost indication (compensatory measures invoked).

Description: On April 17, 2014, the licensee performed surveillance test procedure (STP) NS13D002A, "CO2 CARDOX System Functional Test." This test, performed every 12 months per Duane Arnold's Technical Requirements Manual Surveillance Requirement (TSR) 3.11.7.3 and 3.7.11.4, demonstrated functionality (automatic actuation and verification of flow) of the cable spreading room CARDOX system. During the simulated actuation portion of the test, control valve (CV)-8521, CARDOX system Master Control Valve, did not open automatically as expected following a simulated actuation of the cable spreading room fire detectors. The licensee declared the CARDOX system non-functional, established a continuous fire watch in the cable spreading room, and entered the condition into the CAP as condition report (CR) 01959160, "STP NS13D002A Could Not Be Completed." The licensee performed troubleshooting and identified that the pilot solenoid valve (SV)-8521 for CV-8521 had failed due to degraded internal seals. Condition report 01959160 was screened by a CAP coordinator (CAPCO) and the management review committee as a significance level 3, functional importance determination (FID) 2 component condition adverse to quality, and the CR was closed to plan work to replace SV-8521. No additional assignments were generated as a result of CR 01959160. The licensee later replaced SV-8521 and STP NS13D002A was subsequently performed satisfactorily.

Following the restoration of the CARDOX system, the inspectors reviewed CR 01959160 and PI-AA-204, "Condition Identification and Screening Process." Based on the CR significance level, component classification, and potential significance of the as-found non-functional CARDOX system, the inspectors questioned why an evaluation was not performed for the failure of SV-8521. In particular, the inspectors questioned whether the preventive maintenance frequency for the valve was appropriate. The licensee documented the inspector's question under CR 01968949, "Determine if Valve Needs to be Replaced/Rebuilt as a PM." Condition Report 01968949 was screened as a condition not adverse to quality and the CR was closed to a routine work assignment. The inspectors again reviewed PI-AA-204, specifically Attachment 4, "Guidelines for Determining Evaluation Type," and noted the statement, in part, that "Equipment related failure condition reports require the CEFE checklist, except for severity level (SL) 3 not adverse to quality CRs." Further, the inspectors noted that Section 4.1.1.A of ER-AA-204-2005, "Critical Equipment Failure Evaluation," Revision 5, stated, in part, that "a CEFE is required if the condition resulted from a FID 2 component failure that would have led to a FID 2 failure."

The inspectors questioned why a CEFE was not performed, at a minimum, to evaluate the past performance of SV-8521 and the adequacy of preventive maintenance. The inspectors were concerned that simply replacing SV-8521, without some level of evaluation of the failure, could lead to future as-found failures of the CARDOX system to perform its fire suppression function for the cable spreading room. The licensee documented the inspector's concerns in CR 01977645, "CEFE Not Performed for CR 01959160."

As part of CR 01977645, the licensee performed a CEFE and noted that SV-8521 had failed three times in the prior 30 years with no preventive maintenance task developed after the failures. Based on the results of the CEFE, as well as the recognized performance history of SV-8521, the licensee initiated a preventive maintenance change

request assignment to replace the valve on a 10 year frequency. The licensee also performed a condition evaluation (CE) to further understand why a CEFE was not initially performed, as well as whether any extent of condition (failing to assign CEFEs for equipment failures) existed. The CE identified two additional component failures since January 1, 2014, where CEFEs were not performed as required. Specifically, CEFEs were not performed following the failure of a high refrigerant pressure switch associated with the "A" control building chiller (system safety function maintained), and the loss of indication of a fuel pool temperature instrument (compensatory measures invoked). The licensee determined that in general, CEFEs were not initiated because the "CR's were poorly written, the CAPCOs did not question the FID 2 component failure and if a CEFE was needed or completed, and a CR was not generated after troubleshooting to identify what the failure actually was." Corrective actions included the performance of CEFEs for each identified instance above, communications to the CAPCOs on CEFE requirements, and an action to review the effectiveness of the communications (i.e. were CEFEs being assigned appropriately).

Analysis: The inspectors determined that the issue of concern represented a performance deficiency because it was the result of the licensee's failure to meet procedural requirements, and the cause was reasonably within the licensee's ability to foresee and correct and should have been prevented. Section 4.1.1.A of ER-AA-204-2005, "Critical Equipment Failure Evaluation," Revision 5, stated, in part, that "a CEFE is required if the condition resulted from a FID 2 component failure that would have led to a FID 2 failure." The licensee did not perform a CEFE for the failure of pilot solenoid valve (SV)-8521.

The performance deficiency was determined to be more than minor and a finding because if left uncorrected, failing to conduct evaluations of equipment failures to develop appropriate corrective actions would have the potential to lead to a more significant safety concern.

The inspectors utilized Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and concluded that this finding's significance was best characterized by using Appendix M, of IMC 0609, "Significance Determination Process Using Qualitative Criteria." Based upon the fact that the three instances discussed above did not rise to a level of greater than very low safety significance, the inspectors determined that this issue was best characterized as having very low safety significance (Green).

The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the performance deficiency was associated with the cross-cutting aspect of Problem Identification and Resolution, Identification, and involving individuals identifying issues completely and accurately in accordance with the corrective action program. Specifically, for each finding example, CRs initiated did not clearly identify that an equipment failure occurred which led to an improper screening by the CAPCOs such that CEFEs were not performed. [P.1]

Enforcement: This finding, with three examples, did not involve a violation because procedure ER-AA-204-2005, "Critical Equipment Failure Evaluation," Revision 5, was not subject to 10 CFR 50, Appendix B requirements or any conditions of Duane Arnold's

Renewed Facility Operating License. The finding was entered into the licensee's CAP as CR 01954560 (**FIN 05000331/2014004-01, Failure to Perform Critical Equipment Failure Evaluations**).

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Turbine building basement.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one internal flooding sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

On August 12, 2014, the inspectors observed a crew of licensed operators in the plant's simulator during a licensed operator requalification annual examination to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and the exam was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas of the crew:

- licensed operator performance;
- 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.

This inspection constituted one resident inspector quarterly review of licensed operator requalification sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On July 15, 2014, the inspectors observed various activities in the control room during a planned control rod pattern adjustment. There were several activities that required heightened awareness or were related to increased risk. The inspectors evaluated the following areas of the crew:

- licensed operator performance;
- 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 procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one resident inspector quarterly observation of heightened activity or risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.3 Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the Biennial Written Examination, and the Annual Operating Test administered by the licensee from July 21 - August 29, 2014, as required by 10 CFR 55.59(a). The results were compared to the



thresholds established in Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," to assess the overall adequacy of the licensee's Licensed Operator Requalification Training (LORT) Program to meet the requirements of 10 CFR 55.59. (02.02)

This inspection constituted one annual operating test results sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.4 Biennial Review (71111.11B)

a. Inspection Scope

The following inspection activities were conducted during the weeks of August 11, 2014, and August 18, 2014, to assess: (1) the effectiveness and adequacy of the facility licensee's implementation and maintenance of its systems approach to training based Licensed Operator Requalification Training (LORT) Program put into effect to satisfy the requirements of 10 CFR 55.59; (2) conformance with the requirements of 10 CFR 55.46 for use of a plant referenced simulator to conduct operator licensing examinations, and for satisfying experience requirements; and (3) conformance with the operator license conditions specified in 10 CFR 55.53. The documents reviewed are listed in the Attachment to this report.

- Licensee Requalification Examinations (10 CFR 55.59(c)); Systems Approach to Training Element 4 as Defined in 10 CFR 55.4): The inspectors reviewed the licensee's program for development and administration of the LORT biennial written examination and annual operating tests to assess the licensee's ability to develop and administer examinations that were acceptable for meeting the requirements of 10 CFR 55.59(a).
  - The inspectors conducted a detailed review of two biennial requalification written examination versions to assess content, level of difficulty, and quality of the written examination materials. (02.03)
  - The inspectors conducted a detailed review of 12 Job Performance Measures (JPMs) and 6 simulator scenarios to assess content, level of difficulty, and quality of the operating test materials. (02.04)
  - The inspectors observed the administration of the annual operating test and biennial written examination to assess the licensee's effectiveness in conducting the examinations, including the conduct of pre-examination briefings, evaluations of individual operator and crew performance, and post-examination analysis. The inspectors evaluated the performance of one operating crew (two simulator crews) in parallel with the facility evaluators during two dynamic simulator scenarios administered to each simulator crew, and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. (02.05)

- The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the last requalification examinations and the training planned for the current examination cycle to ensure they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans. (02.07)
- Conformance with Examination Security Requirements (10 CFR 55.49): The inspectors conducted an assessment of the licensee's processes related to examination physical security and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors reviewed the facility licensee's examination security procedure and observed the implementation of physical security controls (e.g., access restrictions and simulator input/output controls) and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the inspection period. (02.06)
- Conformance with Operator License Conditions (10 CFR 55.53): The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53(e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. Additionally, medical records for 10 licensed operators were reviewed for compliance with 10 CFR 55.53(l). (02.08)
- Conformance with Simulator Requirements Specified in 10 CFR 55.46: The inspectors assessed the adequacy of the licensee's simulation facility (i.e., simulator) for use in operator licensing examinations and for satisfying experience requirements. The inspectors reviewed a sample of simulator performance test records (e.g., transient tests, malfunction tests, scenario based tests, post-event tests, steady state tests, and core performance tests), simulator discrepancies, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy corrective action process to ensure that simulator fidelity was being maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. (02.09)
- Problem Identification and Resolution (10 CFR 55.59(c): Systems Approach to Training Element 5 as Defined in 10 CFR 55.4): The inspectors assessed the licensee's ability to identify, evaluate, and resolve problems associated with licensed operator performance (a measure of the effectiveness of its LORT Program and their ability to implement appropriate corrective actions to maintain its LORT Program up-to-date). The inspectors reviewed documents related to licensed operator performance issues (e.g., recent examination and inspection reports including cited and Non-Cited Violations, NRC End-of-Cycle and Mid-Cycle reports, NRC plant issue matrix, licensee event reports, licensee condition/problem identification reports including documentation of plant events and review of industry operating experience). The inspectors also sampled the

licensee's quality assurance oversight activities, including licensee training department self-assessment reports. (02.10)

This inspection constituted one biennial review sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Radioactive effluent monitoring systems; and
- Nuclear instrumentation systems.

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 (SSCs)/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.

These inspections constituted two routine quarterly evaluation samples as defined in IP 71111.12-05.

b. Findings

No findings 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:

- Division II river water supply (RWS) cable insulation resistance testing;
- "B" (SBDG) under-voltage relay failed surveillance testing;
- Radwaste isolation valve corrective maintenance;
- Hydraulic control unit (HCU) 34-19 configuration control issue; and
- "B" reactor protection system motor-generator set post-maintenance test (PMT) with adverse weather forecasted.

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.

Documents reviewed are listed in the Attachment to this report.

These inspections constituted five maintenance risk assessments and emergent work control samples as defined in IP 71111.13-05.

### b. Findings

#### Hydraulic Control Unit Configuration Control Error

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to accomplish procedure OP-AA-101-1000, "Clearance and Tagging," Revision 10. Specifically, on July 21, 2014, the licensee failed to ensure that clearance isolation 5500-1T221(34-19) for hydraulic control unit (HCU) 34-19 was appropriate for the requested work scope and that all applicable TS actions were entered. After receiving a high temperature alarm associated with HCU 34-19, the licensee incorrectly concluded that the alarm was expected. During a walk down by an operator on the subsequent shift, it was determined that HCU 34-19 was improperly tagged out as revealed by the temperature alarm, and that control rod 34-19 should have been declared inoperable instead of slow.

Description: On July 21, 2014, at approximately 5:07 pm, clearance isolation 5500-1T221(34-19) was performed to conduct planned maintenance under WO 40234807 on HCU 34-19 to address a minor accumulator nitrogen leak. The licensee entered TS LCO 3.1.5, Condition A for one control rod scram accumulator

inoperable, and logged Required Action A.1 to declare the associated control rod scram time “slow” within eight hours or Required Action A.2 to declare the associated control rod inoperable within eight hours. At 5:37 p.m., a control rod drive mechanism high temperature annunciator was received associated with HCU 34-19 and the annunciator was logged as an expected alarm for the clearance isolation and WO in progress.

At approximately 9:30 p.m. during a plant walkdown, a night shift operator questioned the clearance isolation of HCU 34-19 based on the intended WO scope. Specifically, several hydraulic-side valves of HCU 34-19 were tagged closed when typical nitrogen leak repair and recharge actions only required accumulator-side valve isolations. The control room was informed and the clearance error was evaluated as rendering the control rod inoperable. The licensee entered an unplanned TS LCO 3.1.3, Required Action C.1 to fully insert the inoperable control rod within three hours and Required Action C.2 to disarm the associated control rod drive within four hours. The licensee un-isolated the hydraulic-side valves of HCU 34-19, exited TS LCO 3.1.3.C at 11:50 p.m., and completed TS LCO Required Action A.1 by declaring control rod 34-19 scram time “slow.”

The licensee generated CR 01979472 within the CAP to document the HCU 34-19 configuration control error, as well as the unrecognized applicability of TS LCO 3.1.3 based on the improper clearance isolation. The licensee performed a causal evaluation to further understand the apparent and contributing causes of the clearance error and determined that multiple barriers in the clearance preparation, review and performance broke down allowing the improper clearance and TS applicability to go unrecognized. Further, Operating Instruction (OI) 255, “Control Rod Drive Hydraulic System,” used in reference during clearance preparation, did not acknowledge applicable LCO conditions based on the types of HCU clearances. Corrective actions as a result of the causal evaluation included capturing the issues within the “crew notebook” to communicate the evaluation results to all licensed operators, updating administrative procedures to clearly define roles and responsibilities for clearance reviewers and approvers, revising OI 255 to specifically identify applicable LCOs, and providing coaching to planners and clearance owners related to process accountability.

The inspectors reviewed the licensee’s causal evaluation, corrective actions, OP-AA-101-1000, “Clearance and Tagging,” Revision 10, and interviewed involved licensee personnel. The inspectors shared several concerns identified by the licensee as discussed above, but further questioned whether the configuration control issue with HCU 34-19 should have been investigated following the receipt of the control rod drive mechanism high temperature annunciator. Specifically, the inspectors were concerned that the control room did not consider this an unexpected (vs. expected) alarm based on the scope of the work to be performed. Additionally, the inspectors recognized that OP-AA-101-100, Section 4.6, “Performing a Clearance,” stated in part, that “Operations Shift Supervision SHALL ENSURE that plant status and conditions can support the requested tagging; including the operational impact on system(s) and equipment and Technical Specification requirements.” Based on the licensee’s causal evaluation, this OP-AA-101-1000 requirement was not properly performed prior to allowing the clearance isolation to proceed and was considered a performance deficiency. The inspectors also concluded that the unexpected control rod drive mechanism high temperature annunciator revealed the improper clearance isolation of HCU 34-19 and the performance deficiency associated with the clearance order process did not warrant characterization as a being a licensee-identified issue.

Analysis: The inspectors determined that the issue of concern represented a performance deficiency because it was the result of the licensee's failure to meet a procedural requirement, and the cause was reasonably within the licensee's ability to foresee and correct and should have been prevented. The licensee failed to properly accomplish procedure OP-AA-101-1000, "Clearance and Tagging," Revision 10, to ensure that a clearance isolation for HCU 34-19 was appropriate for the requested work scope and that all applicable TS actions were entered.

The performance deficiency was determined to be more than minor and a finding because failing to properly remove safety-related systems from service and recognize applicable TS action statements impacted the Mitigating Systems Cornerstone Attribute of Configuration Control, and adversely affected the Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," to this finding. The inspectors answered "No" to all questions within Table 3 – SDP Appendix Router, and transitioned to IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Because the inspectors answered "No" to questions 1-3 of Section C – Reactivity Control Systems of Exhibit 2 – Mitigating Systems Screening Questions, the finding screened as very low safety significance (Green).

The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the performance deficiency was associated with the cross-cutting aspect of Human Performance, Work Management, and involving the organization implementing a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the clearance preparer, reviewer and approver for the isolation of HCU 34-19 failed to properly implement the clearance and tagging process to ensure the proper isolation was made and the applicable TS actions were entered. [H.5]

Enforcement: Title 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.

Contrary to the above, on July 21, 2014, the licensee failed to properly accomplish procedure OP-AA-101-1000, "Clearance and Tagging," Revision 10, to ensure that a clearance isolation for HCU 34-19 was appropriate for the requested work scope and that all applicable TS actions were entered.

Because this violation was of very low safety significance and because the issue was entered into the licensee's CAP as CR 01979472, consistent with Section 2.3.2 of the Enforcement Policy it is being treated as an NCV (**NCV 05000331/2014004-02, Hydraulic Control Unit Configuration Control Error**). The licensee captured the issues associated with this NCV within the "crew notebook" to communicate the evaluation results to all licensed operators, updated administrative procedures to clearly define roles and responsibilities for clearance reviewers and approvers, revised OI 255 to specifically identify applicable LCOs, and provided coaching to planners and clearance owners related to process accountability.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Division II RWS low insulation resistance results prompt operability determination;
- “A” and “B” SBDG cable splices/terminal strips non-environmentally qualified and subject to turbine building flooding prompt operability determination;
- Reactor core isolation cooling (RCIC) system flow instrument accuracy issue; and
- SBDG lubricating oil heat exchanger gasket issue.

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 TSs 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 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 inspections constituted four operability evaluation samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modification:

- “A” SBDG electrical cable junction box flood protection barrier.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TSs, as applicable, to verify that the modification did not affect the operability or availability of the affected system. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modification was installed as directed and consistent with the design control documents; the modification operated as expected; post-modification testing

adequately demonstrated continued system operability, availability, and reliability; and that operation of the modification did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one plant modification sample as defined in IP 71111.18–05.

b. Findings

No findings 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:

- Diesel fire pump functionality test;
- “B” SBDG under-voltage relay testing;
- “B” CS operability test following PM;
- “A” control building chiller operability test following condenser head replacement; and
- “A” SFU testing following charcoal filter replacement.

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 the TSs, 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.

This inspection constituted five post-maintenance testing samples as defined in IP 71111.19–05.



b. Findings

Failure to Perform Causal Evaluations for “A” Standby Filter Unit Issues

Introduction: A finding of very low safety significance (Green) with no associated violation was identified by the inspectors for the licensee’s failure to accomplish procedure PI-AA-204, “Condition Identification and Screening Process,” Revision 24. Specifically, on September 4, 2014, the inspector’s identified that an inappropriate SL was assigned to CRs 01976835 and 1977206 following the extension of a planned TS LCO (treated as an unplanned LCO) due to the failure of the “A” SFU exhaust isolation AV-7322A to close in a timely manner during surveillance testing. Although the apparent failure mechanism was known and several corrective actions were taken, an ACE was not performed (or ACE-nonperformance justified) to review the cause of the mispositioning as well as why adequate post maintenance testing was not performed following charcoal replacement in January of 2014.

Description: On July 8, 2014, the licensee entered TS LCO 3.7.4, Condition A to perform annual testing of the “A” SFU. During the performance of the test per STP NS13C012SFUA, “SFU A Charcoal Bed Deluge System Functional Test,” AV-7322A did not close in a timely manner as expected after depressing the carbon bed deluge reset pushbutton. The licensee stopped the testing, informed the control room, and documented the issue within the CAP as CR 01976835. Over the course of approximately 60 minutes following the deluge reset, AV-7322A gradually drifted closed. The licensee remained within TS LCO 3.7.4.A until an investigation was completed to identify the likely cause. On July 9, 2014, the licensee determined that the quick exhaust valve (QEV)-7322 for AV-7322A was in a closed (vs. intermediate) position that resulted in the slow closure of AV-7322A and initiated an additional CR 01977206. The licensee also determined that in January of 2014, AV-7322A was removed from the “A” SFU to accommodate a regularly scheduled charcoal filter replacement per FILTER-L889-01, “Lane & Roderick Control Standby Filter Unit;” but there was no evidence that QEV-7322 was repositioned. However, the licensee recognized that WO 40210633 that directed removal of AV-7322A for the charcoal replacement did not contain any requirement to functionally test AV-7322A following reinstallation. A past operability review (POR) was assigned as part of CR 01977206 to evaluate the impact of AV-7322A not closing timely. The POR determined that although AV-7322A would not have closed in a timely manner due to the QEV-7322 mispositioning, operability was not affected for the system. Additionally, a procedure change request (PCR) was submitted to add a step to FILTER-L889-01 to verify adequate operation of AV-7322A following future charcoal replacements. On July 11, 2014, the licensee adjusted QEV-7322, demonstrated proper functionality of AV-7322A, and performed STP 3.7.4-05A, “Standby Filter Unit A Operation with Heaters On,” to exit TS LCO 3.7.4.A.

On September 4, 2014, the inspectors reviewed CRs 01976835 and 01977206 (both SL 3 classifications), the completed POR, and the procedure change request actions. The inspectors were concerned that condition or causal evaluations were neither assigned nor performed to determine how or why QEV-7322 repositioned closed, as well as why WO 40210633 did not contain appropriate post-maintenance testing following the removal and reinstallation of AV-7322A for “A” SFU charcoal replacement in January of 2014. Although the inspectors recognized that condition or causal evaluations are not always required for SL 3 CRs per PI-AA-204, “Condition Identification and Screening Process,” the inspectors did not understand why evaluations were not performed

considering that licensee work planning processes should have prevented the issue. For example, WO 4021633 did not recognize the need to functionally test AV-7322A following removal and reinstallation during charcoal replacement. The licensee documented the inspectors' concerns in the CAP as CR 01989031 and assigned a CE to determine whether the original CRs for the issue were properly characterized within the CAP and whether the appropriate assignments were created. The CE determined per PI-AA-204, Attachment 3, "Guidance on the Classification of Condition Reports," both CRs 01976835 and 01977206 documented extensions of planned LCO entries, were to be treated as unplanned LCOs with Actions less than 30 days, and both CRs should have been assigned SL 2-level ACEs (or non-performance justifications).

The licensee ultimately assigned and performed ACEs under each original CR and created new additional corrective actions to strengthen CAPCO and management review committee sensitivity to SL assignment criteria, changes to post maintenance testing guidelines for instances where components are removed due to interferences, and actions to train work planners to recognize these types of situations during WO development to verify PMTs are in place.

Analysis: The inspectors determined that the issue of concern represented a performance deficiency because it was the result of the licensee's failure to meet a procedural requirement, and the cause was reasonably within the licensee's ability to foresee and correct and should have been prevented. Per PI-AA-204, Attachment 3, CRs 01976835 and 01977206 documented extensions of planned LCO entries and should have been assigned SL 2-level ACEs (or non-performance justifications).

The performance deficiency was determined to be more than minor and a finding because if left uncorrected, failing to evaluate the cause of inadequate PMTs following maintenance on safety-related equipment would have the potential to lead to a more significant safety concern.

The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," to this finding. The inspectors answered "No" to all questions within Table 3 – SDP Appendix Router, and transitioned to IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Because the finding only represented a degradation of the radiological barrier function provided for the control room per Exhibit 3 – Barrier Integrity Screening Questions, the finding screened as very low safety significance (Green).

The inspectors determined that the performance characteristic of the finding that was the most significant causal factor of the performance deficiency was associated with the cross-cutting aspect of H.13, Consistent Process, and involving individuals using a consistent systematic approach to making decisions. Specifically, the failure to appropriately characterize the extended planned LCO to drive appropriate causal evaluations demonstrated an inconsistency in licensee decision making within the corrective action program. [H.13]

Enforcement: This finding did not involve a violation because significance level assignment and causal evaluation requirements within procedure PI-AA-204, "Condition Identification and Screening Process," Revision 24, were not subject to 10 CFR 50, Appendix B requirements or any conditions of Duane Arnold's Renewed Facility Operating License. The finding was entered into the licensee's CAP as CR 01989031

**(FIN 05000331/2014004-03, Failure to Perform Causal Evaluations for “A” Standby Filter Unit Issues).**

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 3.1.7-01, “SBLC [standby liquid control] Pump Operability Test,” Revision 36 (in-service test);
- STP NS160002A, “‘A’ RHR SW Operability Test,” Revision 8 (routine);
- STP 3.3.5.1-33A, “‘A’ and ‘C’ RHR Pump Start Time Delay Relay Calibration,” Revision 0 (routine); and
- STP 3.8.1-06B, “‘B’ Standby Diesel Generator Operability Test (Fast Start),” Revision 18 (routine).

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were 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 was in accordance with the 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 in-service 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.

This inspection constituted three routine samples, and one inservice testing sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Training Observation

a. Inspection Scope

The inspectors observed simulator training evolutions for licensed operators on July 30 and August 19, 2014, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

This inspection constituted two training observation samples as defined in IP 71114.06–06.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstone: Public Radiation Safety**

2RS7 Radiological Environmental Monitoring Program (71124.07)

This inspection constituted one complete sample as defined in IP 71124.07-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the annual radiological environmental operating reports and the results of any licensee assessments since the last inspection to assess whether the Radiological Environmental Monitoring Program (REMP) was implemented in accordance with the TS and Offsite Dose Calculation Manual (ODCM). This review included reported changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data.

The inspectors reviewed the ODCM to identify locations of environmental monitoring stations.

The inspectors reviewed the UFSAR for information regarding the REMP and meteorological monitoring instrumentation.

The inspectors reviewed quality assurance audit results of the program to assist in choosing inspection "smart samples." The inspectors also reviewed audits and technical evaluations performed on the vendor laboratory if used.

The inspectors reviewed the annual effluent release report and the 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," report, to determine if the licensee was sampling, as appropriate, for the predominant and dose-causing radionuclides likely to be released in effluents.

b. Findings

No findings were identified.

.2 Site Inspection (02.02)

a. Inspection Scope

The inspectors walked down select air sampling stations and dosimeter monitoring stations to determine whether they were located as described in the ODCM and to determine the equipment material condition. Consistent with smart sampling, the air sampling stations were selected based on the locations with the highest X/Q, D/Q wind sectors, and dosimeters were selected based on the most risk-significant locations (e.g., those that have the highest potential for public dose impact).

For the air samplers and dosimeters selected, the inspectors reviewed the calibration and maintenance records to evaluate whether they demonstrated adequate operability of these components. Additionally, the review included the calibration and maintenance records of select composite water samplers.

The inspectors assessed whether the licensee had initiated sampling of other appropriate media upon loss of a required sampling station.

The inspectors observed the collection and preparation of environmental samples from different environmental media (e.g., ground and surface water, milk, vegetation,

sediment, and soil) as available to determine if environmental sampling was representative of the release pathways as specified in the ODCM and if sampling techniques were in accordance with procedures.

Based on direct observation and review of records, the inspectors assessed whether the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the UFSAR, NRC Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," and licensee procedures. The inspectors assessed whether the meteorological data readout and recording instruments in the control room and, if applicable, at the tower were operable.

The inspectors evaluated whether missed and/or anomalous environmental samples were identified and reported in the annual environmental monitoring report. The inspectors selected events that involved a missed sample, inoperable sampler, lost dosimeter, or anomalous measurement to determine if the licensee had identified the cause and had implemented corrective actions. The inspectors reviewed the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection) and reviewed the associated radioactive effluent release data that was the source of the released material.

The inspectors selected structures, systems, or components that involve or could reasonably involve licensed material for which there is a credible mechanism for licensed material to reach ground water, and assessed whether the licensee had implemented a sampling and monitoring program sufficient to detect leakage of these structures, systems, or components to ground water.

The inspectors evaluated whether records, as required by 10 CFR 50.75(g), of leaks, spills, and remediation since the previous inspection were retained in a retrievable manner.

The inspectors reviewed any significant changes made by the licensee to the ODCM as the result of changes to the land census, long-term meteorological conditions (3-year average), or modifications to the sampler stations since the last inspection. They reviewed technical justifications for any changed sampling locations to evaluate whether the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

The inspectors assessed whether the appropriate detection sensitivities with respect to TS/ODCM were used for counting samples (i.e., the samples meet the TS/ODCM required lower limits of detection). The licensee uses a vendor laboratory to analyze the REMP samples so the inspectors reviewed the results of the vendor's Quality Control Program, including the inter-laboratory comparison, to assess the adequacy of the vendor's program.

The inspectors reviewed the results of the licensee's inter-laboratory comparison program to evaluate the adequacy of environmental sample analyses performed by the licensee. The inspectors assessed whether the inter-laboratory comparison test included the media/nuclide mix appropriate for the facility. If applicable, the inspectors reviewed the licensee's determination of any bias to the data and the overall effect on the REMP.

b. Findings

No findings were identified.

.3 Identification and Resolution of Problems (02.03)

a. Inspection Scope

The inspectors assessed whether problems associated with the REMP were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. Additionally, they assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involved the REMP.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

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

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator for the period from the third quarter 2013 through the second quarter 2014. 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 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC Integrated Inspection Reports for the period of July 2013 through June 2014 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 constituted one MSPI emergency AC power system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

## .2 Mitigating Systems Performance Index - High Pressure Injection System

### a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - High Pressure Injection Systems performance indicator for the period from the third quarter 2013 through the second quarter 2014. 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 7, dated August 31, 2013, was 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 July 2013 through June 2014 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 constituted one MSPI high pressure injection system sample as defined in IP 71151-05.

### b. Findings

No findings were identified.

## .3 Mitigating Systems Performance Index - Heat Removal System

### a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI- Heat Removal System performance indicator for the period from the third quarter 2013 through the second quarter 2014. 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 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, MSPI derivation reports, and NRC Integrated Inspection Reports for the period of July 2013 through June 2014 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 constituted one MSPI heat removal system sample as defined in IP 71151-05.

### b. Findings

No findings were identified.



## 4OA2 Identification and Resolution of Problems (71152)

### .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 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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and 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 Attachment to this report.

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 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 were identified.

### .3 Selected Issue Follow-Up Inspection: Root Cause Evaluation (RCE) 01986971, High Pressure Coolant Injection (HPCI) Inboard Isolation Unplanned LCO

#### a. Inspection Scope

The inspectors performed a review of RCE 01986971, "HPCI Inboard Isolation Unplanned LCO," to further understand the licensee's determination of the root and

contributing causes, corrective actions to preclude repetition, extent of condition and cause, and planned effectiveness reviews. The RCE problem statement was, “to determine the causes and contributors for a HPCI isolation that occurred while an I&C technician was installing a relay block to support surveillance, resulting in an unplanned LCO, reportable event, and unavailability.” The inspectors completed the review of the RCE and did not identify any concerns.

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

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report (LER) 05000331/2014-004-00: Unplanned Inoperability of High Pressure Coolant Injection

On May 30, 2014, the licensee declared HPCI inoperable due to the unexpected closure of the “A” inboard steam supply containment isolation valve. At the time of the isolation, the licensee was performing a HPCI surveillance test of the “A” HPCI isolation logic. As part of the surveillance test, the licensee installed relay blocks to allow associated relays to actuate when tested but prevent actual repositioning of isolation valves. During the conduct of the test, technicians made inadvertent contact with and actuated a relay while installing the relay blocks that resulted in the inboard steam supply valve isolation and subsequent HPCI unplanned inoperability. The licensee immediately recognized the inoperable status of HPCI, backed out of the surveillance test, and reopened the “A” inboard steam supply containment isolation valve to restore the HPCI system to an operable status.

The inspectors reviewed the licensee’s RCE. The licensee determined that a unexpected HPCI isolation had occurred in the past, but since the previous occurrence involved the manipulation of the relay cover and not the relay itself, it was concluded that the May 30, 2014 occurrence was not a repeat event. The licensee determined that the root cause of the event was due to the design of the relays themselves due to the necessity to install relay blocks to prevent actuation as part of the surveillance.

Corrective actions included changes to the relay blocking methodology for effected surveillance testing, to the extent possible, to reduce the possibility of recurrence. For procedures that could not eliminate the use of relay blocks, the licensee planned to either lift electrical leads, install over-ride switches, or conservatively enter applicable TS LCOs as a prerequisite to the testing.

Documents reviewed are listed in the Attachment to this report. No findings or violations of NRC requirements were identified. This LER is closed.

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

.2 (Closed) LER 05000331/2014-005-00: Automatic Start of Standby Diesel Generators due to Grid Disturbance

On June 30, 2014, the licensee had an automatic start of both SBDGs due to an electrical grid disturbance caused by severe weather in the area. Both SBDGs started but did not load onto the vital buses due to essential power remaining available. The SBDGs ran unloaded for approximately 30 minutes after which time they were shutdown in a normal fashion.

The inspectors reviewed the licensee's ACE. In reviewing switchyard voltage data the licensee found that the 161 kV phase to ground voltage, nominally at 93 kV, had reduced to 58 kV, or 62 percent, for 13 cycles. The essential bus undervoltage relay trip setpoint is 65 percent of nominal voltage and will initiate SBDG startup after 12 cycles. In 2010, the licensee had performed a permanent modification to increase the essential bus undervoltage relay trip from 4 cycles to 12 cycles after which the relays would actuate and start the SBDGs. The licensee made this change in response to a noticed trend of unnecessary SBDG starts associated with electrical system perturbations with the relay delays set at 4 cycles. The increase to 12 cycles was chosen to allow two breaker automatic fault isolation in the switchyard to occur without impacting the SBDGs and thus preventing unnecessary SBDG starts. As part of the ACE the licensee stated that, "this design is reasonable, in that it prevents unnecessary starts of the emergency diesel generators during minor grid events yet does not prevent the emergency diesel generators from performing their safety function."

The licensee concluded that since the SBDGs performed as designed and that a severe transient occurred that lasted longer than the 12 cycle design, that no corrective action was warranted.

Documents reviewed are listed in the Attachment to this report. No findings or violation of NRC requirements were identified. This LER is closed.

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

.3 (Retracted) Event Notification 50375: Standby Gas Treatment System Inoperable

a. Inspection Scope

On August 15, 2014, the licensee was performing a monthly surveillance of the "B" standby gas treatment (SBGT) subsystem. As part of the surveillance the procedure directed the "A" SBGT mode select switch to be repositioned from the automatic position to manual. While the "A" mode select switch is in manual, the "A" SBGT subsystem is rendered inoperable. Once the "A" SBGT mode select switch was repositioned, the licensee noted that the "B" SBGT fan flow indicating controller (FIC) went blank then proceeded to display an error message. Both the "A" and "B" SBGT subsystems have a common suction header and flow indication for both trains is taken from that common header. The "B" SBGT air flow continued to indicate flow of 4073 standard cubic feet per minute (SCFM) which was greater than the test procedure required flow of 3600 SCFM, as indicated by the "A" fan FIC. In accordance with the procedure the "A" SBGT mode select switch was returned to the automatic position and operability was restored. During the two minutes that the "B" FIC was blank and "A" mode select switch was in manual, indicated flow remained at 4073 SCFM; however, due to the "B" FIC

being blank, the “B” SBGT train was declared inoperable and during the two minute window both the “A” and “B” SBGT subsystems were inoperable.

The licensee made an 8-hour non-emergency notification to the NRC per the requirements of 10 CFR 50.72(b)(3)(v)(C), “Any event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.” On September 16, 2014, the licensee retracted Event Notification (EN) 50375 due to a note contained in TS SR 3.6.4.3.2 which stated, “When a SBGT subsystem is placed in an inoperable status solely for the performance of Ventilation Filter Testing Program testing required by this surveillance on the other subsystem, entry into associated Conditions and Required Actions may be delayed for up to 1 hour.” Therefore, even as the “B” SBGT subsystem was declared inoperable due to the “B” FIC going blank, the “A” SBGT subsystem should not have been declared inoperable due to taking the mode selector switch to manual in accordance with the TS SR 3.6.4.3.2 note. Consequently, this event was ultimately determined to not be a reportable event or condition. The inspectors reviewed the EN, licensee procedures, the response to the event, and applicable TS and did not identify any issues. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 9, 2014, the inspectors presented the inspection results to Mr. T. Vehec, Site Vice President, 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 2014 licensed operator requalification training biennial written examination and annual operating test results with Mr. E. Murray, Operations Training Supervisor via telephone, on September 4, 2014; and
- The inspection results for the area of radiological environmental monitoring with Mr. R. Wheaton, Operations Director, on September 12, 2014.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

#### 4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) or Severity Level IV was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- Technical Specification 5.4.1.a requires, 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.” Regulatory Guide 1.33, Appendix A, Section 7.d(4) includes “sampling” under procedures for BWR Air Extraction, Offgas Treatment, and Other Gaseous Effluent Systems.

Contrary to the above, on June 17, 2014, the licensee failed to appropriately implement and maintain a gaseous effluent sampling procedure following the issuance and use of Plant Chemistry Procedure (PCP) 8.2, “Kaman Effluent Monitoring System Operating Procedures,” Revision 40. Specifically, due to the emergent failure of the turbine building exhaust stack normal range gaseous effluent monitor (Kaman 1) sample pump, PCP 8.2 was revised to allow for a temporary sample pump to be installed to maintain the turbine building exhaust stack high/extended range gaseous effluent monitor (Kaman 2) in a functional status. Section 11.5.9.1 of the UFSAR states, in part, that “the extended range airborne radiation monitor system was installed to satisfy the requirements of NUREG-0737, Item II.F.1, Attachments 1 and 2.” Per NUREG-0737, “Clarification of TMI Action Plan Requirements,” Item II.F.1, Attachment 1, Table II.F.1-1, high range noble gas effluent monitor power supply consists of “vital instrument bus or dependable backup power supply to normal AC.” Following the revision to PCP 8.2, the temporary sample pump was powered from a welding receptacle which was not powered by a vital instrument bus or dependable backup power supply to AC.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, Initial Characterization of Findings,” Table 3 – Appendix Router and IMC 0609 Appendix D, “Public Radiation Safety Significance Determination Process.” Because the finding involved the radioactive effluent release program but was not a substantial failure to implement the program and did not result in public dose greater than 10 CFR Part 20, Appendix I, or 10 CFR Part 20.1301(e) criterion, this finding screened as very low safety significance (Green). The above issue was documented in the licensee’s CAP as CR 01983162, “Kaman 1 does not meet UFSAR/NUREG-0737 requirements.” The licensee took immediate corrective actions to declare the affected effluent monitor non-functional, quarantined PCP 8.2, and ultimately removed the procedure steps that allowed the sample pump to substitute for the skid mounted pump. Additionally, the licensee made repairs to the effluent monitor system and returned the monitor to a functional status.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

T. Vehec, Site Vice President  
G. Pry, Plant General Manager  
K. Kleinheinz, Site Engineering Director  
W. Bentley, Maintenance Director  
M. Davis, Emergency Preparedness and Licensing Manager  
J. Mahan, Nuclear Oversight Manager  
R. Wheaton, Operations Director  
R. Porter, Radiation Protection Manager  
D. Olsen, Chemistry Manager  
J. Schwertfeger, Security Manager  
C. Hill, Training Manager  
B. Murrell, Licensing Engineer Analyst  
L. Swenzinski, Licensing Engineer  
C. Casey, Environmental Analyst  
T. Gordon, Assistant Operations Manager  
E. Murray, LOCT Supervisor  
M. Walter, Operations Instructor  
K. Gassman, Simulator Specialist

#### Nuclear Regulatory Commission

C. Lipa, Chief, Reactor Projects Branch 1  
M. Chawla, Project Manager, NRR

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000331/2014004-01	FIN	Failure to Perform Critical Equipment Failure Evaluations (Section 1R05.1)
05000331/2014004-02	NCV	Hydraulic Control Unit Configuration Control Error (Section 1R13)
05000331/2014004-03	FIN	Failure to Perform Causal Evaluations for "A" Standby Filter Unit Issues (Section 1R19)

### Closed

05000331/2014004-01	FIN	Failure to Perform Critical Equipment Failure Evaluations (Section 1R05.1)
05000331/2014004-02	NCV	Hydraulic Control Unit Configuration Control Error (Section 1R13)
05000331/2014004-03	FIN	Failure to Perform Causal Evaluations for "A" Standby Filter Unit Issues (Section 1R19)
05000331/2014-004	LER	Unplanned Inoperability of High Pressure Coolant Injection (Section 4OA3.1)
05000331/2014-005	LER	Automatic Start of Standby Diesel Generators due to Grid Disturbances (Section 4OA3.2)

### Discussed

None

## LIST OF DOCUMENTS REVIEWED

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

### 1R01

OP-AA-102-1002; Seasonal Readiness; Revision 4  
Abnormal Operating Procedure (AOP) 903; Severe Weather; Revision 49a  
AOP 304; Grid Instability; Revision 40  
AOP 301; Loss of Essential Electrical Power; Revision 65

### 1R04

OP-AA-102-1003; Guarded Equipment; Revision 5  
OI 151A2; A Core Spray System Valve Lineup and Checklist; Revision 5  
OI 151A4; B Core Spray System Valve Lineup and Checklist; Revision 4  
OI 454A2; A Emergency Service Water System Valve Lineup and Checklist; Revision 14  
OI 410A2; A River Water Supply System; Revision 21  
OI 518.1A1; Instrument, Service and Breathing Air System; Revision 7  
OI 518.1A2; Instrument and Service Air Systems; Revision 33  
OI-518.1A3; Compressed Air System; Revision 1  
OI 518.1A4; Compressor Cooling System; Revision 2  
OI 151A2; 'A' Core Spray System Valve Lineup and Checklist; Revision 6  
BECH-M130<01>; Instrument and Service Air Compressors 1K090A, B, C Cooling Systems; Revision 17  
BECH-M130<02>; Instrument and Service Air Compressors 1K090A, B, C; Revision 27  
BECH-M130<03>; Instrument and Service Air Compressor 1K001; Revision 13  
BECH-M130<04>; Instrument Air Dryers Turbine Building Basement; Revision 12  
BECH-M130<07>; Reactor Building, Torus Room, Radwaste Building, HPIC/RCIC Areas; Revision 29  
BECH-M121; Core Spray System; Revision 40  
CR 01983654; Debris Found In Top Louvers of 1K001

### 1R05

FP-AB-100; DAEC Fire Protection Program; Revision 2  
ACP 1412.4; Impairments to Fire Protection Systems; Revision 73  
CR 01959160; STP NS13D002A Could Not Be Completed  
CR 01968949; Determine if Valve Needs to be Replaced/Rebuilt as a PM  
CR 01977645; CEFE Not Performed for CR 01959160  
STP NS13D002-A; CO2 CARDOX System Functional Test; Revision 24  
ER-AA-204-2005; Critical Equipment Failure Evaluation (CEFE); Revision 5

### 1R11

ACP 103.10; Control of Time Critical Tasks; Revision 7  
TR-AA-104; NextEra Energy Fleet Licensed Operator Continuing Training Program; Revision 6



TR-AA-220-1004; Licensed Operator Continuing Training Annual Operating and Biennial Written Exams; Revision 1  
 TR-AA-230-1007; Conduct of Simulator Training and Validation; Revision 2  
 TDAP No. 1801.4; Simulator Configuration Management; Revision 20  
 Reactivity Management Plan; Downpower for Control Rod Sequence Exchange; July 2014  
 OP-AA-100-1000; Conduct of Operations; Revision 14  
 CR 01960553; RSCS Enforces Rod Movement During Low Power ATWS  
 CR 01870456; 2013 Simulator Certification Test Failure – PPC Point T016  
 CR 01790138; Spurious Simulator Indications During Exams  
 CR 01798801; Weaknesses Noted in Tracking SAG Implementer Refresher Training  
 CR 01931519; Operations Qualifications of Refuel Bridge in Question  
 CR 01941695; Simulator Performance Intermittent During Exam Scenario  
 CR 01944599; Noted Operator Weakness in EOP 3 Execution  
 CE 1941695 Report; Simulator Performance Intermittent During Exam Scenario  
 CR 01966493; 2013 Simulator Certification Test Failure – PPC Point B012  
 CR 01948883; Simulator Performance Indicators Red for February  
 CR 01917070; Unexpected Simulator Response  
 CR 01919895; Simulator CTP Showing Too High – Loss of Availability  
 CR 01838651; Simulator RWM Misprogrammed Due to Pull Sheet Errors  
 CR 01862410; Simulator SRV Modeling Questioned  
 CR 01870411; 2013 Simulator Certification Test Failure – PPC Point B060  
 CR 01965638; SIM 2013 Steady State Test Did Not Fully Meet the Standard  
 Licensed Operator Continuing Training; 50008; Training Program Description Lesson Plan; 2012D-09L; Foreign Material Exclusion/Fuel Handling; Revision 0  
 Forms NG-177Z; Revision 1; Time Critical Task Time Validations; Various THOR Upgrade Testing Matrix; August 11, 2014  
 2013 4.0; Operability and Steady State Tests Data; August 21, 2014  
 Scenario-Based Testing Desktop Guidance Document; July 9, 2013  
 Scenario Based Testing Validation Data 2013; Various dates in 2013  
 Simulator Differences Report; August 12, 2014  
 Simulator Work Request (SWR) 1262; Clean Up Global Temporary Variables; May 15, 2012  
 SWR 1352; 2013 Cert Test Fail – Turb 1<sup>st</sup> Stage Press PPC T016; April 29, 2013  
 SWR 1436; RSCS Enforcing Rod Movement; March 3, 2014  
 AT-01.01 AR Report; August 18, 2014  
 DAEC Simulator Cert Testing Methodology Change Gap Analysis Summary 1985 to 2009 ANS/ANSI-3.5 Standard; August 18, 2014  
 Week 5 2014 Biennial Exam for Senior Reactor Operators; Revision 0  
 Week 5 2014 Biennial Exam for Reactor Operators; Revision 0  
 JPM Number 2.4.41-08; Implement the Emergency Plan; Revision 2  
 JPM Number 203000-03; Respond to ECCS Suction Strainer Blockage; Revision 3  
 JPM Number 272000-01; Perform Downscale/Upscale Trip Setpoint Check; Revision 9  
 JPM Number 202002-06; Perform Required Actions for Resetting Recirc MG Set Scoop Tube Lockup; Revision 4  
 JPM Number 295010-03; Respond to Primary Containment Abnormal Situation; Revision 1  
 JPM Number 295003-08; Securing Recirc MG Set Emergency Oil Pumps and Generator H2 Venting; Revision 1  
 Scenario PDA OPS ESG 170; Earthquakes, A Core Spray Sparger Break, “A” SBDG Fails To Maintain Load, DW High Temp ED, HPCI Inject During ED; Revision 0  
 Scenario PDA OPS ESG 171; “A” RR Pump Runback And Trip, High Turbine Vibrations and Trip, Electrical ATWS, Broken SRV Tailpipe, ATWS ED; Revision 0

January 14, 2014, CV-1175 Fails Open Event Simulator Post-Event Test; June 3, 2014  
PEST SWR-1137 Title: Benchmark Transient Test 4 2.8 LOOP/LOCA with Cooper and  
Monticello; November 29, 2012  
List of SWRs Completed; August 1, 2012 to August 4, 2014  
List of Open SWRs, Levels 1-3; August 5, 2014  
Training Remediation Forms; TR-AA- 230-1004-F04; Failure Date August 5, 2014  
Academic Review Board Forms; TR-AA- 230-1004-F13; August 8, 2014  
Senior Management Training Review Board Form; TR-AA- 230-1004-F14; August 14, 2014  
Duane Arnold Energy Center Operations; Self-Evaluation and Trending Analysis Report; First  
and Second Quarter 2014 Reports  
Crew Grading Attachment Form; TR-AA- 230-1003-F06; ESG 170; August 16, 2014  
Crew Grading Attachment Form; TR-AA- 230-1003-F06; ESG 171; August 16, 2014  
Crew Simulator Evaluation Form; TR-AA- 230-1007-F01; August 19, 2014  
Individual Simulator Evaluation Form; TR-AA- 230-1007-F02; August 19, 2014 ESG 158;  
Revision 1

## 1R12

CE 01983162; Kaman 1 Did Not Meet UFSAR/NUREG-0737 Requirement; Revision 1  
PCP 8.2; Kaman Effluent Monitoring System Operating Procedures; Revision 40  
PCP 2.7; Grab Sampling of Offgas Stack, Reactor, Turbine, and LLRSF Building Vent Stacks;  
Revision 30  
ER-AA-201-2002; System Performance Monitoring; Revision 2  
ER-AA-100-2002; Maintenance Rule Program Administration; Revision 2  
ER-AA-204; Preventative Maintenance Program Strategy; Revision 4  
CR 01982771; Requirements For Kaman 1 Functionality May Not Be Met  
CR 01971410; Kaman Effluent Monitoring Systems Negative Trend  
CR 01972080; Procedure: Stating Accident Range Kaman with Normal Range Inop  
CR 01983162; Kaman 1 Does Not Meet UFSAR/NUREG-0737 Requirements  
CR 01970017; Degrading Performance of Kaman 2  
CR 01899186; Kaman 6 Has Numerous Alarms  
CR 01915234; Kaman 2 Hi Rad Alarm in for 2 Seconds  
CR 01915864; STP NS791010 Section 7.2 Battery Test Failed  
CR 01923018; Unplanned TRM LCO 3.3.3 for Kaman 5 Inoperable  
CR 01928466; Trend – Kaman Failures  
CR 01944629; Kaman 7 Post Maintenance Testing Fails  
CR 01959728; TRM LCO 3.3.3 Not Met: Kaman 9 Not Functional for 7 Days  
CR 01941707; Multiple “C” APRM Upscale Alarms in Back Panel Area  
CR 01987149; Multiple Upscale & Downscale LPRM Indications on APRM “C”  
CR 01993126; Failure of APRM E LPRM Upscale & LPRM Downscale Functions  
CR 01994494; 4 LPRM Downscale Lights Noted in at 1C36 During Walk Around  
CR 01997433; Received “A” Side RPS Auto Scram Annunciator  
CR 01997436; Spurious ½ SCRAM due to “E” APRM Upscale Trip  
CR 01946617; LPRM 24-33-A Failed Life Cycle Testing Per Procedure  
CR 01983104; LPRM 4B-08-09 Showing Erratic Indications

## 1R13

Work Planning Guideline-2; Online Risk Management Guideline; Revision 65  
MA-AA-203-1001; Work Order Planning; Revision 2  
WM-AA-200; Work Management Process Overview; Revision 10

Work Week 1434 WARM Summary and Weekly PRA  
STP 3.3.8.2-01B; Reactor Protection System B MG Set EPA Channel Calibration; Revision 5

#### 1R15

EN-AA-203-1001; Operability Determinations/Functionality Assessments; Revision 17  
CR 01963694; 95002 Review: TCV3273B Body to Piping Flange Torque  
CR 01963774; 1E053A2 Replace Lube Oil Cooler Fixed Head Gaskets  
CR 01967624; FI 2509 Indicated 395 GPM During RCIC Operability Test  
CR 01967794; DNA – Margin to RCIC Technical Specification Flow Requirement is Low  
CR 01971819; Instrument Accuracy Accounted for in RCIC Flow Rate STP  
CR 01981962; Actions Taken for B RWS Pump Degradation  
CR 01981724; B RWS Cable Test Data Review and CR 01978328 POD Review  
CR 01981737; Potential Operability Status Maintained by Compensatory Actions  
CR 01982301; Emergent Project: RWS Cable Replacement  
CR 01982308; Inspect Splices in Manhole 2MH211  
CR 01979920; DNA – “B” RWS Low Megger Cable POD Issues  
CR 01978328; B RWS Pump Cable Meggered Low  
Electrical Cable Program Manual Section 4.8; Actions for Failed or Degraded Cables;  
Revision 3  
Electrical Cable Program Manual Section 4.6; Test Inspection Data Review and Trending;  
Revision 2  
Electrical Cable Program Manual Section 4.5; Electrical Cable Operability; Revision 6

#### 1R19

MA-AA-203-1000; Maintenance Functional Testing; Revision 2  
MA-AA-100; Conduct of Maintenance; Revision 8  
STP 3.5.1-05; HPCI System Operability Test; Revision 58  
WO 40170771; MO2247-O; Lube and Inspect Gear box and Limit Switch  
WO 40176867; MO2318-O; Inspect Lube Gearbox and Limit Switch  
WO 40175686; 1P218-M, Inspect & Perform PI Test  
STP NS13B009; Diesel Driven Fire Pump Functional Tests and Fuel Oil Supply Verification;  
Revision 44  
STP 3.3.8.1-06B; 1A4 Essential Bus Degraded Voltage Relays Logic System Functional Test;  
Revision 5  
WO 40309698; 1E237A: Replace West Head with Coated Head (EC 281642)  
STP 3.0.0-01; Instrument Checks; Revision 144  
WO 40277883; STP 3.5.1-01-B Core Spray System Operability Test  
STP 3.7.4-05A; Standby Filter Unit A Operation with Heaters On; Revision 5  
FILTER-L889-01; Lane & Roderick Control Standby Filter Unit; Revision 14 & 15  
WO 40210633; 1VSFU030A: Replace Charcoal and HEPA Filters  
STP NS13C012SFUA; SFU A Charcoal Bed Deluge System Functional Test; Revision 6  
CR 01976835; AV7322A Did Not Close During NS13C012 SFU “A”  
CR 01977206; Follow Up To CR 01976835 on AV7322A Slow Close  
CR 01989031; No Evaluation for CR 01977206 – NRC Observation

#### 1R22

WO 40271752; STP 3.8.1-06-B B SBDG Operability Test (Fast Start)  
STP 3.3.5.1-33A; A and C RHR Pump Start Time Delay Relay Calibration; Revision 0

STP NS160002A; A RHR Service Water Operability Test; Revision 8  
CR 01959765; Small Leak from Stud on Lower Head of 'A' RHR Heat Exchanger  
CR 01964437; Expected Alarm Did Not Activate  
CR 01968660; RHRSW Pump 1P022C Near Vibration Alert Limit  
CR 01978895; NRC Identified Issue for 1S090A Packing Leakage  
CR 01979707; EC 278848 Installed Junction Box 1J1906 Below Flood Level  
CR 01839315; Deluge System Tagout During SBTG Charcoal Testing  
CR 01839522; Standby Gas Treatment System Annual Filter STP Order of Performance  
CR 01839606; Carbon in the Standby Gas Treatment System Trains Not Replaced  
WO 40277877; STP 3.1.7-01 SBLC Pump Operability

### 2RS3

LP 100RES,01; Respiratory Protection; Revision 12  
HPP 3106.03; Description and Issuance of Respiratory Protection Equipment; Revision 14  
HPP 3106.05; Breathing Air Quality Assurance Test; Revision 20  
HPP 3106.04; Inspection, Maintenance and Quality Assurance of Respiratory Protection Equipment; Revision 23  
Air Sample Records; dated November 16, 2012 and November 20, 2012  
SCBA Qualification Query; dated December 19, 2012  
Nuclear Oversight Report; PDA 12-003; Radiological Protection and Radwaste; April 5, 2012  
12-004-R; Radiological Engineering Calculation; 10 CFR 61 Data Dry Active Waste; Approved September 24, 2012  
CR 01626562; Monthly SCBA Unit Checks Were Not Done in February  
CR 01721646; Unable to Complete SBTG STP 3.6.4.3-02  
CR 01800957; SCBA Unit Pass Alarm Failed  
CR 01824741; PAPR Respirators Worn without Proper Authorization  
CR 01839697; Grade "D" Air Test Not Completed Within the Required 9 Months  
CR 01839706; MSA M7 MMR Certified C.A.R.E Technicians Quals Not in LMS  
CR 01839666; Monthly Inspection Missed on SCBA Equipment  
CR 01839722; Track the Completion of SCBA Annual Flow Test  
CR 01840046; Grade D Breathing Air Sample Missed in April, 2011

### 2RS4

ACP 1411.17; Occupational Dose Limits and Upgrades; Revision 22  
ACP 1411.18; Personnel Dosimetry; Revision 36  
HPP 3104.03; Radiological Air Sample Collection and Analysis; Revision 18  
HPP 3105.03; Shallow Dose Equivalent Assessment; Revision 13  
HPP 3105.05; Administration of In-Vivo and In-Vitro Bioassay; Revision 22  
SAFO 1607538; Focused Self Assessment of Dosimetry with Emphasis on Internal Dosimetry; Assessment Dates August 30 through September 1, 2011  
Internal Dose Assessment for 2011 and 2012 and Related Bioassay Data  
NVLAP Accreditation for Mirion Technologies for July 1, 2012 through June 30, 2013  
Electronic Dosimeter Dose and Dose Rate Alarm Logs for 2012  
Whole Body Counter Quality Assurance Logs; Dated July through December 2012  
CR 01736845; Skyshine Dose to Workers is 3-4 Rem per Year  
CR 01724120; 2011 Site Dose vs. Goal Report Discrepancy  
CR 01742438; Fastscan Whole Body Counter Out of Service  
CR 01770390; Whole Body Counter Gain Adjust Failure  
CR 01752529; Failure to Return TLDs at the End of the Monitoring Period

## 2RS7

CR 01750652; I-131 Identified in REMP River Sample Not From the DAEC  
CR 01824038; 2011 Annual REMP Report Issues  
CR 01904395; Validate REMP, HP, KAMAN Air Sample Media for Efficiency  
CR 01878134; Delta T to Plume Model Computer Point Failing Low  
CR 01847327; Trend: REMP Air Samplers As-Found Specs OOT  
Offsite Dose Assessment Manual; Revision 30  
ESP 4.7 Evaluation: REMP Sample Station Effectiveness; May 3, 2014  
ESP 4.5 Annual Environmental TLD Test; March 8, 2014  
2013 Land Use Census  
DAEC Metrology Lab Report of Calibration for Low Volume Air Samplers; Various Dates  
EV-AA-104; Radiological Environmental Monitoring Program; Revision 1  
ESP 1.0; Radiological Environmental Monitoring Quality Control Program; Revision 13  
MIT-C012-01; Climatronics Met Tower Sensors Calibration; Various Dates  
ESP 4.5; Statistical Comparison of TLDs for Direct Radiation Impact; Revision 5

## 4OA1

MSPI Basis Documents; Revision 16  
EN-AA-105-1005; Mitigating Systems Performance Index (MSPI); Revision 0  
ACP 1402.4; NRC & WANO & MOPR Performance Indicator Reporting; Revision 20  
NRC PI Data Calculation, Review and Approval; MSPI AC Power System; Third Quarter 2013 through Second Quarter 2014  
NRC PI Data Calculation, Review and Approval; MSPI High Pressure Injection System; Third Quarter 2013 through Second Quarter 2014  
NRC PI Data Calculation, Review and Approval; MSPI Heat Removal System; Third Quarter 2013 through Second Quarter 2014

## 4OA3

RCE 1986971; HPCI Inboard Isolation Unplanned LCO; Revision 5  
ACE 1627466; Inadvertent Relay Actuation Resulting in Group 6 Isolation Rendering RCIC Inoperable  
PI-AA-100-1007; Apparent Cause Evaluation; Revision 8  
PI-AA-100-1005; Root Cause Analysis; Revision 10  
PI-AA-104-1000; Corrective Action; Revision 0  
ER-AA-204-2001; Plant Health Committee; Revision 5  
BO-AA-103-1007; Project Review Board; Revision 1  
CR 01627466; Group 6 Isolation Signal Received During I&C STP  
CR 01968971; HPCI Inboard Isolation "A" Logic Occurred During STP 3.3.6.1-43  
CR 01984729; B SBTG Controller Flashing "RAM Test," "Stack OK"  
CR 00343030; 072082 SCAQ – Electrical Transient in DAEC Switchyard  
ACE 002020; SCAQ – Electrical Transient in DAEC Switchyard; Revision 1  
ACE 01975516; Severe Weather on June 30, 2014 Caused Grid Transient Which Started Both Emergency Diesel Generators; Revision 6  
ACE 01984205; Essential Bus Overcurrent and Undervoltage Relay Coordination; Revision 6  
CAL-E98-001; 4.16 kV Essential Bus Undervoltage Relay Setpoint Calculation; Revision 2  
CAL-E10-001; Undervoltage Relays – NGV11s; Revision 0

## LIST OF ACRONYMS USED

AC	Alternating Current
ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
AOP	Abnormal Operating Procedure
CAP	Corrective Action Program
CAPCO	Corrective Action Program Coordinator
CARDOX	Carbon Dioxide Fire Suppression
CE	Condition Evaluation
CEFE	Critical Equipment Failure Evaluation
CFR	Code of Federal Regulations
CR	Condition Report
CS	Core Spray
CV	Control Valve
DAEC	Duane Arnold Energy Center
EN	Event Notification
FID	Functional Importance Determination
HCU	Hydraulic Control Unit
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
JPM	Job Performance Measure
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
MSPI	Mitigating Systems Performance Indicator
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OI	Operating Instruction
PARS	Publicly Available Records System
PCP	Plant Chemistry Procedure
PFP	Pre-Fire Plan
PI	Performance Indicator
PM	Planned or Preventative Maintenance
PMT	Post-Maintenance Testing
POR	Past Operability Review
PRA	Probabilistic Risk Analysis
QEV	Quick Exhaust Valve
RCE	Root Cause Evaluation
RCIC	Reactor Core Isolation Cooling
REMP	Radioactive Effluent Monitoring Program
RHRSW	Residual Heat Removal Service Water
RWS	River Water Supply
SBDG	Standby Diesel Generator
SBGT	Standby Gas Treatment
SCFM	Standard Cubic Feet Per Minute
SDP	Significance Determination Process

SFU	Standby Filter Unit
SL	Significance Level
SSC	Structure, System or Component
STP	Surveillance Test Procedure
SV	Solenoid Valve
TS	Technical Specification
TSO	Transmission System Operator
TSR	Technical Requirements Manual Surveillance Requirement
UFSAR	Updated Final Safety Analysis Report
WARM	Work Activity Risk Management
WO	Work Order

T. Vehec

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Sincerely,

*/RA/*

Christine Lipa, Chief  
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